N4 Supervisory Management

Gateways to Engineering Studies - Chris Brink

HYBRID LEARNING SOLUTIONS

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Supervisory Management

N4

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	Checklist		Practical
	Demonstration/ observation		Presentation/ Lecture
	Did you know?		Read
	Example		Safety
	Experiment		Site visit
	Group work/ discussions, role-play, etc.		Take note of
	In the workplace		Theoretical – questions, reports, case studies, etc.
	Keywords		Think about it

Module 1

Management

Learning Outcomes
On the completion of this module the student must be able to:

- Describe
  - Scientific management
  - Enterprise activities
  - General management functions
  - Management aids

1.1 Introduction

This modules discusses the importance of good management and the role it plays in the organization.

1.2 Scientific management

Scientific management is the manner in which people in command of human activities approach and carry out their decisions, planning, organising, commanding, co-ordination, and control, so that everything involved will gain thereby and the entire enterprise will function with a higher degree of efficiency and productivity.

Frederick W Taylor was the father of scientific management. Early in the twentieth century, he started the development of scientific management with his experiments at a coal yard.

He studied production variables, and the results led him to set the following principle: "The highest production is obtained when each worker is given a definite task to be performed in a specific time in a specific manner."

He proved that incentive bonuses can bring about an increase in production, and showed that work activities must be thoroughly planned, which is, in fact, scientific management.

Note:
This planning embodies perception of the task, the development of a hypothesis, experimentation, and testing.

Henry L Gantt was another main contributor to scientific management. He put production activities into sequences.

Also, Frank and Lillian Gilbreth were concerned with the subject, and they included fatigue, monotony, emotional reactions, and other human factors in their studies of time and motion.

Experiments at the Hawthorne factory in the United States were aimed at determining the influence that salary and working conditions have on production; the findings were that they have an influence, but moral and psychological factors also play a major role.

Walter Shewhart applied statistical control measurements to production and found that interrelated factors such as product design, plant layout, worker's ability, environment, client attitude, and material, must also be taken into account.

1.3 Enterprise activities

Enterprise activities fall into five groups, which are described below.

1.3.1 Technical activities

Technical activities include:

- Industrial settlement and layout
- Demand forecasting
- Production engineering
- Product design, research and development
- Production planning and control (method study and work measurement)
- Manufacturing (work standards, increase in productivity, and incentive schemes)
- Purchasing of materials, parts, and so on, and provisioning
- Quality control and industrial safety
- Maintenance

1.3.2 Commercial activities

Commercial activities include:

- Marketing organisation
- Market research and segmenting
- Advertising
- Sales
- Determining the buyer's behaviour
- Demand forecasting
- Price planning of manufactured products
- Distribution of manufactured products
- Marketing control and planning

1.3.3 Financial activities

Financial activities include:

- Budgeting and budget control
- Determination of costs, and cost control
- Financing of projects, extensions and departments
- Decisions on investments in banks and other financial institutions
- Reserve and dividend policies
- Finance accountancy and analysis
- Purchase financing
- Salaries and expenses
- Taxation (income tax, sales tax, and employee taxation)
- Insurance
- Credit control
- Dividend payments

1.3.4 Personal activities

Personnel activities include:

- Provision of personnel for the entire organisation
- Work simplification for all jobs in the organisation
- Recruitment, selection, locating, and annexation of employees
- Determination, introduction, and implementation of conditions of service
- Training of employees
- Development and promotion of established employees
- Improvement and introduction of benefits
- Transfer, downgrading, chastisement, and dismissal of employees
- Improvement of working conditions
- Establishment of wage and salary structure
- Work evaluation and personnel appraisal
- Social care of employees and employee's dependants
- Labour relations, personnel relations, and external relations (industrial relations)
- Personnel planning

1.3.5 Administrative activities

Administrative activities include:

- Correspondence with departments and with other organisations
- Printing
- Provision of stationery
- Filing and keeping of records and reports of organizational matters, and of employees
- Keeping of minutes
- Utilisation and planning of available office space
- Planning and organisation of administration
- Calculation of wages and salaries
- Clerical procedures
- Control of office personnel, and office management

1.4 General management functions

- **Planning**: setting objectives, policy making, decision making, designing the organisational structure, product design, and production planning.
- **Organisation**: plant planning and layout, organisation of employees, materials, machines and tools, administration, marketing, and production.
- **Leading**: leading of all activities in the enterprise.
- **Co-ordination**: co-ordination with all departments in the organisation and with other organisations.
- **Control**: control over all activities in the organisation; activities of command must be effective and purposeful.

If these functions are to be performed effectively, they must be communicated effectively and continuously at all levels.

Furthermore, management must establish and maintain external relations with suppliers, clients, shareholders, financial institutions, authorities, labour institutions, and legislature.

Note:
The correct choice of suppliers must be made and prices, terms of credit and delivery promises must be negotiated.

There must be negotiation with clients about the quality of products, prices, after-sales service and complaints. There must be negotiation with shareholders about growth of dividends and payment of dividends, and new investors (shareholders) must be sought.

Management must negotiate with financial institutions about interest rates, investments, overdraft facilities, and loans. With the authorities, there must be negotiations about taxation (sales, income, and employee taxation), subsidies (housing, medical, and production subsidies), factory conditions and factory laws, and manpower utilisation.

Think about it!
Management also has a function in relation to the community: it provides work, housing, community development, scope for advancement, and security.

For the employees, management must provide better remuneration, better working conditions and benefits, more job satisfaction, scope for advancement, and security.

1.5 Management aids

There are many aids available to management, of which the following are the most important:

- People.

- Models.
- Mathematical techniques.
- Computers.
- Charts.

Definitions:

Production: Production is the purposefulness of action to produce something useful.

Production system: A production system consists of the design processes through which raw materials are processed and transformed into useful products.

Process: A process is an organised procedure that transforms inputs into outputs (materials into products).

In an industrial process, the inputs are mainly responsible for the variable production costs. The facilities that transform the materials are associated with fixed costs, and outputs are associated with revenue.

Profit depends on the relation between costs (both variable and fixed) and revenue.

System: A system is a collection of interrelated components.

Model: A model is a representation or abstraction of the important features of a process. It reflects the relation between cause and result, and between objectives and limitations.

Physical models are scale models (such as those of large structures, plants, and so on). They provide a reflection of the final product and ensure that alterations can be made inexpensively.

Schematic models include graphs, symbolic charts, networks, flow-charts, and organisation charts, and make experimentation possible.

Mathematical models are powerful aids. They include formulae and equations. They are manipulated easily and are accurate. The origin of faults can easily be traced.

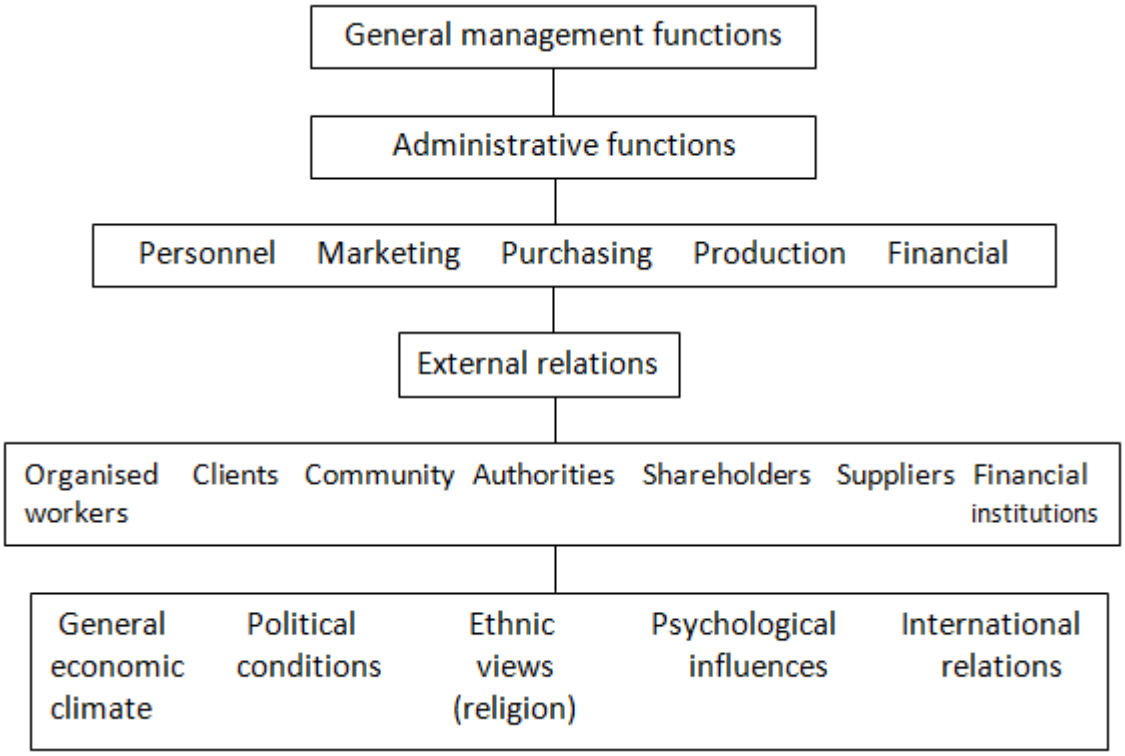


Figure 1.1

Activity 1.1

1. Define the term scientific management.
2. Define the term communication.
3. Define the term motivation as applicable to the industry.
4. Define the term discipline as applicable to the industry.
5. Define the term worker.
6. Define the term employer.
7. Define the term supervisor.
8. Briefly discuss the following business sections of an organisation.
   (a) Technical section
   (b) Financial section
   (c) Administrative section
   (d) Personnel section
   (e) Commercial section
9. Briefly discuss the objectives of management.
10. List and explain the five activities of management planning.

Self-Check

I am able to:	Yes	No
• Describe		

o Scientific management		
o Enterprise activities		
o General management functions		
o Management aids		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 2

Planning

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the planning process

2.1 Introduction

Planning is the art of forecasting, to foresee what will happen in the future and to decide what course of action must be taken to achieve the desired objective.

Planning is a three-step process:
- Analysis of the data of the past.
- Decisions on the present.
- Evaluation of the future.

Note:
Planning is a management function and, in fact, the function which precedes all others.

Top-level management develop extensive, long-term plans that affect the entire organisation and the surrounding society.

A supervisor must plan for the future of his own department within company policy and guidelines. These plans are for the short term and are usually of a detailed, immediate, and specific nature. The supervisor plans on a day-to-day or week-to-week basis for smooth workflow and maximum production at minimum cost and time.

The first step is the development of objectives. Objectives are measurable, realistic aims which must be achieved. Objectives set by the departmental supervisor are secondary objectives.

Note:
Top-level management set objectives for the company, and every supervisor develops objectives for his department within these guidelines.

Departmental objectives must be realistic, measurable, and well defined. They must be put into writing to serve as a reference for the developing plan. There must either be a time limit for the completion of each objective, or else a duty-list can be used.

The next step is the development of plans for the realisation of these objectives.

Normally these basic plans are formulated by top-level management, then each supervisor adjusts them to suit his department and puts them into effect.

Five basic plans are:
- Policies
- Procedures
- Methods
- Rules
- Budgets

Definition: Policies
Broad guidelines of thoughts.

Policies are formulated by top-level management and serve as a foundation for company thoughts. Policies canalise and restrict the decisions made by every manager and departmental supervisor.

Take the policy on leave; for example; you, as a supervisor, must adapt this policy to the needs of your department and apply it to the workers.

Departmental procedures show employees the sequence of steps by which their work must be executed.

Definition: Procedure
A procedure defines a chronological sequence of a specific action that is to be carried out.

Note:
Procedures are more specific than policies. Procedures are guidelines for action, and define how a policy must be put into effect.

They also assist the supervisor in the control of work-flow and scheduling, and with the instruction of employees.

A method is even more detailed than a procedure. It concerns one particular sequence of the work operation.

Definition: Method
Methods ensure the effective and proficient execution of the work.

As a supervisor, you must develop methods so that you can find the correct way to carry out the work in your department.

Definition: Rules
Rules are absolute guidelines on behaviour. No deviation is permitted.

Rules can be developed by management or by the supervisor depending on the situation. The manager and the supervisor must exercise authority and enforce company rules strictly.

Budgets are expressed numerically in rands and cents, man hours, units produced, and material and stock used. Budgets are specific and precise in terms of objectives.

Definition: Budgets
Plans for intended financial results.

Note:
Planning always includes risk.

After an objective has been set, a start must be made with the analysis and investigation of the plan for the achievement of the objective.

When the plan has been developed, the following six questions must be considered:

1. **What must be done?**
   This question deals with the development of a concrete plan for the achievement of the objective. A clear picture must be developed of the entire extent of the desired objective.

   All resources must be considered; these include personnel, staff, equipment and tools, material and stock, and the supervisor's own time.

2. **Why must it be done?**
   In this step, the supervisor must consider the objectives fairly. Will the objective benefit the future of the department? What purpose will it serve?

Think about it!
Every advantage and disadvantage must be carefully considered before the objective can be implemented.

3. **Where must it be done?**
   The supervisor must plan for efficient use of space and equipment. A floor plan can be drawn. Working conditions and the physical size of the work space of the department should be considered.

4. **When must it be done?**
   This question calls for the drawing up of a duty-list with time limits for the completion of each part of the objective.

5. **Who must do it?**
   The supervisor must use his workers for maximum productivity. Every worker must be used effectively. Work must be divided fairly and purposefully.

6. **Bow must it be done?**
   This question deals with the choice of work methods or processes that could be followed for the completion of the work.

   The supervisor must plan for effective utilisation of personnel, equipment and tools, space allocation, materials and stock, time, (both that of the supervisor and that of the workers), and other resources.

Activity 2.1

1. Job planning can be done in five basic steps, namely: route, schedule, dispatch, inspection, control.
2. Describe, in short paragraphs, the meaning of each term for job planning.
3. What personnel factors should a supervisor take into consideration before he draws up a work schedule?
4. Describe two simple ways to record plans without being burdened with too much paperwork.
5. If your company has a planning department, what will the supervisor's responsibilities be towards this department?
6. Your department has to manufacture a quantity of machine parts within a certain time. Describe, step-by-step, how you as a supervisor will go about planning your department to manufacture the parts. Mention all the aids that you would use.

Self-Check

I am able to:	Yes	No

• Describe the planning process		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 3

Organisation

Learning Outcomes

On the completion of this module the student must be able to:

- Describe the types of organisation
- Explain the following structures
  - Management
  - Personnel
  - Post
- Describe organisational charts
- Explain the following organisation:
  - Centralised
  - Decentralised
  - Formal
  - Informal
- Describe the use of procedure manuals
- Explain functional organisational structure
- Explain authority and the delegation of authority
- Describe the basic responsibilities of a supervisor
  - Work delegation
  - Faults that could appear
  - Organisation of a department
  - Duties
- Describe company policy
- Explain public and community relations
- Describe the business climate of the city
- Describe the influence of a good business climate on the community

3.1 Introduction

After planning, organisation is the next step in supervisory management. A supervisor must organise his department and motivate each worker to strive towards a common goal.

This means that he must group his subordinates effectively and fairly if maximum workflow and productivity are to be ensured. Organisation consists of the estimation of the available and required resources, and the scheduling of work distribution.

The supervisor organises his department within the larger, formal organisation of the company. This larger, formal organisation has four basic components, all of which must be focused upon when the supervisor is organising his own department.

These components are:
- People (workers)
- Work
- Relations
- Environment

People are the supervisor's most important resource. The skills and abilities of workers must be considered when a department is being organised; their experience, degree of training, attitudes, behaviour, competency, and interests must be taken into account before they are allocated jobs.

Think about it!
The personnel department is a valuable aid in the recruitment and selection of workers.

The assignment of work is the second component that the supervisor must focus on when organising in a formal organisation.

He must estimate the amount of work and determine the type of work to be carried out. If the work requires different skills and specialisation, or if the working group is too large, the operation must be divided into smaller groups.

Afterwards, the work groups must be analysed and integrated, and their all-round effectiveness must be determined.

Thus, maximum productivity can be achieved.

Flow charts are useful in the organisation of workflow. On them can easily be seen where operations start and end, where there are delays, and where there is a shortage of scheduled manpower.

The four things that are needed to make organisation possible are:
- People to do the work
- Machines to do the work with
- Materials to be transformed
- Money to purchase materials, pay employees and so on

3.2 Types of organisation

3.2.1 Military or line organisation

This is the simplest form of organisation and is based on military discipline. In this system, the lines of authority run vertically from top to bottom.

As the responsibilities of the general manager become too much, he hands some down to the manager; when the manager's become too much, he hands some down to the foreman; and so on.

This method has the advantage that everyone's authority is clearly defined, and the general manager can exercise thorough control over the entire organisation. Line organisation is generally applied only in small companies. **Figure 3.1**.

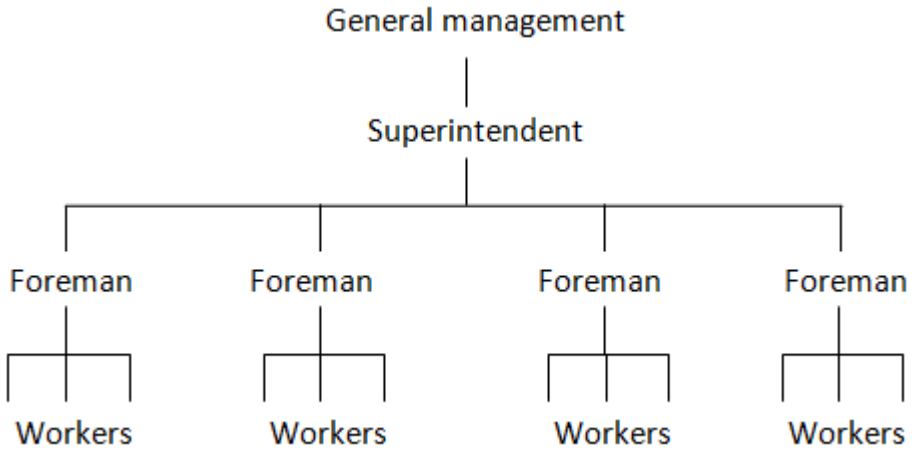


Figure 3.1

3.2.2 Line-and-staff organisation

The specialists who are known as staff are the heads of certain department. Staff serve the general manager in an advisory capacity but have no authority over the line, which falls under the authority of the general manager.

In this way, a supervisor can have an engineer, a cost clerk, and a chemist to advise him. But only he may give orders to the line under him. However, each specialist can also have his own line.

Thus, the staff is indirectly concerned with production. Line workers are the people who are directly concerned with production. **Figure 3.2**.

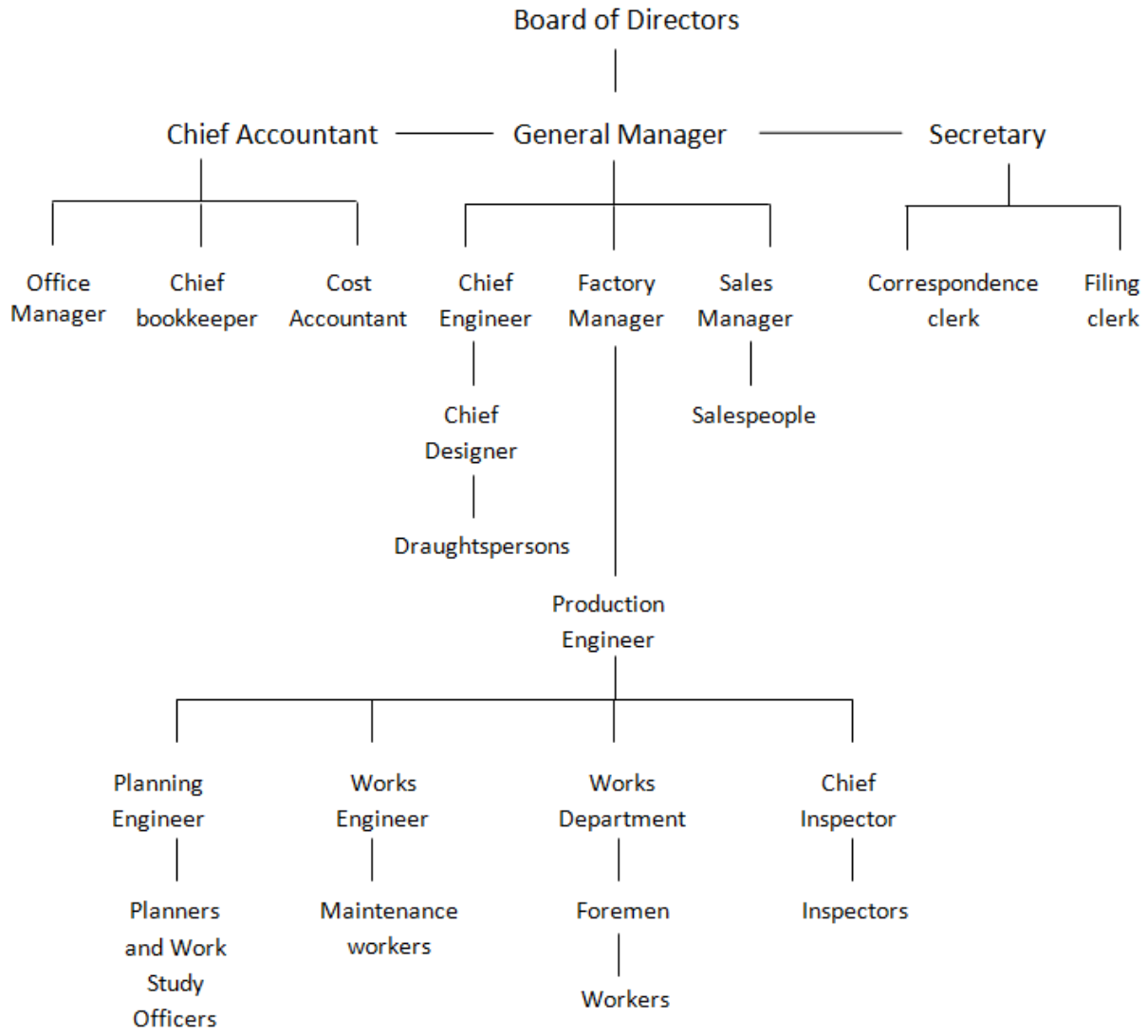


Figure 3.2

3.2.3 Functional organisation

In this type of organisation, the specialists are masters in their field and give advice and instructions to their subordinates.

Think about it!
Thus, the engineer, the chemist, and the production engineer are at the same level of authority, and each foreman receives instructions from the specialists.

The advantage of this system is that the foreman and workers receive accurate and scientific instructions, and this ensures that they are doing the work of an expert. **Figure 3.3**.

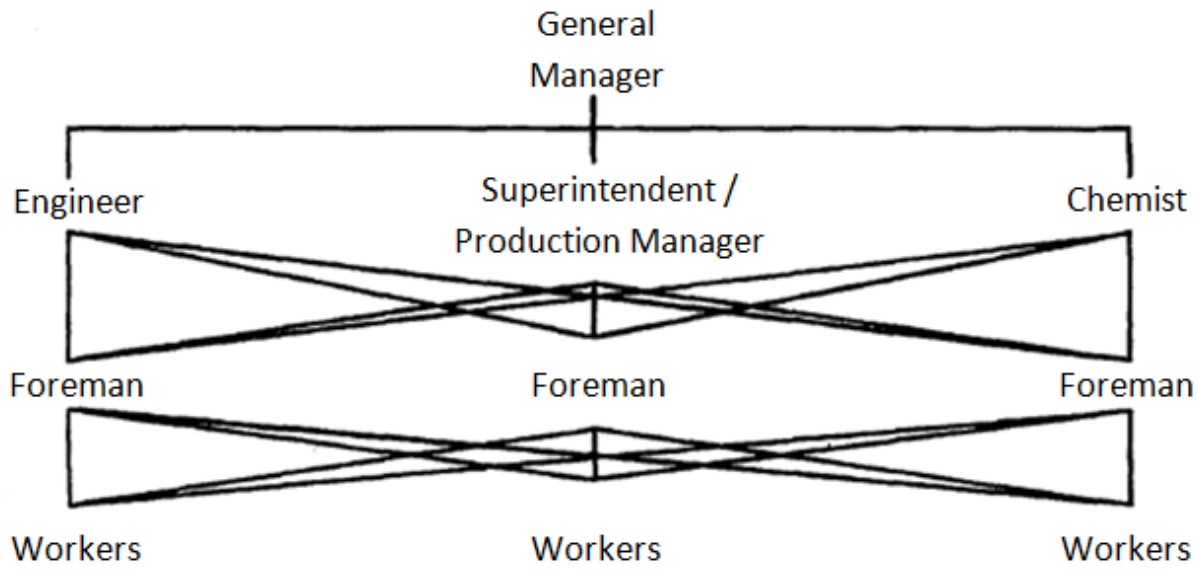


Figure 3.3

3.2.4 Departmental organisation

As the workshops expand, the organisation must also expand. When it reaches a stage at which the plant has to be divided into productive units, the departmental form of organisation becomes inevitable.

The entire plant can, for instance, manufacture deep-freezers, refrigerators, vacuum cleaners, and so on. Then each product line can be organised into its own department, independent of all the others.

These departments will be duplications of the larger organisation and will have their own managers, factory managers, accountants, and so on. They can function as the line type, line-and-staff type, or the functional type of organisation.

Note:
The work in all of these departments falls under the general manager, who has to account to the board of directors.

3.3 Management structure

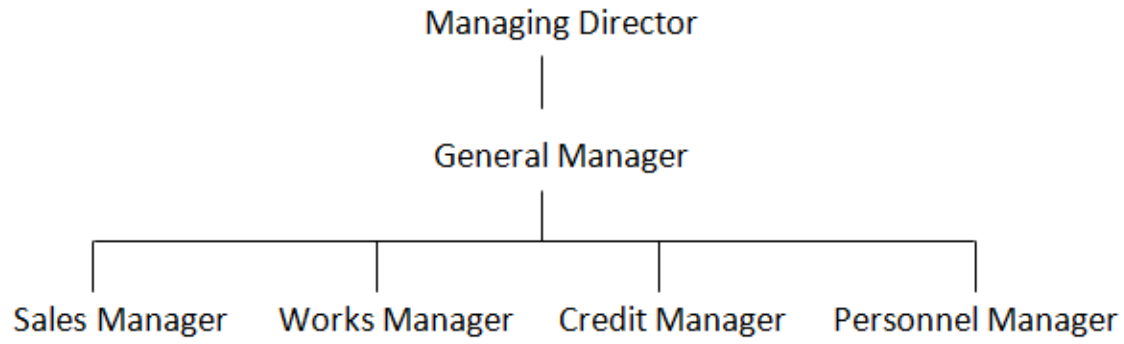


Figure 3.4

3.5 Personnel structure

The personnel structure normally includes the management structure with all office personnel and production personnel and foremen. The production workers are not included.

3.6 Post structure

The post structure is the structure that includes all the employees of the organisation, from the managing director to the labourers and floor sweepers. The number of workers for every category must be known and every position must be filled if the organisation is to function efficiently.

3.7 Organisational charts

Organisational charts are clear representations of the company structure. They show the formal lines of authority between departments and how these departments must interact.

A company can have either a centralised or a decentralised organisation.

3.8 Centralised organisation

A centralised organisation is one in which the many leve1s of management all have their facilities concentrated at the same place. This structure takes the familiar pyramid form in which each level has a defined responsibility approved and authorised by the upper leve1s. Here, management can exercise better control.

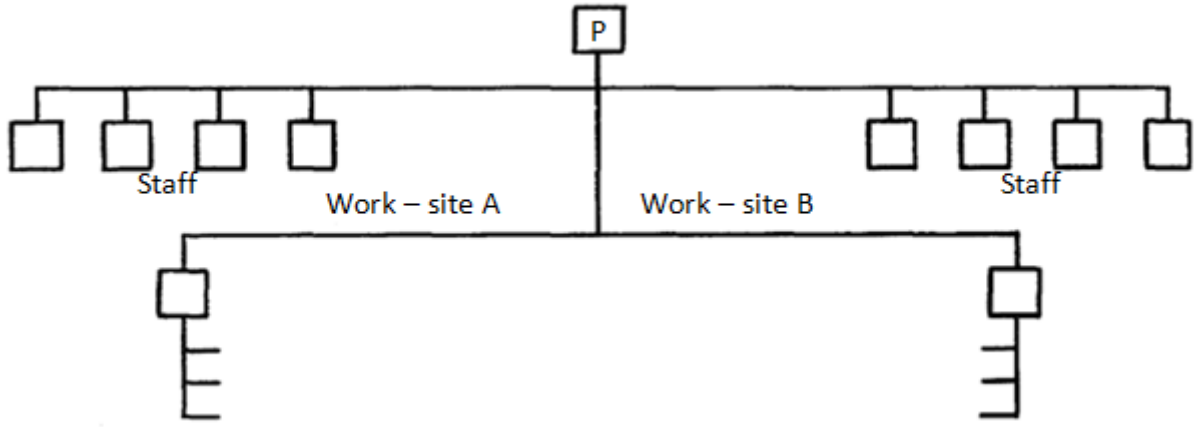


Figure 3.5

3.9 Decentralised organisation

A decentralised organisation is normally associated with large, geographically widespread companies. The departments are treated as autonomous, self-supporting areas of responsibility and authority.

Note:
Effective motivation plays a major role and has high potential.

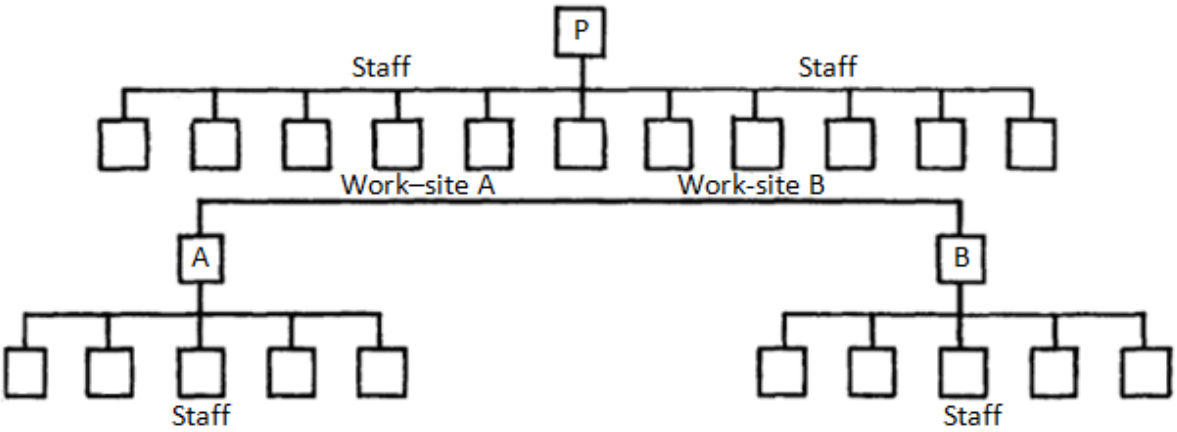


Figure 3.6

3.10 Formal organisation

The formal organisation of a company is the order of rank laid down on paper. The exposition of the post structure with the duties and authorities of each member of the post structure is clearly defined. It has a proper communication network.

3.11 Informal organisation

The informal organisation concerns the creation of groups within the formal organisation. These groups form by themselves and the workers are the members of the groups.

The groups have their own informal leaders and also have their own policies, aspirations, and norms. This can have detrimental consequences for the formal organisation, but can also be advantageous if the groups are approached correctly.

Note:
In effective supervision, the identification of the group leader plays an important role.

3.12 Procedure manuals

Procedure manuals are more specific than policies. Procedures are guidelines to action. They define how to put a policy into effect. More specifically, they define the sequence in which the specific actions must be carried out.

Note:
These procedures are summarised in manuals so that they are kept together and available for reference.

3.13 Functional organisational structure

- Resources function - manpower, physical and intangible assets.

- Processing function - product and service design, manufacturing and marketing.
- Relations function - labour, worker, public, community, government, and shareholder relations.
- Planning and control function - planning, control, bookkeeping, and data processing.

3.14 Authority and the delegation of authority

Responsibility is what is delegated to a supervisor and what is expected of him in his work. For example, the achievement of objectives, workshop management, and so on are responsibilities.

Definition: Authority
The power given to the supervisor so that he can meet his responsibilities.

The supervisor's authority originates from his superior, who in turn receives it from his superior, and so on.

Definition: Accountability
This means that the superior may at any time ensure that the supervisor is using his authority to meet his responsibilities, and take action accordingly.

Accountability cannot be delegated, but the supervisor is burdened with it when authority is delegated to him.

3.15 The basic responsibilities of a supervisor

A supervisor is usually responsible for the following:

- Selection of workers.
- Training of workers.
- Framing of work assignments.
- Maintenance of discipline.
- Handling of workers' problems.
- Handling of minor union problems.
- Knowledge of the functioning of payment and incentive schemes.
- Decisions on production-line matters.
- Co-operation with other departments.
- Determination and possible improvement of work methods.
- Cutting and control of costs.

Did you know?
Any member of management, including the supervisor, may delegate authority, including the authority to carry out responsibilities.

3.16 Work delegation

A supervisor must delegate as much as possible of the less important work so that he can concentrate on the more important work.

A typical delegation chart of a supervisor could read as follows:

- Work that the supervisor must do.
- Work that the supervisor should do, but showing with what someone else could help.
- Work that the supervisor can do, but which could be done by someone else if he were given the opportunity.
- Work that someone else should do, but showing what the supervisor can help with in an emergency.
- Work that must be done by someone else.

The supervisor must delegate smaller, routine jobs that require little or no authority whenever he needs time for more important jobs. This ensures that these smaller jobs are done in his absence.

Think about it!
A supervisor should not delegate jobs that require special technical knowledge or skills, or work that involves confidential information.

A worker must be informed about the following when work is delegated to him:

- Why the work is delegated to him.
- The importance of the work.
- When and to what extend the supervisor will check the work.
- The degree of authority connected to the work.

Besides that, the supervisor must inform all the other workers that he has delegated a specific job to a certain person.

When workers have jobs delegated to them, they benefit in the sense that they get the opportunity to learn more of other jobs; the change ensures interest, satisfaction and pride, and, possibly, the better compensation that is normally associated with more responsible work.

3.17 Faults that can exist in an organisation

The following faults can exist:

- A long chain of command, which leads to poor communication from top to bottom and from bottom to top.
- One worker reporting to two bosses.
- An assistant -manager doing the same work as his superior.
- Job overlap, which leads to duplication and wasted energy.
- Departmental responsibilities that are in conflict with the objectives.

3.18 Organisation of a department

The supervisor must use the same approach as management to organise a department.

He must:

- Analyse the work that must be done.
- Determine the best grouping for long-term operations; the work can be divided into main and supportive functions.
- Unite operations and services so that costs are reduced and efficiency increased.
- Organise management and management-oriented positions to plan, co-ordinate, and control with maximum efficiency.

3.19 Company policy

Company policies are regulations and procedures according to which the company must be managed.

These policies are set at a high level and then communicated downwards to be carried out throughout the organisation, especially by line-management. Policies may cover all important company activities, but the supervisor is concerned with the policies that relate to workers and workshop practice.

Policies are normally written, but may sometimes be unwritten. The supervisor must act within the boundaries of company policy, but may suggest changes to management.

Note:
Certain sections of policies are applicable only to certain departments, but each section of a policy is equally important.

The supervisor must never criticise or apologise for company policy; as a management representative, the supervisor must support the company policy. He must understand the policy, as this will assist him in the performance of his duty, especially with regard to decision taking.

A supervisor may have full authority, limited authority (he must report back), or no authority (he must discuss his actions with management first). He must be in possession of a supervisor's manual so that he can become familiar with the written regulations, procedures, and specifications connected with company policy.

Think about it!
When the supervisor informs the workers about company policy, he must use terms that they will understand. He must also be purposeful.

3.20 Public and community relations

The public see the supervisor as a representative of his company; therefore, he must be prepared to speak intelligently and with judgement. He must not make all the information known, but only the information that contains favourable facts.

If he is questioned by a stranger, he should ask for credentials and identity documents if necessary, or else refer the stranger to the official management spokesman of the company. This is very important if the person is a news reporter.

Note:
If the supervisor cannot provide the public with the information they ask for, or if the information is confidential, he must tell them so in a polite manner.

Unfavourable publicity can be caused by a misunderstanding, insufficient information, differences between management and reporters, poor handling of enquiries (which leads to speculative gossip), or by misleading and false reports.

The supervisor must release favourable information on long-service awards, safety achievements, production achievements, and so on, to the news media by way of the personnel or public-relations office.

If possible, the supervisor must create a favourable impression of the company by active participation in:

- Politics
- Education
- Religion
- Recreation
- Social work

Think about it!
If the company is managed well its good habits will be carried to the community by the workers (safety, tidiness, and so on).

Industry can cause the value of property to decline. It does not necessarily do so, especially if the industry is well located and management exercises good control, and if the industry is community oriented. Pollution and unsightliness are particularly to be avoided.

3.21 Business climate of the city

A city is considered to have a good business climate if:

- The city-officials and citizens are unbiased towards business.
- There is a good industrial balance in the city.
- There is a good labour source in the city or nearby.

- There is a good public transport system in the city.
- The city has a good business history (no strikes, demonstrations, or riots).

3.22 Influence of a good business climate on the community

A good business climate ensures:

- Work security
- Better employers
- Competitive salaries
- Good government
- Lower tax
- Better opportunities

Note:
The supervisor should play an active role in community matters so that the foundation is laid for future promotion of a better business climate.

The company should allow its workers time to participate in community activities, but the company policy will determine to what extent such participation is possible.

3.23 Duties of a supervisor

A supervisor has the following duties:

- He must establish a favourable climate of human relations in his department.
- He must motivate workers to improve their work performance.
- He must interpret and apply company policy, work specifications, and work orders.
- He must train new workers and encourage old workers to work safely and effectively.
- He must give advice to workers and discipline them.
- He must establish and suggest personal actions like promotions, transfers, salary increases, dismissals and suspensions.
- He must plan and maintain time schedules and work schedules.
- He must make use of his expert knowledge to adjust and improve work procedures.
- He must take all the steps that will ensure good quality and service from his department.
- He must co-ordinate his department in such a way that he can achieve his objectives economically.

Note:
In the management cycle, which consists of planning, action, and control, most of the supervisor's duties fall into the "action" phase.

Activity 3.1

1. Compare the formal organisation with the informal organization.
2. What is an "informal organization" and how can a supervisor use it to his own advantage?
3. Give examples of general misuses in the establishment of an informal organisation and say what the supervisor must do to prevent them.
4. Explain the difference between a centralised and a decentralized organisation.
5. Explain the difference between a line and a staff organisation.
6. In the manufacturing industry, the departments are normally line; what normally, are personnel organisations?
7. Explain the use of organisation charts.

Self-Check

I am able to:	Yes	No
• Describe the types of organisation		
• Explain the following structures		
o Management		
o Personnel		
o Post		
• Describe organisational charts		
• Explain the following organisation:		
o Centralised		
o Decentralised		
o Formal		
o Informal		
• Describe the use of procedure manuals		
• Explain functional organisational structure		
• Explain authority and the delegation of authority		
• Describe the basic responsibilities of a supervisor		
o Work delegation		
o Faults that could appear		
o Organisation of a department		
o Duties		
• Describe company policy		
• Explain public and community relations		
• Describe the business climate of the city		
• Describe the influence of a good business climate on the community		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 4

Leadership

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the role of management
- Explain leadership
- Describe the requirements for a good leader
- Describe the compensation for a leader
- Describe the types of leader
- Explain the reasons why workers do not confide in their leaders
- Describe how to gain the confidence of the workers
- Describe directing

4.1 Introduction

Leadership can be described as "a process of social influence in which a person can enlist the aid and support of others in the accomplishment of a common task".

For example, some understand a leader simply as somebody whom people follow, or as somebody who guides or directs others, while others define leadership as "organizing a group of people to achieve a common goal".

Did you know?
Studies of leadership have produced theories involving traits, situational interaction, function, behaviour, power, vision and values, charisma, and intelligence, among others.

4.2 The role of management

Management performs four basic functions:

- Planning
- Organisation
- Directing
- Control

4.2.1 Planning

This function consists of two parts:

- The establishment of an objective.
- The development of a plan or strategy by which the objective can be achieved.

4.2.2 Organisation
This function includes the collection of the human and material resources needed for the operation of the plan.

4.2.3 Directing
Directing is sometimes referred to as implementation. It is the point at which action is taken. It includes the implementation of the plan: to put it into operation, or to make it happen.

4.2.4 Control
This function ensures that the desired results are achieved as laid down in the objective. Any deviations from the original plan are corrected by control measurement; for example, employee guidance, discipline, reports, and rectification plans.

Think about it!
For effective control, management must communicate and co-ordinate effectively, and good human relations and personnel relations must be the order of the day.

4.3 Leadership
Leadership is the ability to persuade the workers to follow and obey commands willingly.

According to Dr AH Maslow, leadership is one of the psychological needs that have to be satisfied for effective motivation.

Note:
A good leader or supervisor does not necessarily gain friends; some of his decisions will not satisfy everybody. But he must earn the respect of his workers.

Most of us feel that we are able to practise command over something. Even the machine operator who has never in his life practised command over anything exercises leadership when he introduces a new worker to a machine.

In every formal and informal group, there is somebody who exercises leadership - a leader. In primitive communities, it is possibly the best warrior or hunter, or the biggest and tallest man.

At work it may be the person who complains the most, or the person who criticizes management the most, or the person who is the best artisan.

Note:
The supervisor must identify the leader of the working group and use the leader's stature within the group to simplify his duties as a supervisor.

4.4 Requirements for a good leader

A good leader must have the following:

- Intelligence
- A good sense of judgment and the ability to plan strategically
- Good perception
- Good imagination
- The ability to accept responsibilities
- A good sense of humour
- A well balanced personality
- The ability to judge fairly
- The ability to co-ordinate
- The ability to communicate
- Fairness
- The ability to delegate
- The ability to reflect the progress of his group
- The ability to give commands and receive messages
- The strength of character to set an example to his group
- The ability to motivate
- Courage
- The ability to make decisions
- Knowledge of his work
- An unselfish attitude
- Determination
- Perseverance
- Self-confidence
- Reliability and honesty
- The energy to perform efficiently in his work
- Good health

4.5 Compensation for a leader

The supervisor has a difficult task, but he is compensated by one or more of the following:

- More prestige and status at work and amongst friends, and in public
- The challenge that the work itself offers
- The satisfaction of taking the right decisions
- Job satisfaction
- Financial compensation for his responsibility

Did you know?
Some people are born leaders, but most leaders achieve their position through hard work and dedication.

4.6 Types of leader

4.6.1 Autocratic leader

This leader gives commands and insists on them being carried out. He determines the policy of the group without consulting its members.

He gives no information about future plans, but informs the group about only the immediate steps to be carried out. He praises or criticises each member on own initiative. He remains superior to the group.

4.6.2 Democratic leader

This type of leader gives commands only after he has discussed them with the group.

He sees that group policy is determined by the group through discussion and that it is accepted by the group. He never asks someone to do something before he has sketched the long-term plan to that person.

He makes it clear that praise and blame have to be a group decision. He takes part in group activities as a member of the group.

4.6.3 Free-hand leader (Laissez-faire)

This type of leader does not lead. He lets the group use its own discretion and initiative and he himself does not participate.

4.5.4 Charismatic leader

Maria Peron and JF Kennedy were charismatic leaders. Love and other ethnic reasons play major roles with the group members; fear, respect, and admiration play lesser roles. Such a leader can be so effective that the group members will remain loyal in his absence, or even after his death.

Think about it!
Psychologists regard the democratic form of leadership as the best but, in practice, use is made of a combination of all the forms of leadership.

The supervisor must apply the type of leadership that is best suited to his personality, but he must not always rely on that type of leadership.

Think about it!
A good personality helps in leadership, but more important is the ability to sympathise with workers and to show empathy towards them.

If aggressive and hostile behaviour is shown by the group members, the autocratic type of leadership is the best. For aggressive but co-operative behaviour, democratic leadership is the best.

For individualistic behaviour, the free-hand leader is the best (if the leader knows his job). In emergencies, autocratic leadership should be used.

Did you know?
It has been found that supervisors who do not overemphasise production objectives obtain higher production from the workers.

It has also been found that, in high-production groups, the workers are allowed a free-hand by their supervisors; that the supervisors are work-oriented and spend more time with them than with paperwork; and that the supervisors encourage contribution by the workers.

The supervisor must allow workers to participate in workshop policy. When the workers set their own objectives under the supervisor's leadership, they will in most cases work diligently towards those objectives without further motivation.

Sometimes, the supervisor has to make decisions without the participation of the workers. This will be accepted by the workers, as long as they have their fair share in other decisions.

A supervisor can gain the loyalty of the workers by defending their actions (if it is justified), by supporting their main interests, and by showing loyalty to his own superiors.

Think about it!
A supervisor should make a study of human behaviour, even if it is not in a formal way.

Good leadership depends on:
- Demonstrated ability to plan.
- Demonstrated ability to co-ordinate.
- Drive, courage, fairness, perseverance, confidence in workers, and the ability to acknowledge the people under him.

A supervisor must know his capabilities and his limits. He must try to avoid situations that would be beyond his limits, though without misleading the workers. He must ask for honest help.

4.7 Reasons workers do not confide in their leaders

There are several reasons for workers not to confide:
- Fear that the supervisor might form an impression of incompetence.

- Fear that they might lose their jobs, or receive poor salary increases, or that promotion might be compromised.
- Fear that they will disturb the supervisor or waste his time.
- Fear that they will create the impression of being a troublemaker.
- Fear that the supervisor · will lack sympathy because he himself is, in a sense, responsible for the situation.
- Fear that personal matters may not be discussed in work time; the supervisor might be too busy with other things; he might change his opinion about them because he is probably already informed about matters; the information might become part of his unwritten report; and he might talk to someone else about it.
- Fear that they might be obliged to follow the supervisor's advice.
- Fear that the supervisor might take immediate action, when all they had wanted to do was inform him about the circumstances.

4.8 How to gain the confidence of the worker

A supervisor can gain the confidence of the workers as follows:

- He must listen to and be influenced by constructive criticism of his decisions.
- He must be trusted to represent their interests to other workers, departments, and supervisors.
- He must listen to what the workers have to say.
- He must be interested not only in production but also in the workers.
- He must show the workers that he and they must trust each other.

Note:
All leaders or supervisors must act calmly, even in a crisis.

4.9 Tips to leaders

Leaders should:

- Be predictable in a sense.
- Put themselves in the position of the workers.
- Show enthusiasm.
- Be interested in the prosperity of the workers.
- Treat all the workers similarly (be fair).

4.10 Directing

Directing is one of the management functions, and is sometimes referred to as implementation. It is the point at which action is taken, and includes the implementation of the plan.

Directing includes functions such as the training of workers, work assignments, appraisal interviews, decision-making, cost reductions, and improvement and implementation of safety programmes.

Also, directing includes daily duties that have to be carried out by the supervisor, such as:

- the planning and organisation of each day's work
- co-ordination with the supervisor of the previous shift to become familiar with the state of materials, the machines in operation, and the product in manufacture
- checking of production control
- deciding on what work to assign to which workers
- requisition and obtaining of materials
- control of attendance of the workers and the completion of attendance reports
- on-the-job training of inexperienced workers
- control of production reports
- meetings with management to check on quality control and inform management about unusual situations
- execution of disciplinary action against workers
- improvements that can be made
- cost reduction suggestions
- acknowledgement of good work by the workers
- interviewing workers for merit, suggestions, and so on
- control of production, communication, motivation, problem solving, and so on.

Activity 4.1

1. Describe the supervisor's responsibilities with reference to the following:
   (a) Leader and trainer of his workers.
   (b) Institutor of ideas.
   (c) Discusser of the work
2. Compare autocratic leadership with democratic leadership.
3. Name the characteristics that distinguish a successful leader.
4. If a worker tends to be aggressive but co-operative, what style of leadership will probably be the most efficient to use with him? Why?

Self-Check

I am able to:	Yes	No
• Describe the role of management		
• Explain leadership		
• Describe the requirements for a good leader		
• Describe the compensation for a leader		
• Describe the types of leader		
• Explain the reasons why workers do not confide in their leaders		
• Describe how to gain the confidence of the workers		

• Describe directing		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 5

Decision making

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the decision making process
- Describe the application of the decision making process

5.1 Introduction

We are all involved every day in a process of decision making as we experience problems, select answers, and act on decisions. Most daily problems are solved easily, but many people find it difficult to solve more complex ones.

Supervisors at all levels in industry have to make decisions that can affect the lives of their subordinates. Because their decisions can have such far-reaching consequences, supervisors must use a systematic, rational method of problem solving.

This method calls for a skill that can be acquired and developed through experience, drill, and maturity.

Decisions made at management level are decidedly more complicated and affect a greater number of workers than those made by the departmental supervisor; nevertheless, each decision requires the same intellectual process.

Definition: Decision making
A process of selection of the right course of action that will solve a problem.

5.2 Decision-making process

The decision-making process is a systematic method that is composed of the following five steps:

- Identification of the problem
- Analysis of the problem
- Development of alternative solutions
- Selection of a solution

- Implementation and follow-up

5.2.1 Identification of the problem

This first step is a prerequisite to the finding of solutions and the choice of the best solution. The problem must be located and defined before any other step can be taken.

A general error is the confusion of the problem with its symptoms. This way, high costs can be attributed to a poor inventory, poor product design, production delays, defective equipment, excessive overtime, poor production, and so on.

Think about it!
The supervisor must investigate the problem thoroughly in order to determine the cause correctly.

Also, the extent of the problem must be determined. Does it only happen to certain workers or in certain departments?

When does the problem arise and how often? These and other questions must be answered if the cause is to be determined correctly. Only after the cause of the problem has been determined, can the reason for the problem be determined.

Note:
The definition of the problem must be based on facts and not on acceptance.

5.2.2 Analysis of the problem

After the problem has been defined, the supervisor must start on the analysis of the problem through investigations, collection of the facts and evaluation of the results. He must be complaisant and receptive.

Sometimes one can rely on experience, education, and training during the analysis. When all the information connected to the problem has been collected, notes must be made. Then the problem should be discussed with subordinates.

Note:
The analysis must be objective without being biased, and all the alternative solutions must be considered.

5.2.3 Development of alternative solutions

At this point, several solutions have to be developed. There must always be enough possible solutions to choose from.

Think about it!
The more alternative solutions there are, the better the final solution will be.

The supervisor must again be complaisant and receptive. To ensure that he is receptive, he must keep all the relevant information in mind, and he must be willing to consider and investigate various solutions.

Note:
There is always a degree of risk involved with decision making. When each alternative is evaluated, the risk must be evaluated too.

The following factors have to be taken into account when alternative solutions are considered:

- Cost
- Aids available
- Tools and equipment
- Facilities
- Labour
- Effort involved
- Workers' reaction
- Long-term consequences
- New problems that may arise
- Moral and legal implications

Think about it!
It is not always easy to select the best alternative: two solutions may appear equally suitable. In such a case, it will be best to try and combine the alternatives.

5.2.4 Selection of a solution

In this step, the supervisor must decide which of the possible solutions will be the best.

Various factors may assist him in this critical final solution:

- Logics
- Experience
- Intuition
- Advice from others
- Scientific decision making

5.2.5 Implementation and follow-up

When the final decision has been taken, it must be put into effect.

Subsequently, appraisal is necessary so that one can determine whether the problem has been solved.

Such an appraisal can be in the form of a short report that evaluates the decision and its consequences. If the solution is found to be unsatisfactory, the entire decision-making process has to be repeated.

5.3 Application of the decision-making process

Column A contains five decision-making steps. Column B is completed by following the steps given in column A.

Column A	Column B
1. Define the problem. Be as accurate as possible. Write who, what, when, where, and so on.	
2. Analyse the problem. What has really happened? What was the real cause?	
3. Develop alternative solutions. What are the possible ways in which the problem can be handled?	
4. Select the best alternative. Make a decision. Choose the alternative that should be the most practicable.	
5. Execution. How can the decision be acted on?	

Table 5.1

Activity 5.1

1. Name five factors that should be taken into account before a decision can be made.
2. Name the steps to be taken by a successful supervisor in problem solving (analysis) to determine what the cause of the problem is, and in the subsequent decision making process to decide what can be done about the problem.

Self-Check

I am able to:	Yes	No
• Describe the decision making process		
• Describe the application of the decision making process		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 6

Communication

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the purpose of communication
- Describe the following
  - Vertical communication flow
  - Horizontal communication
  - Extra-organisational communication
- Describe the communication process
- Describe obstacles to good communication
- Explain the guidelines for effective communication
- Describe communication with a group of workers

6.1 Introduction

Communication is the process by which opinions are exchanged through a system of symbols. It is a process of human relations by which information and understanding are transferred from one person or group to another.

The supervisor is part of the industrial communication process by which opinions concerning the work environment are exchanged between workers and groups of workers.

Note:
The supervisor forms the main link in this chain of communication.

Communication can take place in many forms. It can be in a spoken or written form. It can be in the form of gestures such as facial expressions (body language).

We can communicate our opinions by our reactions to the opinions of others. Communication can take place by means of pictures, diagrams, graphs, and illustrations.

Without communication, there cannot be any society, because all aspects of our personal, social, and business lives are interconnected by communication.

6.2 The purpose of communication

Communication has several purposes:

- To inform
- To persuade
- To understand
- To educate
- To stimulate action
- To socialise
- To entertain
- To command

6.3 Vertical communication flow

Downwards (from management to workers)

- To explain company objectives, aims, and policy.
- To inform about the organisation, its history, progress, and future.
- To inform about daily activities.
- To explain reasoning and management decisions.
- To educate workers; to appraise them with matters concerning the technical and non-technical aspects of their work.

Upwards (from workers to management)

- To express personal impressions, complaints, grievances, and problems.
- To suggest improvements concerning work
- To acknowledge company policies and objectives.
- To make management conscious of the attitudes and feelings of the workers.
- To participate in decision making.
- To obtain information on how to perform certain jobs.

6.4 Horizontal communication

Across (between departments or between people)

- To stimulate co-operation between different departments.
- To stimulate the quality and applicability of decisions.
- To co-ordinate departmental and work functions.

6.5 Extra-organisational communication

(between companies)

- To satisfy the guidelines of federal, state, and local authorities.
- To effect involvement with business.
- To obtain public approval.
- To stimulate favourable legislation.

6.6 The communication process

The communicator sends the message through a channel to the receiver who reacts to achieve the purpose.

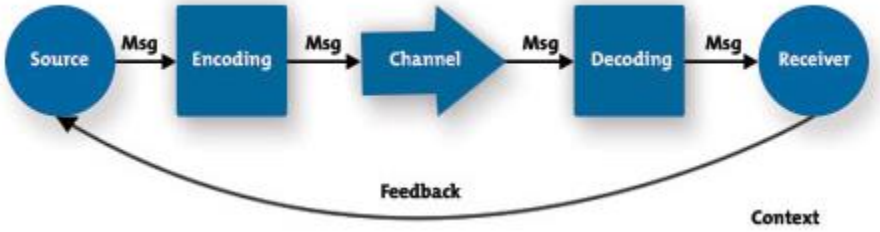


Figure 6.1

A communication process consists of five main components:

- The communicator
- The message
- The symbol
- The channel (media)
- The receiver

6.6.1 The communicator

This is the person who does the communicating. In an ordinary conversation, the role of communicator is continuously exchanged between the parties involved. In a lecture or speech, the communicator is the person who addresses the audience.

6.6.2 The message

The message is the opinion that is communicated. The message itself is a representation. It is something that must be visualised.

Think about it!
The message is the opinion, thought, or meaning that is exchanged.

6.6.3 The symbol

When the opinion has been developed by the communicator, he must put it into a form that will be easily understood by the receiver(s). He will make use of a spoken or written form of communication, or he can communicate by means of pictures, graphs, diagrams, or illustrations, or by body language.

6.6.4 The channel

The channel is the medium of communication and can be one of many forms. For example, workshop bulletin boards, interoffice memorandums, newsletters, the telephone, meetings, conferences, radio, and television are channels of communication.

6.6.5 The receiver

The receiver, or better known as the listener, is the person to whom the message is addressed.

6.7 Obstacles in communication

6.7.1 Improperly coded messages

The communicator must transform or code his message to the receiver so that it will be understood. The communicator must therefore be certain that his coded message is an accurate transformation of his opinion.

Think about it!
To express exactly what is meant efficiently, the correct language must be used.

6.7.2 Improperly decoded messages

These result when the receiver decodes or interprets the communicator's message wrongly.

6.7.3 Poor listening habits

The ability to listen effectively is an art. The average person's listening efficiency is only about twenty-five per cent.

Another obstacle here is the ability of the brain to process data at a much faster rate than that at which words can be spoken.

Now, the brain has to be kept occupied to prevent boredom: with the evaluation of the spoken word if the speech is interesting, or with roaming thoughts if the speech is uninteresting.

6.7.4 Misuse of communication channels

Notices that are left on notice boards for months, dirty and mushy looking boards, and the use of notice boards for purposes that have no connection with the work (like advertisements) are examples of the misuse of communication channels.

Note:
Other examples include boring, monotonous, and strictly one-way (downwards) meetings.

6.7.5 Mistrust, acceptability, frankness

These obstacles are related to the decoding part of the communication process. When the workers mistrust the supervisor, it will be very difficult to communicate.

Also, communication suffers when the manager or supervisor is not acceptable to and shows a lack of frankness to the workers, prevent them from talking openly about their feelings, problems, and complaints.

Note:
Fear normally causes a lack of frankness with the workers and can also influence the communication process unfavourably.

6.7.6 Other obstacles

There are many other obstacles to good communication:

- Noise.
- Distraction (like movement).
- Personality (person does not like to communicate).
- Attitude (receiver has a negative attitude towards the communicator.
- Language (communicator cannot communicate effectively in a language that will be understood by the receiver).
- Emotion (the receiver is under emotional stress due to fear, disappointment, or sadness).
- Prejudice (the receiver has decided what his reaction on the communicator's message will be before the message is complete).
- Fear (the receiver fears the communicator or he fears that he will not be able to decode the communicator's message).
- Fatigue (the receiver cannot concentrate on the communicator's message).
- Physical handicaps (the receiver is physically handicapped by deafness or blindness).

6.8 Guidelines for effective communication

If you wish to communicate effectively, you should make use of the following guidelines.

6.8.1 Listen and understand

- Be willing to-listen.
- Concentrate on what is being said.
- Be patient, sympathetic, and understanding.
- Avoid distractions by physical causes like noise, and avoid arguments.
- Encourage workers to discuss their problems with you.
- Be a good listener and welcome ideas.
- Don't take for granted everything that has been said.
- Do not interrupt the worker.
- Try to determine the real cause of the worker's visit and do not overreact.

6.8.2 Code the message properly

- Express what you mean properly and correctly.
- Select your words carefully.
- Take into consideration anything that the receiver may not be able to decode.

- Take personalities into consideration.

Note:
Keep your body language in rhythm with your words. Control your voice. Use the best method of communication for the occasion.

- Think carefully before you speak.
- Do not appear to be too aggressive or too defensive.
- Be tactful.
- Combine as many methods of communication as possible.

6.8.3 Use proper communication channels

Communication through memoranda, bulletin boards, notices, and other non-verbal methods have their uses. Hold short meetings and keep telephone conversations as short and to-the-point as possible.

Note:
Accent personal communication.

Letters must be concise and related only to the subject; use one letter for each thought. Reports must be short and forcible. See that memoranda transmit messages effectively and make use of informal conversations.

6.8.4 Be the authorised, regular, and accurate source of information

Do not allow rumours to upset the workers. Such information is normally unreliable. Obtain correct information and tell the workers what concerns them.

In general, communicate with the workers only about matters that concern them. These matters may relate to their work and daily routine, or be recent company matters that will affect them.

Note:
Show an interest in the personal lives of the workers.

6.8.5 Be honest and frank

Never lie to your workers and never mislead them. Give honest and frank answers to their questions, even if you have to take time to find out what the correct answer is.

6.8.6 Get feedback

When communicating in any form, be sure that you get feedback, especially when you. give instructions. Do not ask a worker whether he understands you, rather ask him to repeat what you have told him.

Note:
Encourage workers to communicate frankly with you and to give you their opinions.

6.8.7 Be familiar with communication methods

You can never know too much about communication. Group attitudes will depend upon your knowledge and ability to make known to the workers the company interests and intentions.

Think about it!
Good communication will show the individual that he is a member of a team that is working towards a common goal.

6.8.8 Avoid misunderstanding

Be specific when you communicate with workers. Let the worker repeat what you told him. If the worker chatters or wanders off the subject, bring him back to the point.

6.9 Communication with a group of workers

Communication with the group develops team spirit, group co-operation, and trust. Spoken forms and written forms should be used.

Spoken forms of communication:

- Informal meetings are good, but must be held regularly and must be short.
- Planned conferences are good if the meeting is led well.
- Mass meetings are good for celebrations or to solve differences, but are difficult to control.

Written forms of communication:

- Bulletin boards are good if the boards are properly maintained.
- Posters are good if they are regularly changed.
- Displays and demonstrations are good if they are properly prepared, but they can be expensive.
- Visual aids are good teaching aids if they are well prepared and kept up to date.

Activity 6.1

1. a) Name three problems that could influence effective listening.
   b) How can you eliminate them to ensure effective communication?
2. Discuss, in not more than one page, the effectiveness of group participation.
3. Briefly describe what is meant by three-dimensional communication.
4. How can a foreman improve his listening habits?

5. How can person-to-person speech be effectively conducted?
6. What is the common fault made by supervisors when they give orders and instructions.
7. Name four factors to be borne in mind when orders and instructions are given, and provide examples of how a command should be given so that it will be understood and obeyed.
8. Discuss the advantages and disadvantages of leading a mass meeting as a supervisor when everybody in your department is present.

Self-Check

I am able to:	**Yes**	**No**
• Describe the purpose of communication		
• Describe the following		
o Vertical communication flow		
o Horizontal communication		
o Extra-organisational communication		
• Describe the communication process		
• Describe obstacles to good communication		
• Explain the guidelines for effective communication		
• Describe communication with a group of workers		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 7

Interviewing

Learning Outcomes
On the completion of this module the student must be able to:

- Describe performance counselling
- Explain the advantages of performance counselling
- Describe the performance interview

7.1 Introduction

An interview is a conversation between two or more people where questions are asked by the interviewer to elicit facts or statements from the interviewee. Interviews are employed in many work situations as discussed in this module.

7.2 Performance counselling

Performance counselling is an aspect of the relations between supervisor and subordinate, and the one through which management can stimulate and increase the worker's performance to maximum efficiency.

It is a continual process and should be part of the day-to-day relations. It must be aimed at the support of the worker in the development of his potential so that both he and the company will benefit.

Note:
Immediate feedback must be given to the worker. This feedback must take place in the form of counselling to motivate and develop the worker.

Compensation during the counselling session for good performance can also serve as an opportunity for the worker to air complaints, grievances, and suggestions. These interviews must be carried out regularly; at least twice a year.

Advantages of performance counselling
The worker and the supervisor obtain the following advantages from performance counselling:

- The worker gets the opportunity to learn exactly what is expected of him in terms of duties, responsibilities, authority, quality and quantity standards, and so on.
- The worker can learn how well he has been doing in the performance of the above-mentioned.
- The worker is informed about methods that will improve his performance.
- The worker gets recognition in the form of salary increases, promotion, or simply recognition and expression of thanks for good performance.
- The supervisor can determine what the strong-points and weaknesses of his subordinates are, and can accordingly formulate a-plan to develop the potential of his subordinates.

7.3 The performance interview

7.3.1 Preparation

Preparation is the first step in the performance interview. Here, a balance of the worker's performance must be made that summarises all his assets and responsibilities.

Most of the forms that are used are standard and should be completed about a fortnight before the interview.

A copy of the worker's description of work must be obtained as well, so that his responsibilities can be reviewed.

The worker's true performance must then be compared with the duties and responsibilities laid down in the description of work.

As the interviewer, you should try to determine the reasons for the worker's poor performance and yours, as a supervisor.

Note:
Become familiar with the worker's objectives, personality, fears and motivations - it will help you to give him the right advice and leadership.

Remember that you must help him to improve his performance. Be his boss, but also a friend. Be frank, and the interview must be mutual. Discuss, do not dictate or reprimand. Ensure privacy and do not interrupt the discussion.

7.3.2 The interview

Discuss briefly matters in which the worker is interested, to ease the tension and set the worker at ease.

Briefly explain the purpose of the interview. Introduce him to the possible advantages the interview can hold for him and for the company. Introduce him to the planned course of the interview.

Tell him that you intend to discuss his strong points and his weaknesses. Explain that you and he together will try to develop a plan for the improvement of his performance.

Note:
Develop a positive outlook on the interview. Review his performance. Be frank, objective, and honest.

The review must take the form of a discussion. Use the material in your preparation and compare with standards so that he can discover how he performs in relation to what is expected of him.

After you have pointed out the aspects that he needs to improve, you must explain his weaknesses-use the information that is in your preparation. Discuss which weaknesses can be attributed to him, which to you as supervisor, and which to the environment.

Here, nobody must be blamed, but the causes must be defined and corrective action taken. Discuss different ways to solve the problem. Ask for his ideas and contribute your own. Do not try to develop a precise plan at this stage.

Note:
Only after the best corrective action has been decided upon can the plan for improvement be developed. Try to reach an agreement on specific objectives for improved performance and how you will control its progress.

Specific events, projects, and ideas must be identified in your plan to achieve one or more objective. The plan may include reference to books on certain subjects or may require attendance at a special course. It may also include more strict supervision and on-the-job training by you, as the supervisor.

The conclusion must be firm and positive. Do not make the interview very long. Summarise what you have learned from the interview. Make sure that the worker fully understands what is expected of him.

Let him know that he and his work are very important to the company. Tell him that his efforts are appreciated and that you are confident that he can overcome his weaknesses.

The supervisor's responsibilities for performance counselling do not end with the interview. Performance counselling remains a continual process and must be followed up by the supervisor and the worker.

The supervisor must check whether the plan outlined during the interview does improve the worker's performance as desired; periodic short discussions and meetings should be held with the worker.

7.3.4 Indirect method of interviewing

In the indirect interview, the supervisor first requests the worker for a self-evaluation. This method requires advanced preparation by the worker. He is asked to review and modify the description of his work so that it provides an accurate description and what he feels was expected of him.

Note:
The worker is requested to talk about his own performance. The supervisor must then conduct the interview in the light of the worker's description.

7.3.5 Direct method of interviewing

This method is the opposite of the indirect method: the supervisor does the appraisal. He can use the responsibilities and results of the description of work, or he can first mention the worker's satisfactory results, followed by those that require improvement.

Note:
The worker is told that he must take notes of the points that are mentioned, especially those with which he disagrees.

7.3.6 Interview with an applicant for work

If you are to interview an applicant for work, you should use the following scheme:

- Introduce yourself to him; remember that you represent the company.
- Tell him about the reputation, policy, standards, benefits, and other aspects of the company.
- Tell him about the nature, duties, and responsibilities of the work for which he is applying.
- Tell him about salary and increases, and the chances of promotion.
- Find out about his qualifications, training, experience, and certificates.
- Determine the date on which he can start work
- If possible, inform him whether or not he has been successful, or tell him that you must still consider other applications and that you will notify him of the outcome by post or by telephone.

7.3.7 Factors that can influence a worker's merit

- Quality of the work performed.
- Reliability of the worker.
- The worker's attitude.
- The worker's potential
- The worker's knowledge of his work
- The worker's initiative.
- The worker's attendance.
- The worker's personality.
- The quantity of work performed by the worker.

- The adaptability of the worker to changing circumstances.
- The worker's sense for safety and housekeeping.
- The worker's ability to supervise.

Activity 7.1

1. Explain the difference between job evaluation and merit rating.
2. Should merit rating be confidential? Why?
3. Which factors should be borne in mind by the supervisor when he does performance counseling with the worker?

Self-Check

I am able to:	**Yes**	**No**
• Describe performance counselling		
• Explain the advantages of performance counselling		
• Describe the performance interview		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 8

Discipline

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the generally accepted rules
- Describe the guidelines for disciplinary administration

8.1 Introduction

Good discipline increases efficiency. The purpose of discipline is the development of personnel into a highly educated and determined unit that will function effectively. Such discipline calls for the punishment of those who go against it.

Working groups that perform the best are those that have self-discipline, pride, trust, and determination. They work effectively as a team towards a common goal.

The problem is that if discipline has to be obtained, one person or a group of people has to decide which codes of behaviour will give the desired results, and the process must be developed to ensure that the codes are adhered to.

Here, management decisions on rules and regulations can conflict with the opinions of the workers and may result in disciplinary problems.

8.2 Generally accepted rules

Most of the generally accepted rules prohibit:

- The clocking of other workers' timecards.
- Excessive absence or lateness.
- Fighting on the job.
- Theft.
- Disobedience.
- Breaking of safety rules.
- Playing on the job.
- Sleeping on the job.
- Poor performance on the job.
- Gambling on the job.
- Forging of records.

- Immoral behaviour.
- Leaving the job without permission.
- Sabotage.
- Taking of drugs.
- Bribery.
- Strikes and riots.
- Arson.
- Political discussions on the job.
- Eating on the job.

The company management must also consider provincial and municipal laws and ordinances when setting their rules. Companies that employ members of unions must make provisions for labour agreements, too.

When the rules are developed, punitive measures must also be decided. Most companies follow the concept of progressive discipline. This means that the worker is given a mild punishment for his first offence, a more severe punishment for his second offence, and the most severe punishment for continued offences.

After the first offence, the worker might be warned orally; after the second offence, he might be warned in writing; and after the third offence he might be suspended or dismissed. Serious offences, including theft, fighting, and strikes, may call for immediate dismissal.

Note:
Disciplinary action against a workers must be lawful. Every possible situation must be considered, and the penalty must be definite. This ensures uniformity and constancy.

Management must communicate clearly and regularly with the workers about disciplinary matters, and must explain the rules to them and tell them about disciplinary measures. This is one of the supervisor's duties and ensures that misunderstandings will be eliminated.

8.3 Guidelines for disciplinary administration

When the rules have been developed and communicated to the workers, they must be enforced. This is another supervisory duty.

As a supervisor, you should use the following guidelines:

- Know, understand, and communicate the rules. Do not take it for granted that the workers know and understand the rules.
- Get the facts. about misdemeanours before acting. Don't decide with undue haste. Only rarely will you be expected to make a decision immediately. Make time to investigate the situation. Collect all the facts about the worker(s), witnesses, other supervisors, unusual circumstances, who said what, who did what, and the condition of the area where the situation arose. Be

patient and willing to listen. Study the worker's record and make sure that he understands how similar cases have been handled in the past.

- Be fair, uniform, and constant. Be sure that the penalty is in line with the offence. Remember that discipline has to be constructive; This way you will be respected by your subordinates.
- Always be calm. Do not lose control over the situation, and do not allow emotions to influence your actions. If the offender is already emotionally influenced, first allow him time to calm down before you take disciplinary action against him. Even when dismissal is the only possible penalty, it will help to send him home first (under suspension), and then send the notice of dismissal to his home.
- Be firm. Remember that dismissal and other serious disciplinary action can influence a worker's career. If he is demoted, his income will be reduced accordingly. The decision is therefore a serious responsibility.
- Respect the worker's dignity. It is equally difficult to accept disciplinary action and to give it. Discipline must be constructive and you must maintain the dignity of the worker. Make sure that disciplinary action takes place in private. Do not shout or haul him over the coals, treat him as an adult.
- Because discipline is aimed at the correction of action and behaviour, it must be followed-up within a certain time to ensure that you have succeeded in your goal. Follow-up takes place in an informal conversation or a formal discussion in your office. Be friendly and positive to maintain a good relation with the worker.

Activity 8.1

1. Distinguish between “negative" and “positive" discipline.
2. Name two causes of grievances, in the work situation, of which a foreman should be conscious.
3. What precautionary measures should a supervisor take to prevent theft in his department?
4. One of your workers is a regular late-comer. Explain step-by-step the disciplinary action that you will take to discourage the worker from this misdemeanour.
5. You are in the middle of a conflict between a worker from your department and top-management. How would you handle the problem?

Self-Check

I am able to:	Yes	No
• Describe the generally accepted rules		
• Describe the guidelines for disciplinary administration		

If you have answered ‘no’ to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 9

Work analysis and evaluation

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the benefits of work evaluation
- Describe the method of work evaluation
- Describe analysis of work descriptions

9.1 Introduction

The purpose of evaluation is the determination of the relative values of different jobs in the organisation.

9.2 The benefits of work evaluation

Work evaluation has the following benefits:

- Logical pay structure within the organisation
- Remission of grievances
- Definition of how the worker can progress financially
- Comparison of the pay structure with that of other organisations
- Use in the upgrading of certain jobs and evaluation of new jobs

9.3 Method of work evaluation

Information can be obtained from:

- Questionnaires completed by the workers
- Interviews
- Observation
- Work evaluation is normally done by professionals from outside the organisation

9.4 Analysis of work descriptions

The following information must be obtained:

- Responsibility
- Accuracy

- Necessary training
- Relation of the job with other jobs
- Occupation qualities
- Job acquaintance
- Tools and machines used
- Education needed
- Physical activities
- Psychological processes
- Experience needed
- Supervision necessary
- Working conditions

Note:
When all the information has been collected, the jobs must be arranged in an order of preference according to a points allocation system. They are arranged on forms specially prepared for the purpose.

Then the minimum and maximum salaries are determined for each job. The increases are determined according to a percentage that maintains the percentage difference between the different job grades. Cost-of-living adjustments are made from time to time.

Activity 9.1

1. What are the benefits of work evaluation?
2. Which methods are used for work evaluation?
3. What is the analysis of work descriptions?

Self-Check

I am able to:	Yes	No
• Describe the benefits of work evaluation		
• Describe the method of work evaluation		
• Describe analysis of work descriptions		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 10

Motivation

Learning Outcomes
On the completion of this module the student must be able to:

- Describe factors that influence motivation
- Explain the following:
  - Maslow's hierarchy of needs
  - Herzberg's motivation-hygiene theory
  - McGregor's X-theory and Y-theory concerning the management of workers
- Explain the causes of low productivity
- Describe factors that ensure job satisfaction
- Describe the benefits of job enrichment
- Explain the reasons people work
- Explain the how job satisfaction can arise from the responsibilities of the:
  - Company
  - Supervisor

10.1 Introduction

Motivation is the term that refers to the conditions within a person or animal that drive him to an objective.

Motivation has three aspects:
- A driving condition within the organism.
- The behaviour that is excited and directed by the condition.
- The target to which this behaviour is aimed.

Research into motivation indicates that workers interpret what is said by the supervisor in terms of whether or not it will help them to satisfy their needs, or whether it will help them to overcome losses or punishment.

Note:
Motivation and communication are important roles in all four management functions (viz planning, organisation, direction and control).

10.2 Factors that influence motivation

- Economic conditions.
- Traditions of the industry.
- Expectations of the workers from that type of industry.
- History and image of the organisation and its management.
- Level of education and skills of the workers concerned.
- Influences and attitudes of unions.
- Style of management and supervision.
- Y structure.
- Fringe benefits.

10.3 Maslow's hierarchy of needs

According to Maslow, there are different urges that motivate people in different degrees at different times. The dominating influences start with the basic human needs and, as the basic needs are satisfied, gradually move over to the higher human needs.

The first needs to be satisfied are those of the primitive caveman, which include food, water, shelter, clothes, and sex. As these needs are satisfied, their influence on motivation is deadened, and the attention is then directed to safety and security.

These are again followed by the needs "to belong and love", "status and appreciation", and "self-actualisation".

Note:
The "self-actualisation" need is for the development of oneself to the highest potential and to do whatever is best suited for oneself.

At work, "safety and security" means a secure job, just and consistent treatment, and protection against the uncertainties of after-work circumstances and financial conditions, in an organised and predictable environment.

"To belong and love" includes the acceptance by and attraction to individuals and social and work groups.

"Status and appreciation" needs include the need for good and sound reasons for self-respect and trust in oneself, and for acknowledgement and appreciation from others, and their respect.

Think about it!
Furthermore, a person wants to do what he likes doing best.

10.4 Herzberg's motivation-hygiene theory

According to Frederick Hertzberg, the American sociologist, there are fourteen determinants of a worker's performance. These fourteen factors can be divided into motivators (satisfiers) and maintainers (potential unsatisfiers).

Think about it!
Growth, acknowledgement, achievement, the work itself, responsibility, and progress are all motivators.

Company policy, job security, compensation and benefits, supervision, inter-personal relations, working conditions, status and personal life are all maintainers.

Herzberg means that, in order for a worker to do his best, the maintainers must be satisfied. In other words, the workers must be paid enough and that they must have good fringe benefits, reasonable work security, trust in and respect for their supervisors, and so on.

Note:
He emphasises that these factors ensure and maintain only satisfactory work performance, but not maximum work performance. It is the motivators that stimulate the workers to reach their maximum potential.

10.5 McGregor's X-Theory and Y-Theory concerning the management of workers

10.5.1 X-Theory

- People are lazy and they do not like to work.
- People must be lured to work (carrot and stick).
- People want to be compensated for everything that they are doing and must be forced to work.
- Most people are incapable of carrying responsibilities and must be watched.
- People are not adult.
- Most people prefer to be led rather than to lead themselves.
- People want security above anything else.

10.5.2 Y-Theory

- People have psychological and physical needs to work and work is natural. Therefore, they need not be forced to work.
- People want to have responsibility and they look for it.
- People want to be successful, which is why they learn under ideal conditions.
- People are able to apply a high degree of imagination and can think creatively and intelligently.
- Industry applies the intellectual abilities of the average human being to only a minor degree.
- People want to be adult.

10.6 Causes of low productivity

Low productivity can be ascribed to the following reasons:

- Poor compensation and benefits.
- Poor supervision.
- Monotony on the job.
- Poor communication .
- Insufficient training.
- Insufficient acknowledgement.
- Insufficient and ineffective application of skills and abilities.
- Lack of scope for advancement.
- Poor personnel selection.
- Unstable work security.

Note:
These reasons lead to a lack of satisfaction from the work

10.7 Factors that ensure job satisfaction

- A supervisor who has a personal interest in his workers and who will go out of his way to compliment them on good work This provides acknowledgement of the work.
- Sufficient information, assistance, authority, time, equipment, and tools available to do the job properly.
- Certainty that the supervisor is fair with promotions and is unprejudiced.
- A supervisor who is not too strict.
- A competent supervisor.
- The opportunity to make decisions about one's own work
- A job that requires the learning of new skills and gives the opportunity to be creative.
- Longer paid leave.
- Job security.
- The chance to perform new jobs for one's present employer.
- Good pay for the job that one is doing.
- Company stability.
- Good information.
- Scope for advancement.
- Freedom to talk and to voice ones opinion.
- Knowledge that one's feelings are respected.

10.8 Job enrichment to activate the worker

- The provision of a complete, natural unit of work.
- Delegation of the work that is currently done by the supervisor, like inspection and decision taking.
- The provision of new and more difficult tasks.

- The provision of control by the worker himself before the inspector sees the work
- The allocation of specific and more detailed tasks to certain individuals.
- Downwards delegation of the work that is to be investigated in order to enrich from the top and possibly to enrich less important jobs.
- Careful selection of the jobs for enrichment.

10.9 Reasons why people work

- To be compensated so that the basic needs, including food, drink, transport, and luxuries can be provided
- To be part of a group and to be social
- For status.
- For acknowledgement.
- To be able to be creative.
- To be involved.
- To have security.
- To progress.
- For enjoyment.

10.10 Responsibilities of the company and the supervisor for job satisfaction

The company and the supervisor are jointly responsible for good human relations in the organisation, but the supervisor's responsibilities are far more direct and personal than those of the company.

Note:
The workers themselves must also contribute to their own job satisfaction.

The supervisor can introduce one worker to the other workers; he can explain to him that he is part of a specially selected group; and he can allow him to do-the type of work to which he is inclined.

Activity 10.1

1. According to Dr A H Maslow, there are five basic needs that workers seek in their work. Describe four of these needs briefly.
2. Briefly describe the difference between McGregor's X-Theory and his Y-Theory.
3. How can a supervisor motivate an older worker?
4. Give a short description of Herzberg's views on motivation.
5. Why is it necessary to motivate your workers to improve performance and how would you go about achieving that performance?

Self-Check

I am able to:	Yes	No
• Describe factors that influence motivation		
o Explain the following:		
o Maslow's hierarchy of needs		
o Herzberg's motivation-hygiene theory		
o McGregor's X-theory and Y-theory concerning the management of workers		
• Explain the causes of low productivity		
• Describe factors that ensure job satisfaction		
• Describe the benefits of job enrichment		
• Explain the reasons people work		
• Explain the how job satisfaction can arise from the responsibilities of the:		
o Company		
o Supervisor		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 11

Co-ordination

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the process of co-ordination

11.1 Introduction

To co-ordinate 'is to integrate one's efforts with those of others so that the best results are obtained. Therefore, it is in the interests of the company that there is co-ordination at all levels.

Every management position is associated with certain responsibilities.

Think about it!
Normally, every employee has the authority he needs to carry out his responsibilities. The effective use of this authority requires many skills of co-ordination.

Some of the authority is delegated to the subordinates so that they can carry out their work, but the final responsibility is still the manager's. When interests in or between departments are in conflict, the manager must act as a mediator and cut through the line of organisation to harmonise objectives and co-ordinate activities.

When doing that, he draws a narrow line between the dictation of solutions that discourage initiative and the setting of rules that elicit innovation. There are many activities that keep the manager occupied.

He attends meetings, participates in training programmes, and makes personal appearances to visitors or hand over awards, for example. The impression that he makes during these occasions depends on how well he practises the art of management.

There is an interesting resemblance between production control and a military operation. Before a battle (production process), logistics planning places - the troops and supplies in the chosen strategic positions (placing and scheduling of workers, machines, and materials).

Tactical plans for the manoeuvres are developed (sequence of operations, inventory policies, machine loading). But even the best military plans cannot completely forecast the actions of the enemy (forecasting of business conditions, competitor's actions, delays and holdups).

That is why the proceedings on the battle grounds depend mainly on individual training, equipment, supervisors, and tactics. A communication network is supposed to feed the battle reports (production operations) back to the command post (production supervisors) to allow for alterations of the tactical plans.

Requests for reinforcements or co-ordinated actions are fed back further to headquarters (production-control department). There, the alterations are evaluated and, if accepted, transformed into orders and commands.

Immediate and applicable action is necessary at all levels, from the front-line (production line) to the general staff (production staff), for a sensitive and reliable control system.

Think about it!
Any policy (for example, on advertising, packaging, research, or development) requires co-ordination of the efforts of the different working units.

A good sales effort, a new type of container, or a successful research programme does not come into being by the isolated efforts of one department.

They are the composition of ideas, requisitions, discussions, and ventures in many directions. The object, which also is a function of combined efforts, is obtained from the co-ordinated actions of other systems.

The adjectives that describe working departments (like marketing, sales, purchasing, and so on) are functional adjectives for subsystem objects. The verb that unites subsystems within a system to implement strategic objectives, is "co-ordinate".

An example of a subsystem is a distribution system. It exists within the boundaries of a larger body. Even though a separate department is not necessarily allocated to distribution problems, all industries give attention to their services to customers.

The relation of distribution to costs to sales is very prominent in certain industries: about 25 per cent for the food industry, and 22 per cent for the chemical, rubber, petroleum and primary-metal industries.

The purpose of a distribution system is service to the consumer; it starts with the purchase that is made by the client and ends with the delivery of the ordered goods.

The top half of the blocks read like an organisation chart. The bottom half brings the representative function into relation with the physical distribution.

Note:
An alteration in a function that originates from any organisational department will influence the entire distribution policy. (**Figure 11.1**)

Take a successful new marketing development, for example. A greater demand by clients increases sales and requires new production schedules to meet expected deliveries.

Purchasers work in connection with production planners to create an increased production capacity. This may be achieved by higher machine utilisation, overtime, altered material-handling routines, or more workers.

Note:
Other measures include those that require assistance from the pay office, recruitment, training, the engineer's office, maintenance, and other departments.

Meanwhile, the clients' orders are processed. The orders form the base for inventory planning to provide for storage and for traffic planning to determine shipment. Warehouse and shipment personnel organise the physical facilities and administration needed for the distribution of the product flow.

Conflicts may arise anywhere in the organisation. Marketing might not agree with sales about the timing of campaigns. Purchasing might ask for larger orders, to benefit from quantity discount, while inventory-control warns of the increase in storage and holding costs.

A new package design might meet the approval of marketing, sales, and purchasing, while production planning, warehouse, and inventory control disapprove of it. To avoid conflicts like these, there must be effective co-ordination at all levels and between departments.

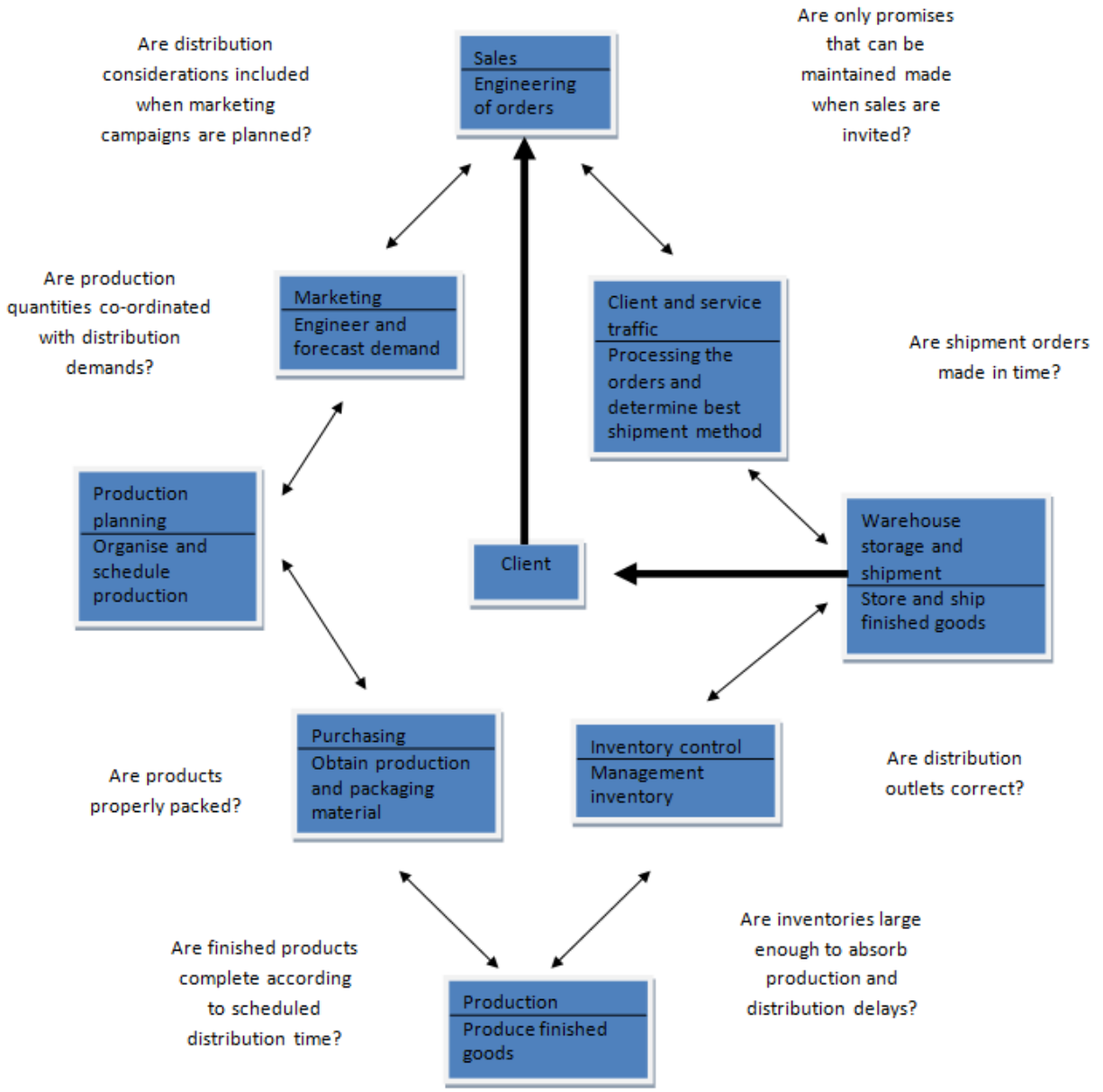


Figure 11.1

Activity 11.1

1. What is the process of co-ordination?

Self-Check

I am able to:	Yes	No
• Describe the process of co-ordination		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 12

Control

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the basic steps in control
- Describe the characteristics of a control system
- Describe human resistance to control
- Describe the requirements for a good control system

12.1 Introduction

Control is a management function that directs activities in such a manner that the desired results are maintained. It has to be exercised thoroughly by all departments and at all levels of the organisation.

Definition: Control
To regulate, to exercise authority, and to limit.

Control can be exercised on quantity, quality, cost, post structure, overtime, leave, purchasing, sales, manufacturing, flow, and projects.

Note:
People must be given authority needed for the implementation of control.

Every person in the organisation has to exercise control in a sense. The manager exercises control over his subordinates about production, sales, costs, and so on.

In turn, the supervisor exercises control over his subordinates, for example over leave, production, methods, costs, and quality. The worker exercises control over the quality, quantity, and maintenance of his own work.

12.2 Basic steps in control

The basic steps that are taken in control are the following:

- Setting standards

- Measurement
- Comparison
- Analysis
- Evaluation
- Corrective action

12.2.1 Setting of standards

A plan must be laid down that conforms with company policy. For budget control, the plan includes the draughting of factory budgets, while quality-control plans take the form of quality and inspection standards or specifications.

Production-control plans include details of the consumption of materials and the utilisation of labour and machines. Cost-control plans include the setting of costing standards for production.

Note:
All these standards serve as guidelines for future action.

After the plan has been decided upon, it must be introduced to all the parties concerned so that they know what is expected of them.

A standard is a measure of dimensions, quality, or value. Therefore, any type, model, or example can be used as a standard or measure of excellence.

Standards are determined by management after consultation with clients, specialists, and supervisors, and are influenced by materials, machines, and equipment, skills of the workers, and the degree of competition from other companies that manufacture similar products.

12.2.2 Measurement

When the plan is in operation, its execution has to be measured. The frequency of measurement will depend on circumstances, but should not be higher than is absolutely necessary to ensure a reliable reproduction of behaviour.

Think about it!
Slowly changing circumstances require less observation than fast changing ones.

Measurement can be of quantity, to ensure that production meets the demand. It can also be of quality, to ensure that products meet the standards of both company and client.

Note:
Cost can be measured to ensure that the funds of the company are not exceeded.

12.2.3 Comparison

The observations made during measurement must be compared with the plans that were made, and significant deviations should be noted.

When comparisons like these are made, conformations and deviations will be noted, but only the deviations draw attention and cause action.

Conformation with the plan up to the point of deviation indicates that the plan was successful at least in a sense - certainly up to that particular point.

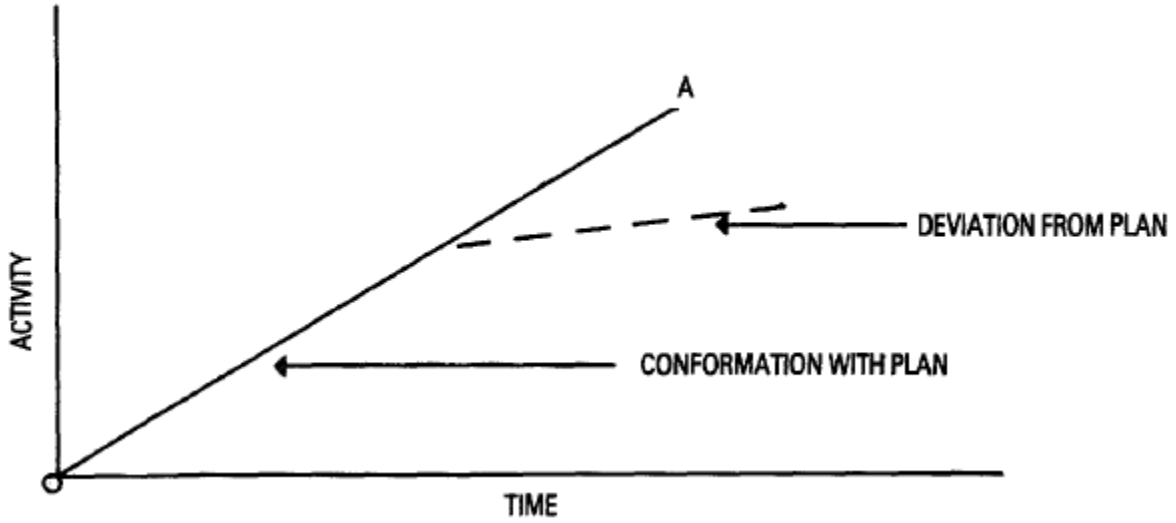


Figure 12.1

12.2.4 Analysis

Analysis deals with the treatment of observations. The reasons must be found for any deviation from the plan. The extent of deviation from the plan must be determined, and the factors identified that contributed to the conformation to the plan.

12.2.5 Evaluation

The observations made during the measurement of the plan helps with the evaluation of whether the plan was a success or a failure; whether to continue with the plan or to stop; whether the execution of the plan is on schedule and the standards are satisfied.

12.2.6 Corrective action

Any deviations from the plan must be corrected, or it must be adapted to accept the deviations. It may well be that the deviations originate from unknown conditions, but the supervisor must have comprehensive knowledge of the current situation.

12.2.7 Characteristics of a control system

For a control system to be effective and successful, it must satisfy the following requirements:

- Efficiency
- Economy
- Flexibility
- Applicability
- Comprehensibility

Firstly, it must be planned and executed efficiently. It must indicate the deviations clearly and it must satisfy the required standards. In particular, it must be such that the plan can be executed.

The control system must be economical, and the cost involved must not be so high that the price of the product is greatly increased. The cost of quality-control apparatus, quality-control personnel, and training of workers, all contribute to production costs.

The less effort needed for the exercise of control, the better the control design. The less control that has to be exercised, the more effective it will be.

Think about it!
Extensive control usually leads to confusion.

A control system must be flexible enough to adapt to the changing circumstances of production demand, development of new products, and training of workers.

Flexibility is needed so that deviations can be brought back into line with the original plan. If they cannot be corrected, the plan must be adapted to the circumstances.

The control system must be fully comprehensible by all the people authorised to exercise control The purpose of control, the method of execution, the expected results, the possible problems, and the solution of those problems must be known to them.

A control system must be applicable in the sense that it must be executable and should not make very high demands on its users.

Note:
Control should not be executed excessively and must be applied sensibly.

12.3 Human resistance to control

When control is exercised over workers, their opinions and attitudes towards the supervisor and towards the method of application of the control policy must be considered.

If the control system sets high demands on the workers, they will be against it and against the people responsible for its design. This can lead to non-aggressive behaviour like strikes, high absence, and reduced production.

If this is not dealt with carefully, it can develop into aggression, including looting, damaging of machines and material, and riots.

Think about it!
If control is not executed sensibly by the supervisor, it may lead to an unpleasant atmosphere, absence, reduced production, strikes, and other problems.

The individual seldom shows resistance against control: he is influenced by his personal life. As soon as he is part of a formal or an informal group, however, his actions are reinforced.

He then follows the behaviour of the group. Groups are normally against control that is executed injudiciously and unfairly. In such circumstances, the leader of the informal group plays an important role in the execution of control.

The leader of the group must be identified, so that the purpose of control can be explained to him. After his goodwill has been gained, he will carry it over to his group. If a person continues to oppose control, a solution can be found in his promotion.

He will then have to exercise control himself and will probably agree with the control system. If a person in a position of authority cannot exercise control effectively, promotion to a position of greater authority may allow him to control more strictly.

Think about it!
When there are conflicts between line-staff, it is advisable for the supervisor not to take sides, but to remain neutral. This way, he can judge the attitudes of both sides objectively and can act as the mediator.

The object of control must not be over-emphasised, as this puts unnecessary pressure on the workers, which will lead to misunderstandings, resistance and absence, and even to a high turnover of staff.

12.4 Requirements for a good control system

A good control system has the following requirements:

- The plan must be clear and comprehensible, and must be available to everybody.
- The plan should be measurable, to ensure that it is carried out correctly.
- Deviations from the plan must be identifiable.
- The analysis of the execution of the plan must indicate the degree of deviation.
- The evaluation of the measurements of the plan must indicate whether success or a failure.
- Deviations must be brought back into line with the plan by corrective action, or else the plan must be adapted to the deviations. This means that the plan must be flexible.
- The control system must be effective.
- The control system must be applicable.
- The control system must elicit the goodwill of the workers and should not set high demands to the workers.
- The control system must be executable.

Activity 12.1

1. Explain the use of the following documents:
   (a) Work card
   (b) Requisition
   (c) Gantt -chart
   (d) Inspection report
   (e) Route chart
2. If there is no inspection department, how would you as a supervisor go about ensuring that the quality of the products in your department is good enough?
3. Distinguish between a flow-process chart and a flow diagram.
4. In order to apply successfully a control system to the workers, it is necessary to work within certain control-system characteristics.
   (a) Name four of these characteristics.
   (b) Describe those characteristics briefly as applicable to the work situation.
5. As a supervisor, what are your requirements for a good control system?

Self-Check

I am able to:	Yes	No
• Describe the basic steps in control		
• Describe the characteristics of a control system		
• Describe human resistance to control		

• Describe the requirements for a good control system		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 13

The Gantt-chart

Learning Outcomes
On the completion of this module the student must be able to:

- Describe route charts
- Describe the job card
- Describe the inspection report

13.1 Introduction

These charts are very simple. No attempt is made to acknowledge risks or alternative solutions. Activities are tied to dates according to a desired schedule. Deviations from the intended calendar are used for the indication of present conditions.

By following this routine, the operators can be given their tasks, the pattern of delays are made known and the variable distribution of production loading is expressed clearly.

Definition: Gantt-chart
A graphic that indicates output activities, in the form of bars, against a time scale.

These charts are designed with three methods of scheduling: perpetual scheduling, periodic scheduling, and order scheduling.

The different descriptions and symbols illustrated in **Figure 12.1** can be interchanged between the types of schedule and completely different meanings can be given to these symbols.

Note:
The expansion of this must be limited, to maintain simplicity and prevent overloading, which could destroy the transmissibility and the data-collection capacity of the chart.

Symbol	Meaning
Y	V marks present date on time scale
[0101]	Bracketed line shows time allowed for completion of the designated order in the symbol shown the order number is 101
[0101]	Double or coloured line below bracket denotes the portion of work completed by present date V
⋈	X between brackets reserves time to make up for delays and to increase the schedule flexibility
R	Shows repair time for machine breakdowns or maintenance
M	Shows delay caused by missing or improper materials
T	Shows delay caused by tool trouble
P	Shows delay caused by power failure or poor operator performance (impatience, slowness, lack of instructions, etc.)
O	Shows delay caused by operator's error

Figure 12.1 Typical symbols employed in updating Gantt charts

A perpetual schedule is developed by reviewing the status of all jobs in an open order. The amount of time needed for all the jobs in each department or facility can be made in a form similar to that shown in **Figure 12.2**.

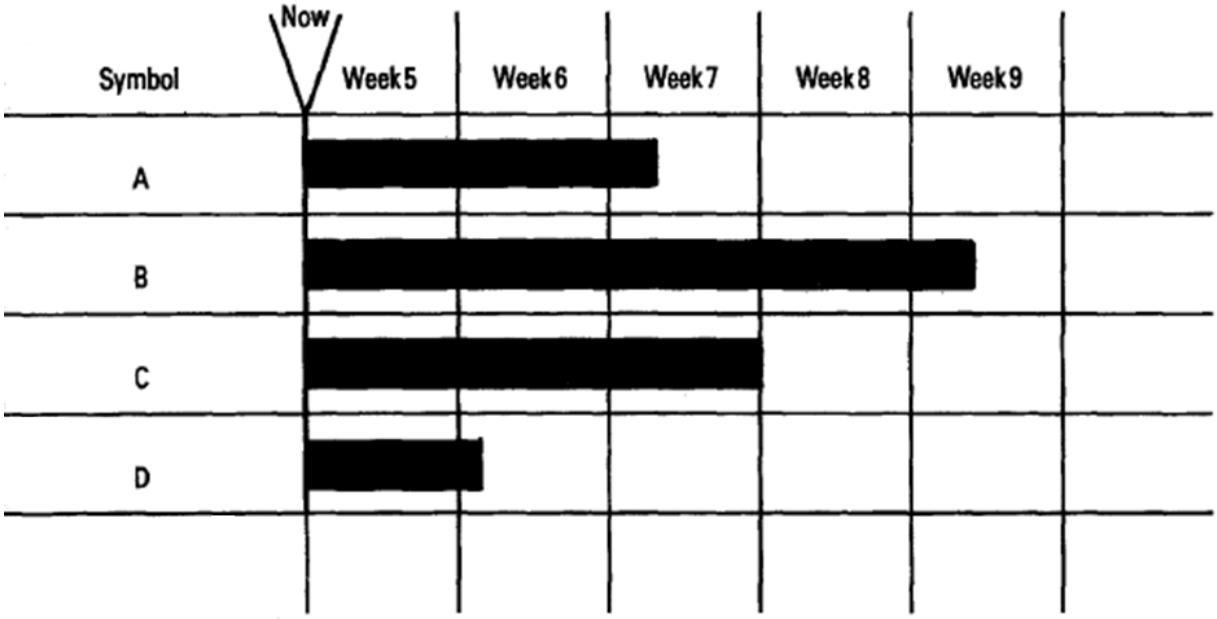


Figure 12.2 Gantt load chart for perpetual scheduling

The schedule is usually made once a week. Horizontal bars indicate the times reserved for each facility to finish the work already on order.

Relative loading of the facilities and the overhead work loading of the organisation is indicated clearly; facilities with less loading can be used to relieve the overloaded sections.

Note:
The weekly updating provides a graphic report on the variations in loading.

The characteristics of the loading patterns are useful in the allocation of improvement studies, decisions on capital investments, and the forecasting of personnel and maintenance needs.

In periodic scheduling, the work that has to be completed within a certain time, normally a week, is loaded into the applicable facilities as shown in **Figure 12.3**.

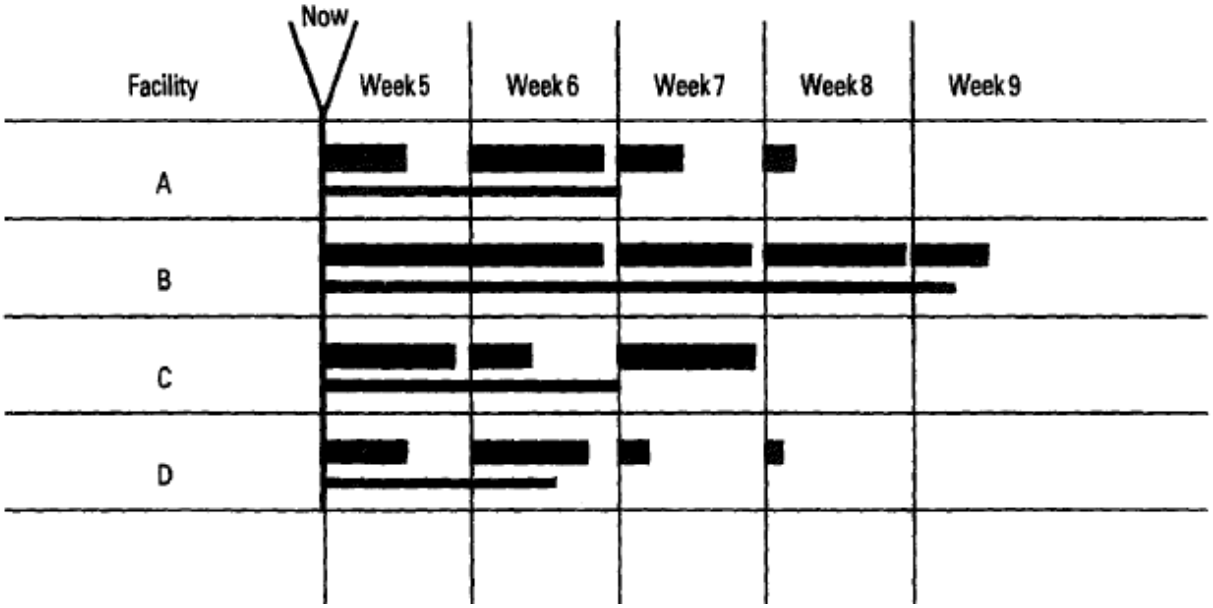


Figure 12.3 Gantt load chart showing accumulated loads for periodic scheduling

Note:
The work that is needed to complete individual orders is allocated to the facilities without any comment, except that it has to be completed in a certain time.

The lengths of the bars on the chart represent the amount of scheduled time for every facility during that period. The. line below the bar indicates accumulated work that is already scheduled.

Again, the work that has been accumulated at each facility indicates the pattern of work loading and calls for attention to any overloading. It is indicated in **Figure 12.3** that facility B has an accumulated work load of approximately four weeks, which forecasts problems with the meeting of future obligations.

Gantt charts are also useful in specific-order scheduling. The simplest form makes use of bars that represent the time needed to complete an order.

Bars are placed in the row of the applicable facility, along a time scale in accordance with the completion schedule, and with numbers that identify the sequence.

Attention is given to the availability of facilities and to the sequence of operations that characterises each sequence. The completion schedule agrees with the lead-time considerations of an assembly chart, as shown in **Figure 12.5**.

Note:
Gantt charts offer additional value in that they record what actually happens with the work progress.

A schedule that is laid out by bars on a time scale can be updated with marks and symbols to indicate the causes of deviations in the work activities. Useful symbols for updating are shown in Figure **12.1.**

The date-collection and transfer capacity of the Gantt-chart can be seen in **Figure 12.4**. The present date is the end of week seven, Immediate work allocation for each facility is quite obvious.

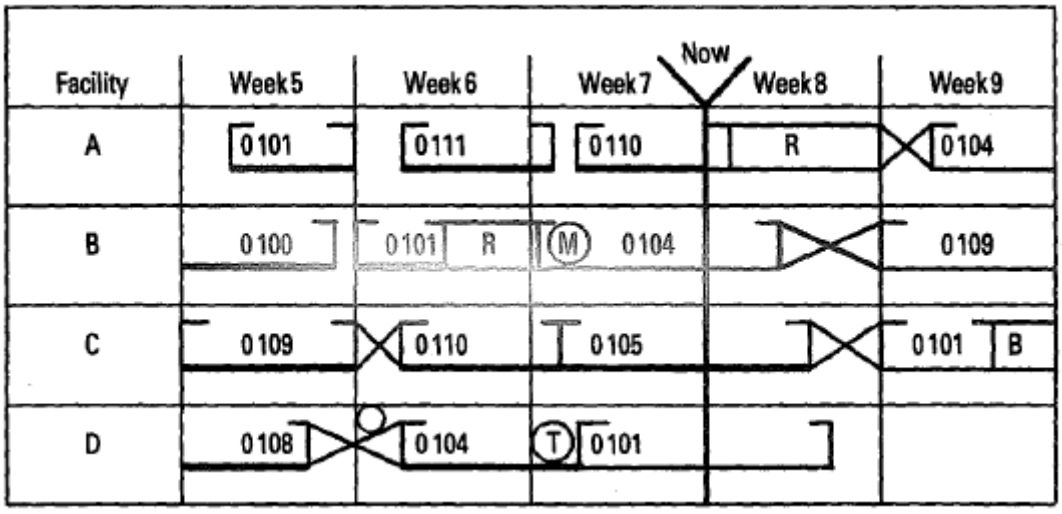


Figure 12.4 Gantt chart for order scheduling and progress reporting

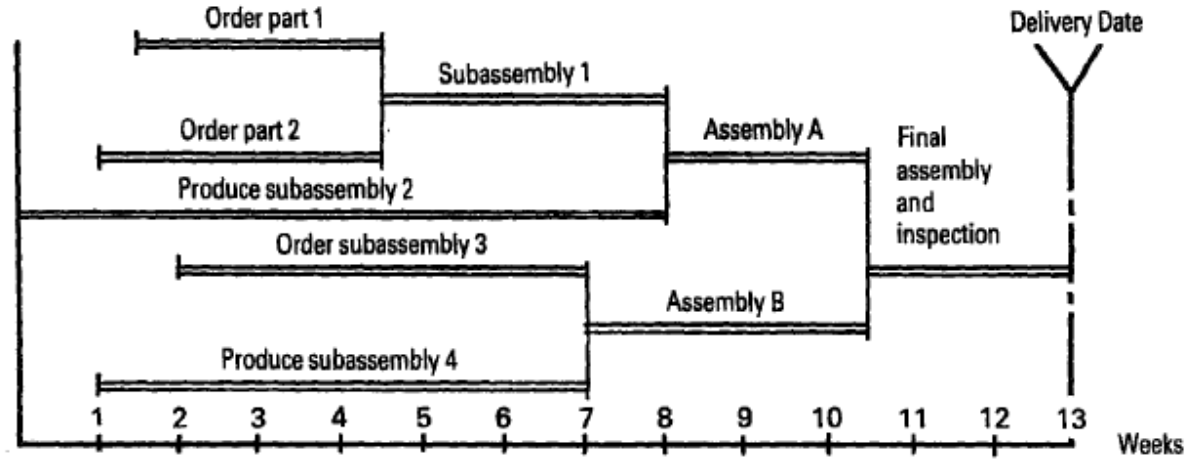


Figure 12.5 Assembly chart based on load times to meet a promised delivery date

Facility A is on schedule for order 110. Facilities Band Dare behind schedule because of tool problems for order 104 in facility D and a shortage of ·material in facility B.

If the work on order 104 in facility D has to be completed before the work on the same order can be started in facility B, special expediting measures are indicated.

Order 106 in facility is the only operation that is ahead of schedule. The updating recommends re-scheduling strongly: possible overtime, multiple shifts, or additional equipment.

The illustrated Gantt -charts are only examples that introduce the usefulness of the bar-chart formation. The records can be of individual workers instead of facilities, and the time scale can be hours, days, or months instead of weeks.

Other notations can be used to reflect the information clearly. Colour -coded bars are often used to distinguish between certain characteristics.

	**Note:** Large and extensive boards based on Gantt's principles are commercially available. They use the pin board design, rotating discs, coloured strings, and slide inserts of plastic, to give a visual picture of planned and present production.

13.2 Route charts

The operational layout in a route chart lists the different elements in the operation. Most articles are manufactured by a number of separate operations.

To ensure that the entire manufacturing sequence is recorded route charts are used to summarise all the operations in a single reference.

If the chart is carefully designed, it can be used to record the complete history of the work, from the initial issue of materials to the approval of the completed and inspected articles and their deposit in the finished-goods store.

Note:
Route charts are applied in many ways, but the most common way is to let the chart follow the same route as the work and then record by the inspection department when applicable.

13.3 Job card

The operator is provided with a job card that s:eecifies the work that must be carried out. It is normally prepared by the production-control department from the route laid down by the production engineering department, and can serve as authorisation to the operator to carry out a specific job.

The operator will write on the card information like quantity of the operation, serial numbers, his own name, the date, or any other information that is needed.

Note:
The cards are collected daily and handed to the progress department for analysis.

This technique is especially useful in small-batch production, because the cards themselves can be used to instruct the operators about the jobs, they have to carry out and thus lighten the task of the supervisor.

13.4 Inspection report

Inspection reports are a useful method to indicate the acceptance or rejection of work batches, and can also serve as an indication of the stability of a supplier, a machine, or a worker.

They can be made by completing a simple report, as shown in **Figure 12.6**.

Sampling Plan AD/704/K				Part No. 38.243	
Supplier					
Date	Order No.	G.R.N. No.	Batch Size	No. of Defectives in Sample	Accept or Reject
6.1.71	32749	0042	5,000	4	A
17.1.71	32749	0296	4,000	3	A
27.1.71	33064	1260	5,000	3	A
12.2.71	33065	2370	2,000	1	A
22.2.71	34126	3635	10,000	30	R
6.3.71	34239	1765	4,000	2	A

Figure 12.6

Critical Path Methods (CPM)

Critical Path Methods, also known as PERT (Program Evaluation and Review Technique), are used to determine all the activities for the completion of a specific project, with their relationship to each other; and also the expected duration of each activity.

Note:
These inter-relationships can be effectively represented in a graphical form of the network.

In this way the shortest possible time to complete the project, and the activities which are critical (in that any delays in those activities will lead to a time extension of the project), can be calculated.

The allowance for each activity is also calculated; in other words, for how long the activity can be delayed without interfering with the time allowed for the completion of the project.

Note:
Critical activities are those without any play.

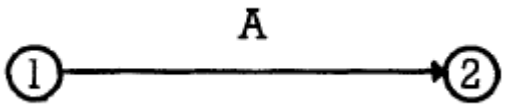
As the project is carried out, and it is found that the expected times and the real times do not agree, the activities which are in danger of becoming critical can be calculated so that management can concentrate on these activities, and make decisions to prevent delays.

This method is normally used on once-only projects. In general, it is not effective for planning and control of mass production. A small number of repetitions of

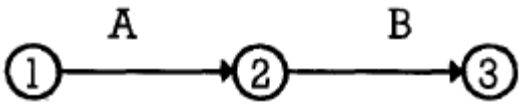
certain activities can be handled in the network, but each repetition is then treated as a separate activity.

The first step in the application of the method is to list all the activities. For each activity it must be determined which preceding activities have to be completed before the next activity can be started, and what its expected duration will be.

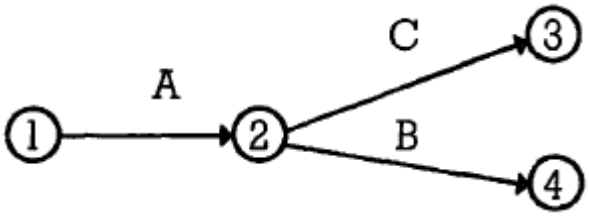
The graphical representation of the project consists of a number of circles and arrows. Each activity is represented by an arrow from a circle or node to another circle.



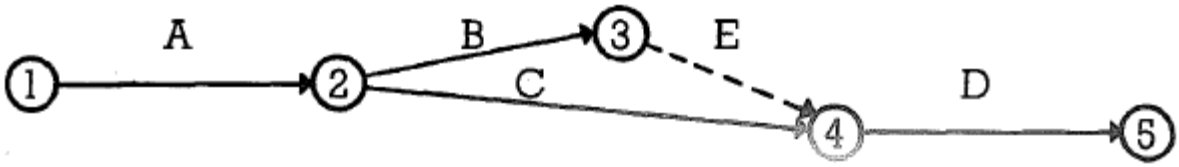
Graphical representation of an activity.



Graphical representation of two consecutive activities.



Graphical representation of two parallel activities.



Graphical representation of a pseudo-activity.

Although E is only a pseudo-activity, it means in fact that activities B and C have to be completed before activity D can be started.

Each activity can thus be associated with a number pair (i, j), where I is the number of the node where the activity starts and j is the number of the node where the activity ends.

Two different activities may not be associated with the same number pair. This means that there may not be two arrows parallel with each other from node i to node j.

Furthermore, the nodes must be so numbered that it will be true for all activities (i, j) and that j does not take place before i. There is one node that represents the start of the project and it is the only node where arrows only start.

A single node likewise represents the completion of the project, and this is the only node where arrows only end.

Note:
The length of the arrows is no indication of duration and the network should be drawn so that the arrows do not cross.

In order to determine the earliest date of completion of the project, the earliest start and earliest completion time for each activity must be calculated. The durations must all be given in the same units (hours, days, weeks), and the start of the project must be at time 0.

Note:
The earliest completion time of all the activities gives the total duration of the project.

If manual calculations have to be made with the aid of graphic representations, it will be convenient to write the duration of the activity next to the arrow, as well as a square in which four numbers can be written as in **Figure 12.7**.

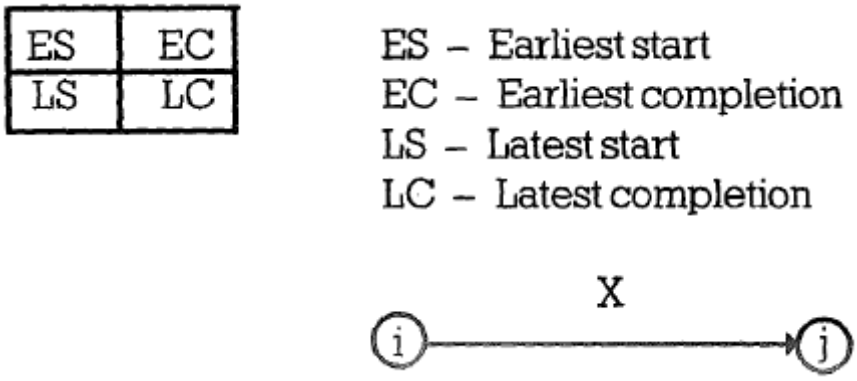


Figure 12.7

Before the earliest start of (i,j) [ES(i,j)] can be determined, the earliest completion times of all activities that end at node i have to be determined.

The ES of (i,j) is then the maximum value or all EC(k, i) of activities (k, i) that end at i.

Therefore:

ES(i,j) = maximum { EC(k,i) over all values of k }

Furthermore:

EC(i,j) = ES(i;j) + T(i,j)

Where T(i,j) is the duration of activity (i,j). Therefore, the earliest completion time is the earliest start plus the duration of the activity.

The-earliest completion of the project is then the earliest completion time of all activities that end at the last node.

Example

Activity list

Activity	Immediate preceeding activity	Duration (days)
A	None	10
B	None	3
C	A,B	3
E	B	7
F	E	6
G	E	4
H	C,F	2

Graphical representation of the network

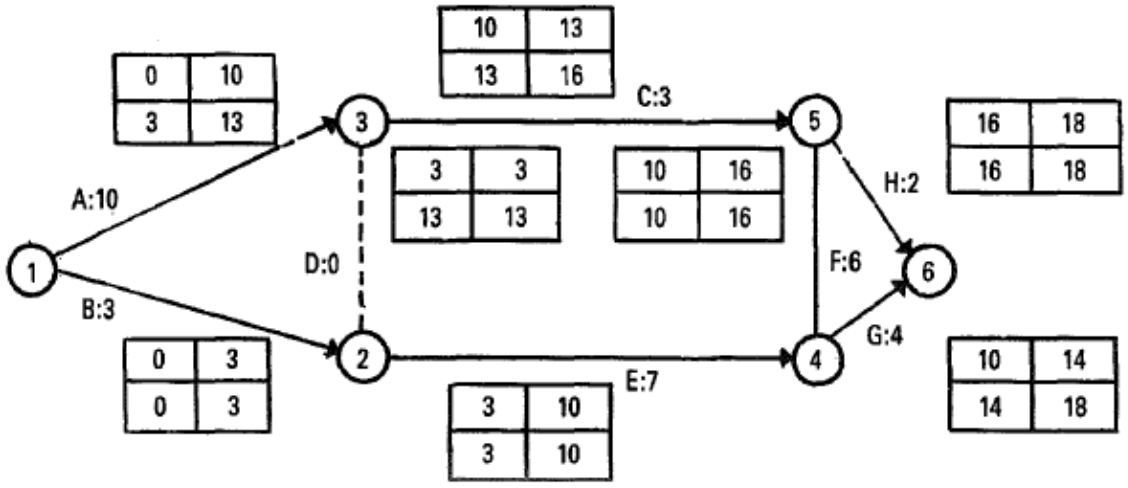


Figure 12.8

Calculation of the earliest start and the earliest completion times

ES(1,3) = 0
EC(1,3) = 0 + 10 = 10
ES(1,2) = 0
EC(1,2) = 0 + 3 = 3
ES(2,3) = 3
EC(2,3) = 3 + 0 = 3
ES(3,5) = maximum { EC(1,3),EC(2,3) } = maximum {10,3 } = 10 etc

The earliest completion time for the project is then the greater of 18 and 14, which is 18 days.

The allowance for each activity is determined by calculating a last completion, LC, and a last starting time, LS, for each activity. The last completion time for each activity that ends at the finishing point is taken as 18.

The last starting time is then the last completion minus the duration, thus:

LS(i,j) = LC(i,j) - T(i,j)

The latest completion of (i,j) can be determined only after the latest start has been determined of any activity (j,k) that finishes at node j, and is equal to the minimum value of the latest start of all activities that start at j.

Therefore:

Latest completion (i,j) = minimum J LS(j,k) over all values of k I

Thee calculations for the diagram are as follows:
LC(5,6) = 18
LS(5,6) = 18 - 2 = 16
LC(4,5) = 16
LS(4,5) = 16 - 6 = 10
LC(4,6) = 18
LS(4,6) = 18 - 4 = 14
LC(2,4) = minimum { LS(4,6),LS(4,5) } = minimum {14,10} = 10

Note:
Activity (4,6) can already start at time 10, but that it can start as late as 14 without causing a delay in the completion time of the project.

Thus, there is a latitude of four days for activity (4,6). The latitude, or allowance, is then the difference between the latest start and the earliest start, or:

S(i,j) = LS(i,j) - ES(i,j)
and the same as: LC(i,j) - EC(i,j)

The activities that have an allowance of 0 are critical. For the diagram, activities (1,2), (2,4), (4,5) and (5,6) are critical.

Note:
The critical activities have a sequence of arrows from the starting point to the finishing point. This is known as the critical path.

All activities on the critical path must start on their earliest starting date. Activities with allowance may start at any time between their starting date and their latest starting date.

Note:
If aids and cost will make no difference, it is arbitrary which value between the limits is decided upon.

Activity 13.1

1. Give a description of route charts and their purpose.
2. Explain the use of the job card
3. Give a description of the inspection report and its purpose.

Self-Check

I am able to:	Yes	No
• Describe route charts		
• Describe the job card		
• Describe the inspection report		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 14

The factory

Learning Outcomes
On the completion of this module the student must be able to:

- Describe factors influencing the location of the factory
- Describe problems in factory design
- Describe the advantages of:
  - a single-floor building
  - a multiple-floor building
- Describe a good layout
  - Measures
  - Advantages
  - Preparation

14.1 Introduction

Factories are pretty hectic places. Many operate on a 24-hour production basis. Therefore, all factory floor staff, supervisors and managers need to approach their work in a methodical, focused and purposeful way.

Understandably, factory managers and supervisors are the people in charge. Consequently, they need to be able to take the lead, motivate and encourage their teams of factory floor staff.

Getting things produced, sorted, assembled, tweaked, packed and ready for distribution is all about teamwork and communication. Everyone needs to pull their own weight and get stuff done.

Think about it!
Collaboration is truly the key to achieving manufacturing and production success.

To work in this area, you are going to have to find ways of keeping your concentration and staying determined at all times, as you may often be under pressure to meet production deadlines.

Note:
You may have to work unsociable hours and do repetitive tasks

14.2 Factors influencing the location of the factory

There are several factors that influence the location of a factory:

- Integration with other group companies that belong to the same group to form a unit and to ensure that the work is integrated.
- Availability of labour; the Department of Commerce and Industry can be consulted on this matter.
- Availability of housing, especially if the workers are not recruited locally.
- Availability of shops, theatres, cinemas, restaurants, public transport, and other amenities.
- Availability of material for manufacturing.
- Availability of transportation for material arid produced goods.
- Availability of parking space.
- Availability of gas, electricity, water, drainage, waste removal, and other services.
- Availability of space for circulation of goods, staff, and transport.
- Suitability of the ground and climate.
- Local building and planning regulations.
- Space for extensions.
- Safety needs (for example, one would not erect a factory near a nuclear station, a gas factory, or a river bed).
- Cost of the site (purchase price).
- Political conditions (for example, one would not erect a factory where the political climate is unstable).
- Special concessions, including low interest rates, low rental, and low taxation.

14.3 Problems in factory design

The design of a factory embodies several problems that need consideration:

- Space for overhead cranes, conveyor belts, storage, offices, and so on.
- Loads to be moved in the workshop, (for example, storage of raw materials; material-handling equipment like hoists and cranes; the work in progress and finished goods; movement space and walkways).
- Accessibility of the factory and its surroundings for deliveries and reception.
- Lighting (maximum use of daylight; security lighting; lighting for optimal productivity; specifications of factory law and regulations; colour schemes to assist lighting).
- Ventilation and heating (windows provide cheap ventilation, but have disadvantages. High running costs of heating can be reduced by insulation. Ventilation systems with air filtration should be considered if there is a danger of a toxic atmosphere).
- Services (type of power - gas or electricity- and amount available. Terminal points, telephone connections, fire protection, and fire-fighting equipment.

- Special process requirements (temperature control, strong floor, special security measures, and the need for special amenities).
- Office space.
- Number of floors.

14.4 Advantages of a single-floor building

- Quicker to erect.
- Lower building costs.
- Maximum use of natural light.
- Easy ventilation.
- Easy insulation.
- No lost space to lifts and other circulation facilities.
- Simple internal transport.
- Flexible (for extensions).
- General supervision is easy.

14.5 Advantages of a multiple-floor building

- Lower site cost.
- Easier location of the maintenance department, toilets, and canteen.
- Shorter distances for water, electricity, and other services.
- Lower heating costs.
- Reduced circulation time.
- Possible use of gravitational force.
- Better departmental supervision.

14.6 Measures for a good layout

- Maximum flexibility; the layout must adapt quickly and easily to changing circumstances.
- Maximum co-ordination; entrance to and transport from any department must be convenient for the dispatch and reception departments.
- Maximum utilisation
- Maximum visibility; all the workers and machines must always be visible.
- Maximum accessibility to machines, power points, services, fire-fighting equipment, and emergency exits.
- Minimum distances for the workers and materials to cover.
- Minimum handling; the best handling is no handling- conveyors, chutes, hoists, and so on.
- Minimum inconvenience from poor lighting, excessive sunlight, noise, vibration, smells, draughts, and so on.
- Built-in safety; positioning of machines away from walkways, good floor surface, and so on.
- Maximum security; protection against fire, theft, and general decay is essential.
- Uniform direction of flow of work and transport is necessary and lines should not cross. A flow in one direction should be provided.

- Visual routes for movement must be provided and clearly marked, like walkways, and may never be used for storage or other purposes.

14.7 Advantages of a good layout

- The all-embracing processing time and costs will be reduced by cutting out unnecessary handling and by increasing the general efficiency.
- Labour supervision and production control is simplified by the elimination of hidden comers where workers and machines can be out of sight.
- Alterations in the programme can be handled more easily.
- Total outputs of a given workshop will be as high as possible because of the effective utilisation of available space.
- A feeling of uniformity will be encouraged amongst the workers by avoiding unnecessary isolation.
- The quality of the products will be maintained by safer and better production methods.

14.8 Preparation of a good layout

A layout should be prepared according to the following steps:
Collect the following information:

- Type and quality of labour
- Dimensioned plan of space to be laid out, indicating power points, water connections, roof strength, toilets, and cloakrooms.
- Present and planned volume of production in the space to be laid out.
- The operations that have to be carried out, their descriptions, operational sequence, and standard times. Take danger, noise, and pollution factors into consideration.
- The equipment needed for the operations:
    - Storage time.
    - Volume of material in sub-store.
    - Volume of main store for finished goods.
    - Fire escape routes.
    - Communication lines.
    - Special needs, like burglar -alarm systems required by the insurer.
    - Special inspection needs.
    - Special geographic needs, such as where the dispatch department should be located.
- Prepare a model.
- Study operational sequence.
- Select key operation.
- Locate key operation on plan.
- Locate main walkways.
- Locate remaining work areas.
- Locate smaller walkways.
- Plan individual areas in detail.
- Locate supporting equipment.
- Test the completed layout against the principles of good layout.

- Verify layout on floor.
- Compare with company policy.
- Install layout with good planning and supervision.

Activity 14.1

1. List some of the factors that influence the location of a factory.
2. What are some problems your may encounter in factor design?
3. What are the advantages of a single-floor building vs a multiple-floor building?
4. How would the designer of the factory create a good layout?

Self-Check

I am able to:	Yes	No
• Describe factors influencing the location of the factory		
• Describe problems in factory design		
• Describe the advantages of:		
o a single-floor building		
o a multiple-floor building		
• Describe a good layout		
o Measures		
o Advantages		
o Preparation		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 15

Maintenance of factory and machines

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the general maintenance of factory and machines
- Describe the maintenance department
  - Sections
- Describe the rules for the control of maintenance work
- Describe planned maintenance

15.1 Introduction

Maintenance of factory and equipment is essential to efficiency, to good working condition, and to economy. Poor maintenance has a strong negative influence on morale and causes unfavourable impressions among clients.

15.2 The maintenance department

The concept that the operator should maintain his own machine is out -dated. He is still expected to keep his machine clean, but the maintenance department is now generally accepted as a specialised service in production.

To benefit from the advantages of specialisation, all maintenance should be carried out by one department, under the supervision of the maintenance supervisor and the factory engineer, who are also responsible for duties other than the maintenance of machines.

Note:
The responsibilities of the maintenance department include the maintenance of the factory site, buildings, and equipment; the installation of new equipment; and supervision of construction work on new extensions to buildings.

15.3 Sections of the maintenance department

The maintenance department normally includes the following sections:

- Millwrights, who install all mechanical equipment, and maintain and repair it.
- Electricians, who install, maintain and repair all electrical equipment, including power sources and communications equipment.
- The building section, which includes carpenters, bricklayers, plumbers, and labourers, is responsible for the condition of the buildings and for the maintenance of fire fighting equipment, ventilation, and heating of the buildings.
- Cleaners, who are responsible for the cleaning and sweeping of the factory, including the toilets and cloakrooms.
- Labourers, who are responsible for the shifting of material and equipment.
- Subcontractors, who are useful for the relief of excessive maintenance overloading, and for the maintenance of equipment that requires specialist knowledge (telephones and office equipment, for example).

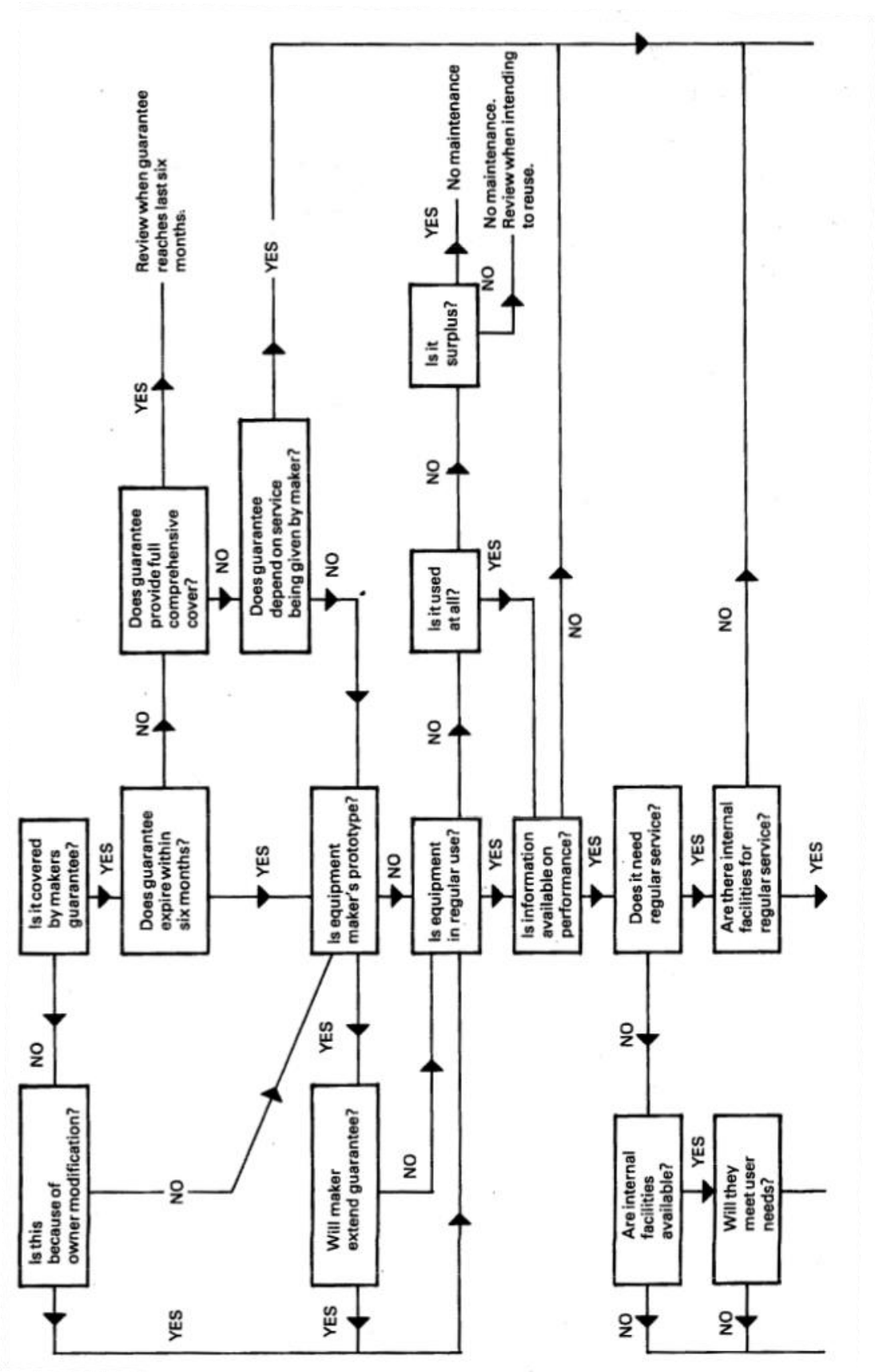
15.4 Rules for the control of maintenance work

- All maintenance requests must be made in writing and handed in at a central point.
- No maintenance can be carried out by the production staff, except when absolutely necessary.
- Records of all the work carried out by the maintenance department must be kept, to help with future maintenance planning and the determination of the depreciation of equipment.
- The maintenance store must be controlled carefully.

15.5 Planned maintenance

The maintenance department must be planned thoroughly, just like all other departments. However, it is very difficult to plan maintenance, because the breakdown of a machine can upset the entire planning.

Note:
The maintenance department must be under-loaded to be able to cope with emergencies. Any unloaded time can be used for day-to-day maintenance. Planned maintenance must cover a period of at least twelve months.


Is it covered by makers guarantee?
YES
NO
Does guarantee expire within six months?
YES
NO
Review when guarantee reaches last six months.
Does guarantee provide full comprehensive cover?
YES
NO
Is this because of owner modification?
NO
YES
Is equipment maker's prototype?
YES
NO
Does guarantee depend on service being given by maker?
YES
NO
Will maker extend guarantee?
YES
NO
Is equipment in regular use?
YES
NO
Is it used at all?
YES
NO
Is it surplus?
YES
NO
No maintenance
No maintenance. Review when intending to reuse.
Is information available on performance?
YES
NO
Does it need regular service?
YES
NO
Are there internal facilities for regular service?
YES
NO
Are internal facilities available?
YES
NO
Will they meet user needs?
YES
NO

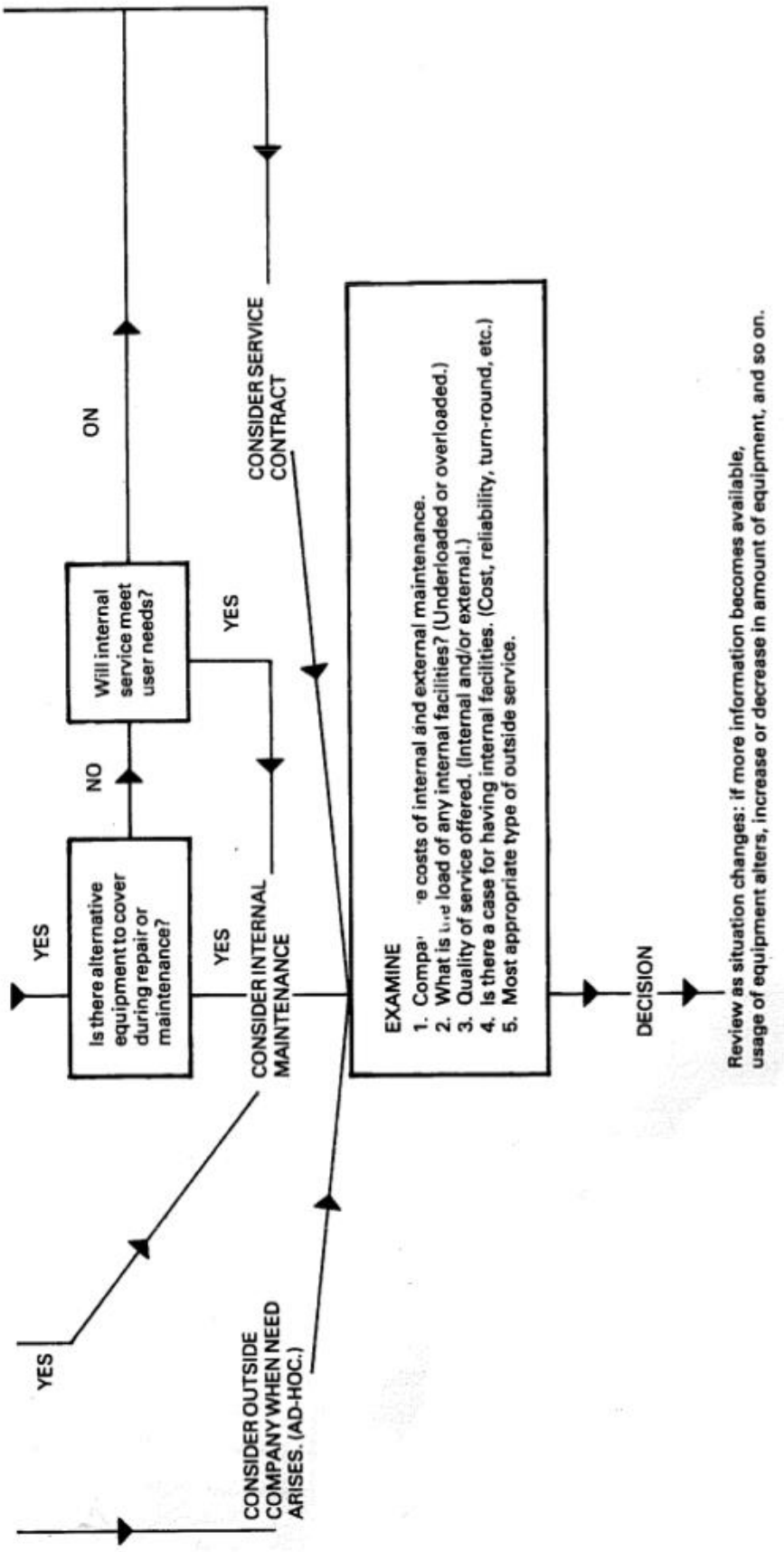

Is there alternative equipment to cover during repair or maintenance?
YES
NO
Will internal service meet user needs?
YES
ON
CONSIDER INTERNAL MAINTENANCE
CONSIDER SERVICE CONTRACT
CONSIDER OUTSIDE COMPANY WHEN NEED ARISES. (AD-HOC.)
YES
EXAMINE
1. Compa e costs of internal and external maintenance.
2. What is the load of any internal facilities? (Underloaded or overloaded.)
3. Quality of service offered. (Internal and/or external.)
4. Is there a case for having internal facilities. (Cost, reliability, turn-round, etc.)
5. Most appropriate type of outside service.
DECISION
Review as situation changes: if more information becomes available, usage of equipment alters, increase or decrease in amount of equipment, and so on.

Figure 15.1

The plan can be compiled as follows:

- Draw up a list of all the work that is carried out by external organisations, including painting and inspection of lifts, hoists, boilers, air-pressure vessels, fire extinguishers, scales, and weigh-bridges. Also, all the equipment should be listed that is insured and will be repaired by the insurer if it breaks-down.
- List all the work that is insisted upon by the factory manager, including the overhaul and maintenance of all machines and equipment, office equipment, and vehicles.
- Prepare standard instructions that will cover the necessary maintenance of the listed items. These instructions must be in detail.
- Prepare a plan to do the work over a period; for example, twelve months. Use Gantt -charts.
- Give instructions from the prepared plan to the workers when necessary. The workers must do the work and record, on the plan, when it is done. It may be necessary to draw up a maintenance register.

Activity 15.1

1. What is the general maintenance procedure for factories and machines?
2. What are the sections within the maintenance department and what is their purpose?
3. What rules govern the control of maintenance work?
4. What is planned maintenance?

Self-Check

I am able to:	**Yes**	**No**
• Describe the general maintenance of factory and machines		
• Describe the maintenance department		
○ Sections		
• Describe the rules for the control of maintenance work		
• Describe planned maintenance		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 16

Requisitioning

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the requisitioning of materials and necessities
- Describe acquisition procedures

16.1 Introduction

The purpose of requisitioning is the provision of the right materials in the right quantities at the right place at the right time. To succeed in this, many decisions have to be taken.

Material management includes three functions, namely acquisition, inventory control, and material handling. Acquisition is aimed at the best value for the provisioning expenses.

To do this effectively, the merit of internal acquisition requests are reviewed and external tendencies are watched carefully to determine prices, service, and quality.

Note:
Except for the overall duties, the acquisition department must coordinate administrative routines to issue acquisition orders, watch the progress of delivery and pay for delivered goods.

Acquisition can be divided into two categories: the maintenance of provisions and the maintenance of raw materials.

Spare parts, manufacturing tools, new machines, office provisions, and housekeeping necessities are regular, but inevitable acquisitions. The main point is how much must be kept.

Raw materials may in fact be genuine raw materials like ore, oil, or plants are, or may be in the form of sub-assemblies or manufactured components.

The acquisition function supports the activities of other operations and in turn is supported by other operations. Therefore, the different departments must

communicate and coordinate their actions so that the acquisition department can function effectively.

Note:
Material and information has to be interchanged continually between the accounts, marketing, production, -engineering, and reception departments, and the suppliers.

16.2 Acquisition procedures

A cycle of acquisition starts with a decision to purchase material and ends when the material is received and accepted by the unit that made the order.

16.2.1 Receive requisitions (demand)

Requisitions are made by persons of all functional units in the organisation. The requisition includes the quantity of the item needed, when the items are needed, by whom the request is made, and other information.

A column for "quantity available" is sometimes included to force the person making the requisition to decide whether the items really are necessary.

The lapsed time between the placing of the order and the receipt of the goods is known as "lead time".

Think about it!
Early requisitioning serves as a buffer for unexpected delivery delays. Long lead times will create larger inventories.

16.2.2 Review of requisitions

Analysis of the functions of materials is necessary. The analysis provides answers to such questions as:

Can a cheaper material perform the same function?

Can the supplier reduce his price by co-operative redesign of reviewed specifications?

Note:
The acquisition department is not usually authorised to replace or improve, but has the responsibility to question requisitions and to suggest alternatives that may lead to better prices.

16.2.3 Selection of suppliers

Sources of supply are located by sales representatives, contacts, advertisements, magazines, correspondence, inspection visits to factories, and from experience of the suppliers' products.

From such sources, an approved list of suppliers can be drawn up. The list is made up after comparison of the different suppliers' quality of product, prices, services, delivery, reliability, and so on.

Then the purchaser has to contact only a few suppliers for prices and deliveries. The list must be updated regularly, so that the best prices are always known.

16.2.4 Placing of orders

The normal acquisition routine for the processing of requisitions for individual items differs for very large, very small, and continuous acquisition.

Think about it!
Acquisitions of unique machines call for unique contracts.

Discussions are had with various possible suppliers and the process is normally quite lengthy, because design, construction and installation specifications have to be decided upon.

Did you know?
The purchase price of inexpensive items may sometimes be lower than the cost of the acquisition order. Small firms keep petty-cash for this reason.

Normally, an account is opened with the supplier when regular acquisitions are made. The supplier keeps records of direct orders and periodically sends accounts to the purchaser. The supplier must see to it that accounts are paid regularly to ensure that the practice is not misused.

Note:
Standing acquisition orders can also be organised with the supplier for items that are in regular demand. The prices of such items can be decided upon annually.

The purchaser benefits by such an agreement in that he will get a discount on the quantity of items purchased, and he is sure of the availability of the items should a shortage arise.

The supplier benefits in that he is ensured of a market for his products and can save on advertising. Both parties benefit in that negotiations take place only once a year.

16.2.5 Control of orders

The acquisition department must control deliveries to ensure that they are on schedule. Here. co-ordination between the acquisition department and other

departments. and between the acquisition department and the supplier. is essential.

16.2.6 Receipt of orders

Receipt of the correct amounts in acceptable condition is a sign that the transaction is settled. Reports of the purchase are summarised and payment is made. The final price is dependent on discounts like exchange, quantity, or cash discount.

Activity 16.1

1. What is the process when requisitioning materials and necessities?
2. What are acquisition procedures?

Self-Check

I am able to:	Yes	No
• Describe the requisitioning of materials and necessities		
• Describe acquisition procedures		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 17

Housekeeping

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the importance of cleanliness of cloakrooms
- Describe storage places
- Describe the workshop
- Explain housekeeping competitions
- Describe the items for a housekeeping checklist

17.1 Introduction

Good housekeeping includes tidiness and maintenance, and serves as an incentive to better quality and better working conditions, and it reduces accidents. Good housekeeping encourages hygienic working conditions and reduces the incidence of dermatitis and other health problems.

Housekeeping does not come naturally. Workers are sometimes unconscious of dirtiness and untidiness because of sheer negligence.

Note:
A good housekeeping programme must be drawn up by the supervisor, and every'' worker must be given a daily housekeeping task to perform.

The supervisor must set the example, organise demonstrations, encourage participation by the workers, listen to their criticism, agree with standards, and keep the workers up to standard.

Did you know?
Good daily housekeeping plus an annual special clean-up must be the supervisor's aim.

The supervisor and the workers take the blame for expensive housekeeping. Expensive housekeeping is caused by poor workshop layout, unauthorised rearrangement of equipment, improper handling and storage of materials, untidiness, and disorder.

All these causes can be eliminated by responsible housekeeping. Normally, use is made of three cleaners for every two hundred line workers.

Workers' unions normally offer no resistance to housekeeping programmes. If they do offer resistance, it is the duty of the supervisor to explain the purpose and advantages of such a programme to them and, if that is not sufficient, he must refer them to his superior or to the personnel department.

17.2 Cleanliness of cloakrooms

The supervisor must encourage the workers to maintain a high standard of cleanliness in the cloakrooms, washrooms, and toilets. He should put somebody in charge to see that the cloakrooms are kept tidy and to report irregularities.

Did you know?
The supervisor must make regular inspections himself.

If any substandard conditions occur in the cloakrooms, like leakages, or broken windows and doors, the supervisor should report them to his superior, and suggest improvements.

Note:
Every worker should have his own locker for the safekeeping of his personal property.

17.3 Storage places

Storage places must be kept tidy, properly identified, and laid out. Inflammable liquids must be stored separately from other materials, to reduce the risk of fire. Dirt and waste must be placed in containers and removed from the workshops daily.

There has to be sufficient storage space and use should be made of the correct storage methods. The workers should be taught the correct storage methods. Use should be made of available storage space.

Think about it!
Salvable and saleable waste must be stored separately from un-salvable rubbish.

17.4 Workshop

There must be sufficient lighting in the workshop. As much us~ should be made of natural light as possible. The areas in front of windows must be kept clear.

Electrical lighting must not be too bright for the eyes, but bright enough to provide sufficient light, especially at night during overtime. Fused bulbs or tubes should be replaced without delay.

The workshop must be properly ventilated. Windows should open. If the workshop has to be dust-free, an effective ventilation system must be provided.

Note:
The temperature inside-the workshop must be as constant as possible during all seasons. A heating system should be provided and serviced and maintained regularly.

The floors must be kept clean of dirt, loose objects, and fluids, which could cause falls and injuries. The cleaning compounds must provide a slip-free finish.

The floor should not have too smooth a finish. Walkways must be clearly marked on the floor, or must be barricaded, and must be kept clear.

No material, trolleys, drums, or other items may block the walkways. Drip-trays and sawdust must be available to clear and combat leakages from machines.

Workbenches must be of a comfortable height, sturdy, and out of the way from the walkways. Workbenches must not be used to store material upon, and must be kept clean.

Note:
At the end of the day, the workers should be allowed time for cleaning up.

Machines must be properly arranged for the comfort of the operator and also to ensure maximum workflow. Machines may not be located in unauthorised places; for example, electrical machines may not be near water connections.

Machines must be cleaned at the end of the day and serviced and maintained regularly to prolong their life. Machines should be lubricated before the weekends to prevent corrosion.

Note:
Machines must be inspected regularly for breakages.

Moving parts are screened off to prevent accidents. Leaks must be repaired immediately. Unsafe, temporary arrangements are to be prevented.

Rubbish must be placed in properly marked containers, which are to be emptied daily. Accumulations of rubbish in the walkways must be forbidden.

Note:
Material should be stored in the right places.

Walls and windows must be kept clean. The walls can be decorated with safety posters, production-charts, achievement graphs, information-charts, and so on. No objects should project that could cause injuries, such as nails, hooks, broken glass, and so on.

Proper fire-fighting equipment is essential in the workshop, and it must be serviceable. Fire-escapes must be provided and introduced to the workers. Fire drill ensures that the workers are well trained in fire-fighting.

17.5 Housekeeping competitions

Housekeeping competitions help improve the housekeeping programme. The company normally starts such competitions, but if none exists, the supervisor should insist that one is introduced.

There should be a prize for the winners and a booby-prize for the losers. The competition should be taken seriously and the judgement must be fair and made by a person in a position of authority.

17.6 Items for a housekeeping checklist

The following items should appear on a housekeeping check-list:

- Unsafe practice.
- Bulletin boards and safety signs.
- Protective equipment and clothing.
- Floors.
- Stairs, walkways, and passages.
- Lighting.
- Material store.
- Machines.
- Buildings.
- Workers' facilities.
- Tools.
- Electrical.
- Pressure system.
- Gases, fumes, noise, and dust.
- Material-handling equipment.
- Walls.

Activity 17.1

1. What is the importance of cleanliness in the cloakrooms?

2. What are storage places and their purpose?
3. What is a workshop?
4. What are housekeeping competitions?
5. Draw up a housekeeping checklist.

Self-Check

I am able to:	**Yes**	**No**
• Describe the importance of cleanliness of cloakrooms		
• Describe storage places		
• Describe the workshop		
• Explain housekeeping competitions		
• Describe the items for a housekeeping checklist		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 18

Quality

Learning Outcomes

On the completion of this module the student must be able to:

- Describe the meaning of quality control
- Explain the duties of the quality control and inspection department
- Describe quality control and inspection
  - Duties of the department
  - Benefits
  - The functional responsibilities in the total production system
- Describe the analysis of product quality where there is no inspection department
- Describe important facts for inspection planning
- Describe how to arouse the workers' interest in quality
- Explain the reason for faults
- Describe how training of workers ensures better quality
- Explain corrective measures to improve quality
- Describe statistical quality control
- Explain zero defects and non-destructive testing
- Describe the importance of reliability

18.1 Introduction

Quality is the degree to which a product or service satisfies the standards or specifications as laid down by the manufacturing organisation, in consideration of the consumer's needs.

18.2 Quality control

Quality control is a function to which management, and especially the supervisor, must give much attention, so that the production plan is adhered to.

Think about it!

Quality control and the inspection department fulfil an important function, because quality and reliability can be built into the product only during the design and manufacturing stages.

Statistical techniques are applied to exercise control over quality. The quality-control department is responsible for the necessary measuring devices and for the organisation of the inspection personnel.

Quality control includes inspection activities and is aimed at the identification, elimination, and prevention of factors that cause deviations from the set standards of a product, production process, or service.

Its aim is the prevention of deviations rather than their identification. The information has to be made available to the production manager as soon as possible, so that corrective action can be taken in time to ensure that only products that satisfy the prescribed standards are manufactured.

Quality control will be applied to the acquisition of parts and raw materials to ensure that they agree with specifications; and also to ensure that only products that satisfy the specifications will be delivered to the consumer.

During manufacture, the following procedures are normally followed: Inputs (raw materials) through processing (manufacturing) to outputs (completed articles).

Note:
In processing, quality control is applied through a process control method, normally with the aid of control charts.

Inspection leads to either the acceptance or the rejection of a product or batch of production. Quality control is directed more to future production and not to completed production.

Did you know?
In quality control, the accent is on control measures that will ensure that future production meets specifications.

The following are a few of the control measures that can be taken:

- Checking that machines are correctly set.
- Correction of faulty performance, without delay.
- Evaluation of parts and raw materials before they are accepted.
- Replacement of worn tools and fittings.
- Discussion of alterations to specifications with the engineering and sales departments
- Storage of finished goods in the correct manner, to maintain the quality until delivery.

18.3 The duties of the quality control and the inspection department

- Inspection of the raw materials, sub-assemblies, tools, and machines on acquisition.

- Inspection of measuring instruments and devices used by inspectors and workers to control quality.
- Inspection of products in manufacture, and of finished goods.
- Introduction of quality standards according to management policy and design-department specification.
- Supervision of inspectors and the test laboratory.
- Detection of defective products that can be salvaged, and the recovery of defective material.
- Liaison with the engineer- and other departments about product design, quality standards, production processes and other matters.
- Making sure that all legal prescriptions applicable to the product are met.
- Grading of completed articles.
- Judgement of whether the product satisfies the requirements of the consumer.
- Judgement of the productivity of individual workers and departments.
- Recording of inspection-report interpretations to determine faults, deviations, and the corrective measures that will prevent the repetition of the faults and deviations.

18.4 Benefits of quality control and inspection

Where a complete inspection is prevented by technical and economical factors, an inspection-and-control system can be made possible by random sampling and statistical techniques.

- The quality of products can be determined quickly and objectively, in order to determine early whether measurable deviations can be attributed to coincidence or indicative variation, and what measures can be taken. This leads to improvement
- The control over production processes and the acceptance of finished products becomes more effective and more economical, and decreases production costs accordingly.
- Clients are more satisfied, because a more uniform and reliable product is supplied.
- Improved product design, because the operation of the product is critically analysed.
- Competition at a higher level with industries that manufacture the same products and supply the same services.
- Better utilisation of machines, labour, and equipment.
- Promotion of the development of sophisticated technical procedures and equipment, and simpler supervision of production.
- The work is properly controlled for incentive payment schemes.

18.5 Cost due to quality

Quality is related to cost, as described below.

18.5.1 Design cost

The cost of accuracy of manufacture must be considered when products are designed.

Did you know?

With low accuracy, the manufacturing cost, and therefore the price of the article, is low. As the accuracy of the article increases, the selling price increases too, but at a slower rate. However, costs rise at an increased rate as the accuracy increases.

18.5.2 Agreed quality

Cost to agreed quality can be between 4 and 12 percent of the turnover. The greatest contributors to this type of cost are:

- Cost due to rejection of products, repairs, low-cost selling of low-quality products, replacement of articles under guarantee, service of clients' complaints, and after-sales service.
- Valuation costs, caused by inspections and tests.
- Prevention costs, including those for operator training, workshops, and design.

18.6 The functional responsibilities of quality control in the total production system

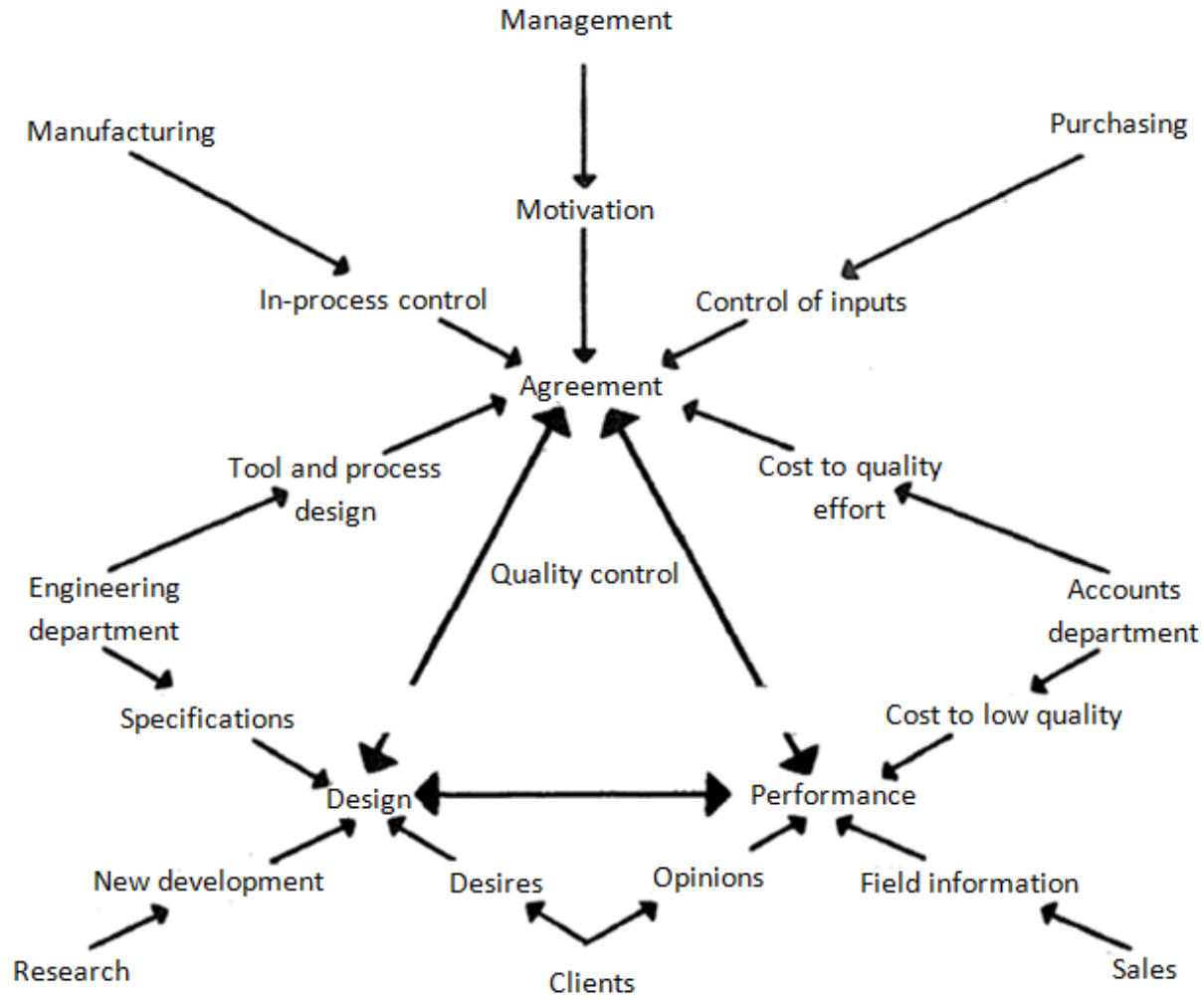


Figure 18.1

18.7 Analysis of product quality where there is no inspection department

Under these circumstances, the supervisor must consider the following:

- What is the inspection problem?
- How can quality be maintained?
- Must inspection take place on a full time or a part time basis?
- Must the inspection be done by a supervisor?
- If the inspection must be done by the supervisor, how much time must he spend on it?
- How must the inspection be done? (Random sampling, batch, etc.)

18.8 Important facts for inspection planning

When a supervisor has to plan his own inspection, he must:

- Draw up quality specifications.
- Put the specifications in writing and see to it that the workers concerned receive a copy

- Offer to use some of his own time for inspection.
- Select critical quality points in the production line.
- Make regular inspection rounds, but change the sequence regularly.
- Check 5 to 10 per cent of the work at a certain stage by random sampling.
- Immediately correct faults as they arise.
- Discuss faulty operations with the workers concerned, with the intention of correcting them.
- Check the first part of a new production set-up, and not allow production to reach completion before the quality meets the specifications.
- Put previous quality reports, rejection reports, etc, on the notice boards.

18.9 To arouse the workers interest in quality

To arouse the workers' interest in quality, the supervisor must:

- Emphasise quality from the first day that a new worker starts work
- Explain quality specifications clearly.
- Stress the reasons for quality.
- Assist the workers to achieve quality in production.

18.10 Reasons for faults

Reasons for faults can normally be traced to poor management, for example:

- Insufficient training.
- Poor communication.
- Insufficient equipment.
- Poor planning.
- Incomplete specifications or procedures, or both.

Think about it!
Sometimes the worker's faults are caused by his own negligence and poor attention.

18.11 Training of workers to ensure better quality

To train the workers to strive for better quality, the supervisor must:

- Inform the workers about the need for reduction in waste.
- Provide job training to the workers.
- Use graphic displays to show the progress in quality.
- Fully explain the reasons for changing the methods.
- Obtain the workers' participation in quality-improvement programmes.

18.12 Corrective measures to improve quality

To correct poor quality, the supervisor must:

- Explain to each worker what quality standards are expected of him.
- Explain the reasons for rejection of work.
- Develop good inter-departmental relations between production departments.
- Keep an updated report of defective work.
- Undertake a certain amount of inspection himself.

- Have a quality-improvement scheme which elicits suggestions from the workers.
- Conduct regular quality discussions with the workers.
- Put historical quality information, and samples, on notice boards.
- Inform the workers about losses due to rejected work.
- Stimulate pride of craftsmanship among the workers.
- Inform each worker about the relation between quality and job security.
- Inform each worker about the relation between quality and promotion.

18.13 Statistical quality control

Statistical quality control is a mathematical technique. Three statistical aids are used by supervisors to help with production control:

- Repetition-distribution charts that indicate what and where variations are.
- Quality control charts, which are line charts that indicate the tendency of quality from regular samples.
- Random tables that are drawn up by the statistician to indicate when and what percentage must be taken for checking.

18.14 Zero defects

Zero defects is a quality programme with the intention of achieving perfection rather than including the rejection of work, in order to create pride of craftsmanship.

The key to success of this programme includes the following:

- Motivation; striving to achieve perfection.
- Elimination of reprocessing, scrapping, and rejection.
- Striving to get things perfect the first time.
- Recognition of individual and group achievements. Congratulation by management.
- Promotion of job security; good quality ensures work stability.
- Suggestion that suppliers also accept and implement zero-defects principles; the provisioning of fault-free materials on time; and time saving on the inspection of raw materials.

18.15 Non-destructive testing

These are methods to test articles without causing destruction or damage.

- Radiography (X-rays or gamma-rays).
- Ultrasonic waves.
- Magnetic fields.
- Dye penetrant fluids.
- Fluorescent fluids with an ultra-violet lamp.
- Temperature flow patterns.
- Cold or hot oil and chalk.

18.16 Reliability

Definition: Reliability
The probability that a product will perform certain functions, under certain conditions, for a specific time.

Reliability can be determined by direct testing or by statistical calculation. It is normally expressed as an average time until expected failure, for example 235 hours. Reliability is directly related to quality control.

Activity 18.1

1. What is the meaning of quality control?
2. What are the duties of the quality control and inspection department?
3. What are the benefits of the quality control and inspection department?
4. What are the functional responsibilities in the total production system?
5. How does the analysis of product quality happen when there is no inspection department?
6. What facts need to be considered when planning for inspection?
7. How can you arouse the workers' interest in quality?
8. What are faults and why do they occur?
9. How does training of workers ensure better quality?
10. What corrective measures can be implemented to improve quality?
11. What is statistical quality control?
12. What do zero defects and non-destructive testing mean?
13. What is the importance of reliability?

Self-Check

I am able to:	Yes	No
• Describe the meaning of quality control		
• Explain the duties of the quality control and inspection department		
• Describe quality control and inspection		
o Duties of the department		
o Benefits		
o The functional responsibilities in the total production system		
• Describe the analysis of product quality where there is no inspection department		
• Describe important facts for inspection planning		
• Describe how to arouse the workers' interest in quality		
• Explain the reason for faults		
• Describe how training of workers ensures better quality		
• Explain corrective measures to improve quality		
• Describe statistical quality control		

• Explain zero defects and non-destructive testing		
• Describe the importance of reliability		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 19

Methods

Learning Outcomes
On the completion of this module the student must be able to:

- Describe choosing the task
- Describe the collection of facts
- Describe analysis and development
- Describe implementation
- Describe maintenance

19.1 Introduction

A method determines the efficient and competent performance of the work in a predetermined sequence. The supervisor must develop a method, or the one correct method, to do the work.

It may sometimes be necessary to call for assistance from method and work-study personnel in order to determine the best method.

Note:
The main problem is the determination of how the work must be done. The method has to be thoroughly planned.

Method improvements are based on thorough investigation and analysis of the present method , which will lead to the alteration and improvement of quality and quantity.

Other terms for method improvement are:
- Time and motion study
- Operational analysis.
- Methods engineering.
- Systems engineering.
- Motion economy.
- Wastage combat.

These all include detailed observation, collection of information, and analysis of each operation.

Note:
Work simplification is the most reliable method of increasing the company profits, which will lead to improvements in compensation and promotion.

To the supervisor it means a more efficient workshop, reduction in cost and delays, and more time for him to spend with his workers and on development.

Aids for method improvement include the following:
- Suggestions from the workers.
- Management (line-management, or supervisor, since he has a better view of the entire system).
- The methods department.

Think about it!
Methods improvement can best be applied where production costs are high, where there are regular delays, and where there is high wastage of materials.

Definition: Job break-down
The breaking down of the operation into single steps, so that each step can be studied in detail.

19.1 Choice of the task

The choice of the task that has to be studied is in the hands of management. Management may react to the supervisor's suggestion. A method study is costly, and these costs must be determined beforehand.

Note:
If these costs exceed possible savings, the study must be carried out only if there are sound reasons for it.

Problems that might necessitate a method study are bottlenecks in the production line; a workshop layout that prevents production to full potential; low morale, which is indicated by complaints, poor quality, and high absence; unstable earnings, where earnings are connected to production.

Think about it!
It is not advisable to carry out such a study at times of industrial unrest - the motives of the study might come under suspicion.

19.2 Collection of the facts

When a supervisor is questioning workers in an attempt to collect the facts about possible improvements, he should:
- Make sure that the workers fully understand the purpose and object of the investigation, and try to make them feel at ease.

- Emphasise the importance of their contributions to the success of the investigation, and allow them to do the most talking.
- Encourage suggestions from the workers.
- Be polite and complementing, without asking trick questions.
- Avoid criticism and attempts to correct the way a worker is doing something. The purpose of the investigation at this stage is to collect facts, not to correct faults.
- Concentrate on causes and not on effects.
- Obtain facts and answers, not opinions.

Note:
Collection of the facts can take place through questioning or by direct visual observation. It must be done very carefully and no important factors may be left out.

Process charts are charts that reflect the sequence of operations diagrammatically by means of symbols, and can be investigated, analysed, and improved away from the workshop.

Five generally accepted symbols that are used are as follows:

○ - Operation: a part, material, or product is modified or transformed.

⇨ - Transport: movement of workers, material, or equipment from one place to another.

∇ - Permanent storage a controlled storage.

D - Delay or temporary storage: delay in the process.

□ - Inspection: inspection for quality or quantity or both.

● - Do operation: this symbol is used when an operation takes place on the product, for example:

○ - means "set up drill", a subsidiary operation.

● - means "drill hole", a "do" operation.

19.2.1 Process charts

There are two basic types of process chart.

1. Outline process charts

These charts give a general outline of the sequence of operations, and of the introduction of materials into the process, by using only two symbols (0,0).

2. Flow process charts

These charts provide more detail than the outline charts, and use five symbols. They can refer to man or machine (activities performed by the worker) or to material (activities performed on the material).

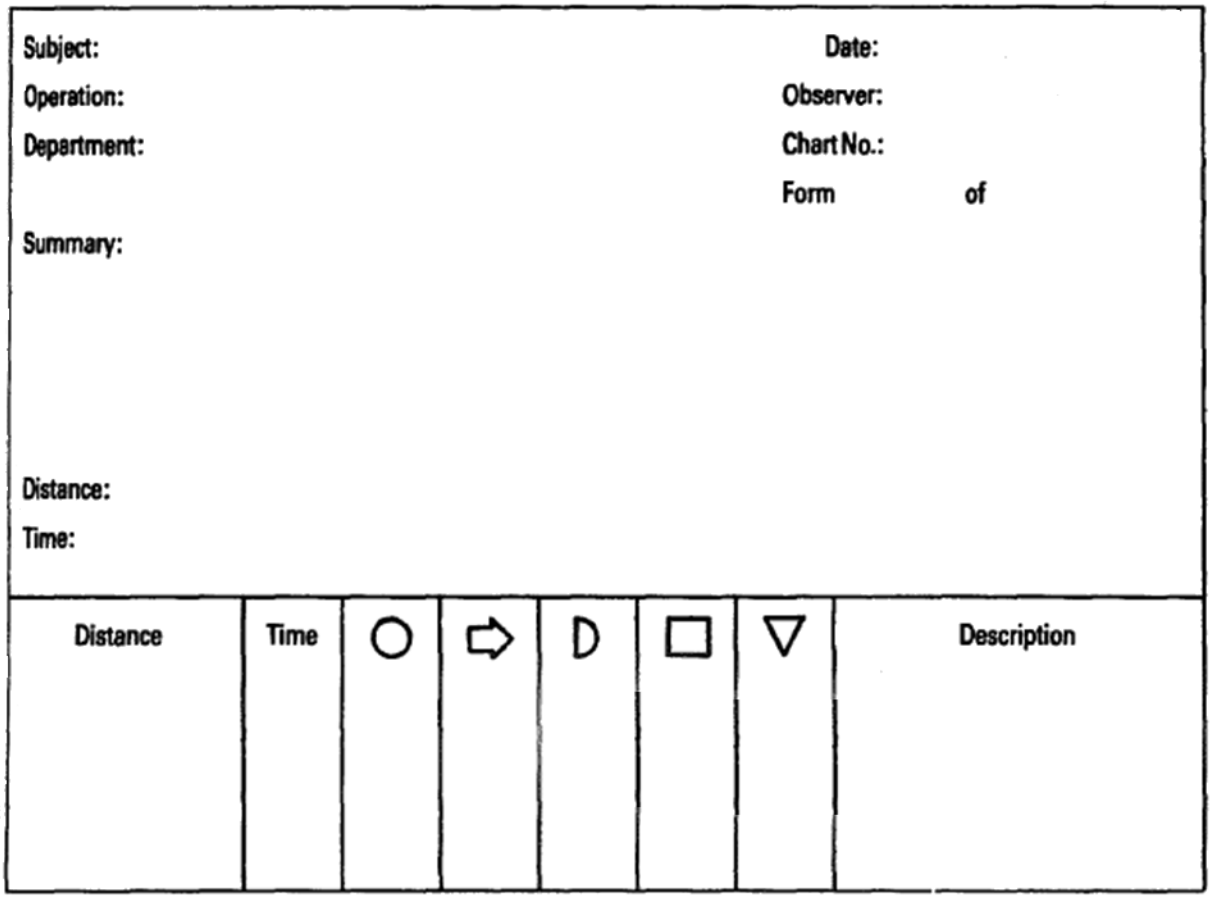


Figure 19.1

19.2.2 Steps in the completion of a flow process chart

- Choice of the operations that are to be investigated. Naming of the subject, person, article, part, or paper form that is going to be analysed. Limited to one person or subject.
- Choice of start and finishing points, and division into steps between start and finishing points.
- Detail of each step.
- Matching of each step to an applicable symbol.
- Writing in of the distances and times.
- Summary of the flow process chart - addition of all the distances, times, delays, etc.

Note:
All information must be entered.

19.2.3 Time-scale charts

Time-scale charts are charts on which two or more activities take place simultaneously or in sequence and are indicated on the same time-scale. There are two types that are generally used:

1. Multiple-activity chart

These charts can be considered as vertical Gantt -charts, and are used to indicate the relation between two or more men, machines, or materials.

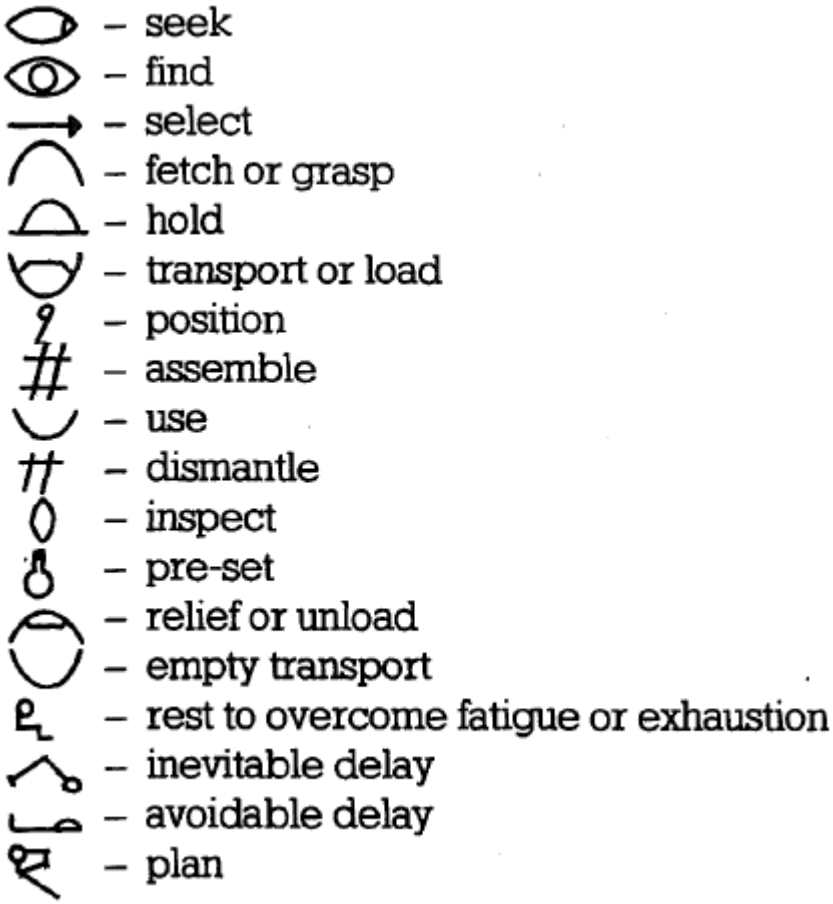
A vertical column is drawn for every main figure and the work that is carried out, and is coded by colour. Time is indicated on the left-hand side, and a short description of the activities is included on the right-hand side.

	**Note:** The ratio of the working times and the non-working times can be determined from the chart, after which an effort can be made to balance them.

2. Simultaneous-movement chart (SIMO-chart)
The movement of two or more parts of the body are recorded on these charts. The movements are normally of short duration (milliseconds), and the preparation of the SIMO-chart includes a frame-by-frame analysis of a motion picture of the work that has been done and is being studied.

Here, 'therblig' symbols (the reverse of Gilbreth) are used to describe human movements.

There are altogether 18 therblig symbols.



The following rules apply to efficient actions by the worker:

- Movements must be productive.
- Movements must be simple.
- Movements must be rhythmic.
- The worker must be comfortable.
- Combine two or more tools.
- Set tools and materials beforehand.
- Restrict activities.
- Make as much use of gravity as possible.

19.3 Analysis and development

When all the information has been collected and recorded on the charts, the analysis and development of the new, better method can be started- away from the workshop. In the development of the new method, an unprejudiced and systematic approach is important.

Note:
The systematic approach can be improved by the technique of questioning.

This technique is as follows:

1.	Purpose	What is done? Why is it done? What else could be done? What should be done?
2.	Place	Where is it done? Why there? Where else could it be done? Where should it be done?
3.	Sequence	When is it done? Why then? When else could it be done? When should it be done?
4.	Person	Who is doing it? Why that person? Who else could do it? Who should it be done?
5.	Manner	How is it done? Why is it done in that way? How else could it be done? How should it be done?

When those questions have been answered, a proper picture of the new method should be clear. Sometimes, it may be necessary to call for expert advice on how to put this new method into operation.

To develop the new method, the supervisor must:
- Eliminate
- Combine
- Change sequence
- Simplify

19.4 Implementation

When the new method has been approved and the expenditure (if any) involved has been authorised, the method is implemented.

A process layout must be drawn up and presented to the foreman, management, and the workers concerned for their approval, or else the new method will fail.

The person who develops it must be someone who is respected and trusted by the workers. As soon as the new method is accepted, the workers have to be trained in its use, through examples, to introduce them to its advantages.

Note:
The training is not complete until the expected productivity is achieved.

19.5 Maintenance

The maintenance of the method requires regular visits by the supervisor. Therefore, the method has to be written down clearly and concisely, and thoroughly understood by the supervisor.

Note:
If there are any changes to the method, the supervisor can effect them himself or refer them to the work-study department for inclusion in the process layout.

At this stage, the supervisor must make proper use of his aids, which include personnel, equipment and tools, space, materials, and to make the method successful.

Activity 19.1

1. How is the task chosen?
2. How would you go about collecting all the facts?
3. Explain the process of analysis and development.

4. How is a method implemented?
5. How is the method maintained effectively?

Self-Check

I am able to:	**Yes**	**No**
• Describe choosing the task		
• Describe the collection of facts		
• Describe analysis and development		
• Describe implementation		
• Describe maintenance		
If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.		

Module 20

Costs

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the type of cost
- Describe cost-reduction opportunities

20.1 Introduction

A supervisor must be cost -conscious, because prices and costs are continually rising. Costs must be cut as far as possible so that products can be kept competitively priced, so that more job opportunities are created, and so that better job security can be achieved.

Two important terms used in cost discussions are "cost control" and "cost reduction".

Definition:
Cost control is the maintenance of cost by preventing its rise or by restricting the rate at which it rises.

Definition:
Cost reduction is more dynamic and means that costs are reduced.

Did you know? Attitudes have a great influence on costs
When business is good, people tend to become less cost-conscious and working habits become lax. When business is bad and profits decline, people want to put things right by cost reduction, but it may already be too late.

Caditz's laws of cost control are as follows:

- Costs tend to increase inversely with the amount of effort put into cost control.
- There is more profit in cost control when business is good than when business is bad.

- The amount of effort needed for cost control increases when business is bad, and decreases when business is good.
- When business is good, companies tend to practise usury, and by doing that, they increase costs out of proportion.

Note:
The supervisor should be familiar with the terms used by accountants, and should also have a sound, basic knowledge of book-keeping.

Ideas for cost reduction can be obtained from the supervisor himself, from the workers, and from the staff departments like the methods-improvement department.

Note:
When a supervisor is instructed to cut costs, he must concentrate on weak points and study records of operations that show an upward trend in sales.

Cost reduction is unwarranted only when its own cost is out of proportion to other expenses. Sometimes management rejects cost -reduction programmes because of too long a payoff period.

Did you know?
Workers do sometimes fear cost-reduction programmes because they can mean less money (through less overtime) or they may lose their jobs.

They criticise cost-reduction campaigns because they feel:
- Management campaigns are often too severe and sometimes unfair.
- Management does not know what it is doing
- Management should direct cost reductions towards themselves and their staff.

Think about it!
These problems can be overcome by giving the workers a clear picture of the cost-reduction device or campaign.

Handling of workers and cost-reduction campaigns calls for the following:
- Emphasis of the reorganisation of work, without dismissal of workers.
- Careful handling of dismissals.
- Protection of the workers as far as possible, where improved methods are concerned.
- Explanations of the reasons and advantages, and attention to their opinions.
- Concise and objective description of the true figures.
- Setting and explanation of objectives.

- Encouragement of workers' participation.
- Explanation of the reasons for cost reduction and help with their efforts to achieve it.

20.2 Types of cost

20.2.1 Cost of quality

When articles have to be manufactured to high quality and accuracy, the production costs increase, mainly because of the time needed for manufacture.

20.2.2 Marketing costs

Marketing costs are the expenses incurred by the promotion of the sales of finished products, the storage of the products, and the transport to the consumer.

20.2.3 Administrative costs

Administrative costs include the expenses incurred by the direction, administration, and control of the manufacturing operations.

They include salaries of executive officials and office personnel, research expenses, development expenses, rental, legal expenses, irrecoverable debts, telephone, stationery, postage, donations, and so on.

20.2.4 Fixed costs

Fixed costs are costs that tend to remain unchanged, within certain limits, despite increases and decreases in production.

Fixed costs include rental, interest, property tax, insurance, research, and indirection.

20.2.5 Variable costs

Variable costs are costs that tend to increase as production increases over a short time. Deterioration, packaging, raw materials, and direct labour are all contributors to variable costs.

20.2.6 Capital costs

This is the interest rate that has to be determined when money is borrowed to purchase provisions. When provisions are purchased out of own capital, it is very difficult to determine this type of cost.

20.2.7 Direct labour costs

Direct labour costs are the costs of labour, material, and services.

20.2.8 Indirect labour costs

Indirect labour costs include overhead manufacturing costs, sales costs, administrative overhead costs, and so on. They are compared to direct labour costs as a ratio; for example, 1:4.

20.2.9 Maintenance and repair costs
These costs include costs of machine parts, lubricants, loss of production while machines are serviced, salaries of maintenance personnel, and tools.

20.2.10 Cost of wastage
This includes the cost of losses due to deterioration and damage of material, defective products, products that do not satisfy specifications, and loss of production time.

20.2.11 Overhead costs
Overhead costs are those that have to be added to manufacturing costs, like the depreciation of equipment, insurance, book-keeping, postage, and advertising. They are normally classified as "factory overheads" and "general overheads".

20.3 Cost-reduction opportunities
There are several ways in which costs can be reduced, including the elimination of the following problems:

20.3.1 Absence and labour turnover
Absence and labour turnover can cause high costs. There are compensation of workers during absence, medical expenses, insurance of workers, recruitment and training of replacement workers, reduced production, clerical time to complete reports and claims, and so on.

Note:
Labour turnover leads to costs due to low productivity of those leaving the company, costs due to lost productivity, costs of recruitment and training of new workers, costs of low production by inexperienced workers, and clerical costs for the completion of records of new workers.

20.3.2 Wastage and re-processing
A percentage of the material that goes through production is rejected, and has to be re-processed. This percentage can often be reduced dramatically.

20.3.3 Accidents
Industrial accidents can lead to extremely high costs because of absence of the injured, clerical work, administrative work, replacements, damaged equipment, lost material, spoilt tools, and lost production. Also, compensation of the injured and medical expenses can be high.

20.3.4 Labour
Direct labour cost are due to normal production and services. Indirect labour costs are due to shipment and reception of workers, cost of maintenance

workers, clerks, supervisors, and other personnel that are not directly involved with the product or service.

Did you know?
Labour costs due to overtime, sluggishness, early stopping, long tea-breaks and lunch-times, speeches by union representatives, and unnecessary movement by operators to fetch material, can all be reduced.

20.3.5 Productivity

Direct labour normally work to 80 per cent of their capabilities, while indirect labour work to 80 per cent, or even less. Much can be done in this respect to reduce costs.

20.3.6 Maintenance

Maintenance costs include those due to production machinery that has to be stopped for unscheduled repairs.

Note:
Scheduled repairs and adjustments help to keep these costs low.

20.3.7 Inventory

Inventories of material, provisions, in-process goods, and finished products have to be in proper balance. Poor inventories can affect operational efficiency and cause delays in production and dispatch.

20.3.8 Tools and equipment

Broken tools, gloves, safety shoes, overalls, and other items lead to high costs. However, if a worker asks for new tools or equipment, and he is requested to hand in the old or broken ones, this type of cost can be reduced by up to 70 per cent.

20.3.9 Planning and scheduling

Machines that do not work and services that are not performed cut profit.

When schedules cannot be met, the right materials are unavailable when needed, poor co-operation exists between departments, and regular unnecessary schedule alterations occur, costs are incurred.

Note:
These problems are caused by poor planning and scheduling.

20.3.10 Time

Time means money. Time must be used productively. Work must be planned so that the least time is needed to do it. Use must be made of the best methods in order to save time.

Note:
The workshop should be reorganised to eliminate unnecessary movement. Working hours must be kept strictly, and lunchtimes and tea-breaks must not be stretched.

20.3.11 Turnover

Efforts to increase the turnover should always be made. A high turnover reduces production costs per item. Increased turnover goes hand in hand with high productivity and efficiency.

20.3.12 Expenditure

Expenditure should be made wisely and perceptively. All acquisitions and expenses should be budgeted. Efforts should be made to keep within the budget.

20.3.13 Available space

Available space should be used effectively. The workshop layout must be planned so that unnecessary movement and accumulation are prevented. A continuous workflow is valuable.

Activity 20.1

1. What are the types of cost?
2. List some cost-reduction opportunities that exist today.

Self-Check

I am able to:	Yes	No
• Describe the type of cost		
• Describe cost-reduction opportunities		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Module 21

Safety

Learning Outcomes
On the completion of this module the student must be able to:

- Describe the causes of accidents
- Describe accident investigations
- Describe safety programmes
- Describe the results of accidents
- Describe the frequency and seriousness of accidents
- Describe safety clothing
- Describe safety committees
- Explain the drawing up of safety rules

21.1 Introduction

Industrial accidents lead to many deaths and mutilations every year, and cause losses in man days and man hours because workers stop to assist the injured or discuss the accidents.

Also, heavy losses are suffered because of medical expenses, damaged property, and accident investigations. The personal suffering and hardship experienced by the accident victim's dependants are, of course, incalculable.

Most accidents happen when objects are handled, or when falls occur. Machines cause the next-highest number of accidents, and are responsible for most fatal accidents.

As for the type of injury, the back is injured the most thumbs and fingers are the next most frequently injured, and then the legs and arms. The toes are injured the least frequently.

Did you know?
Back and head injuries are the main cause of fatalities.

21.2 Causes of accidents

Of all industrial accidents, 95 per cent are caused by human factors, two to three per cent by mechanical hazards, and two per cent are classified as acts of God.

Safety Warning!
Human factors include a lack of safety consciousness, negligence, disobedience of rules and procedures, horse-play, and poor training in safety.

Because the human factor is the main single contributor to accidents, it provides excellent opportunities for the supervisor to promote safety and prevent accidents. Here, training and communication play important roles.

Accidents can be divided into seven categories:
1. Handling of objects.
2. Fires.
3. Slip and fall.
4. Electric shocks.
5. Machinery and tools (especially lifting-gear and rotating machines).
6. Housekeeping.
7. Non-work-related accidents.

21.2.1 Handling of objects

The lifting of objects is the most dangerous, and can cause back injuries, hernias, and muscle and toe injuries. These injuries can be largely eliminated by applying the correct lifting techniques:

- A good pair of leather or rubber gloves will ensure a better grip on the object.
- The weight of the object should be tested; if there is any doubt whether it can be lifted single-handed, help should be sought.
- Balance is essential. The feet should be apart with one foot slightly in front of the other.
- The body should be as close as possible to the object and kneeling with a 90-degree angle of the legs.
- The back must remain straight, and lift should come from the leg muscles, not the back.
- To lower the object the above procedure is reversed, watching out for toes and fingers.
- When lifting gear is used, it must never be overloaded, and the operator must never move underneath the object.

21.2.2 Fires

Causes of fires are inflammable liquids, faulty electrical wiring and connections, ignition sparks of static electricity, smoking in "no smoking" zones, negligence with cigarette ends and matches, oil-sodden rags, waste, and other materials.

Safety Warning!
Workers should be familiar with fire hazards and causes, and they should be trained in fire prevention and fire-fighting methods. Such training is the duty of the supervisor.

There are three basic elements for fire: heat, fuel, and oxygen.

If any of these elements is absent, there can be no fire. It is difficult to remove the fuel from a fire, but the fire can be isolated from other fuels.

The oxygen is removed if the fire is smothered by sand, foam, or carbon-dioxide. The instructions on the fire-extinguisher must be read and understood before use.

There are different types of extinguisher for different kinds of fire. It is obviously better to prevent a fire than to extinguish it.

The following are a few useful fire prevention hints:
- Keep the area clean of waste.
- Store inflammable liquids in containers in properly marked and ventilated stores.
- Do not allow oil-sodden rags and other inflammable material to accumulate.

Other points to keep in mind:
- Make sure that the fire-extinguishing system is in good operating condition.
- Make sure that the exits are clearly marked and that they are never blocked or obstructed.
- Draw up a fire-escape route and be sure that everybody knows it.
- Train the workers to be on the alert for fire hazards and to bring unsafe conditions to the supervisor's attention.

21.2.3 Slip and fall

These accidents can happen anywhere. The following are a few typical causes:
- Running.
- Loose objects like pipes and pencils on the floor.
- Ice, wax, oil, or other slippery materials on the floor.
- Small obstacles like waste baskets and open drawers.
- Heels catching the edges of carpets in lifts and elsewhere.
- Unsuitable shoes.
- Negligent horse-play.
- Leaning back on the rear legs of a chair.
- Unsafe ladders and stairs.

Did you know?

	Slip-and-fall accidents can be reduced if workers do not over worry, if they stop day-dreaming, sit properly, walk at a reasonable pace, and avoid running.

21.2.4 Electric shocks

The main causes of electric shocks are:

- Failure to wear rubber gloves when working on electrical wiring.
- Failure to identify unsafe conditions.
- Working too close to power circuits.
- Irresponsible behaviour around power circuits.
- The principles of electrical safety include the following:
- One should always be on the alert and report dangerous conditions, and switch off machinery when not in use.
- The assumption that any wiring is live.
- The awareness that shocks are caused by the amperage and not the voltage. This means that low- voltage cables (eg 110 volts) can give fatal shocks.
- Checking that the power is switched off before working on electrical circuits.
- The use of thick rubber gloves when working on wires and circuits.
- Care with frayed electrical wires.
- Checking that machines are properly earthed.

21.2.5 Machines and tools

Much can be done to reduce the percentage of accidents with machines and tools.

- Machines must have guards over the moving parts that can cause accidents.
- Starting buttons should be placed in such a position that the operator has to take both his hands away from moving parts to switch the machine on or off.
- Machine covers, canopies and channels are necessary to keep toxic fumes away from the operator.
- Personal protective equipment like goggles, hard hats, safety shoes, rubber aprons, and gloves must be worn.
- Tool injuries are normally not serious. Training in the handling of tools can greatly reduce the occurrence of this type of accident. Tools must be used only for the purpose for which they are designed, and must be kept in a good working condition.
- The supervisor must obtain the co-operation of the workers and set the example himself. The workers must be trained properly, especially in emergency stops ("on" and "off' controls).

21.2.6 Housekeeping

Good housekeeping and a good safety record go hand in hand. Accidents will happen in untidy, confined workshops more often than in tidy, spacious workshops.

Safety Warning!
Rubbish and waste not only are unsightly, but also can obstruct fire-escape routes, fire extinguishers, and alarms. Accumulations of oil-sodden rags can easily cause fires. Pens, pipes, pipelines, cans, waste baskets, and open drawers can cause people to fall.

21.2.7 Non-work-related accidents

Although motor-cars are the main cause of non-work-related accidents, the following are other significant causes:

- Falls
- Fires
- Suffocation
- Poisoning
- Drowning
- Falling objects
- Electric shocks
- Fire-arms

Note:
If a worker is injured outside the working environment, his work will be affected just as much as it would have been had the accident occurred at work

21.3 Accident investigations

In the investigation of an accident, what happened must be determined, as well as where and why it happened.

When an accident is investigated, the name of the injured person, the date of the accident, the occupation of the injured person, a description of the accident, an identification of the danger, and the corrective measures should be recorded in the report.

21.4 Safety programme

A safety programme starts with the analysis of the causes of every reported accident. Each one is analysed according to the nature of the accident, the main causes, the hidden causes, and the suggested corrections.

From the investigation, a plan can be formulated to counteract the types of accident that happen most frequently and those that are the most. serious.

The responsibility for the execution of the plan falls to the managerial, and supervisory levels.

Finally, a follow-up routine has to be decided on to determine whether the objectives have been achieved. The supervisor plays an important role in the successful execution of the plan.

Think about it!
Safety programmes can take many forms, including classroom education, suggestion boxes, emphasis of protection procedures, meetings, discussions, messages, and competitions.

The workshop layout must be such that everybody inside, including those who are passing through, will be safe.

Note:
Safety posters are effective only if they are changed regularly.

21.5 Results of accidents

- Lost time of workers.
- Lost time of fellow workers who stop working because of curiosity, sympathy, or to offer assistance.
- Lost time of supervisors who assist the injured person, investigate the causes of the accident, re-schedule work, train substitute workers, prepare accident reports, and investigations.
- Lost time of first -aid personnel.
- Damage to equipment.
- Negative influence on production.
- Payment of compensation to injured person.
- Lower production of injured person when he returns to work.
- Loss of profits because of stopped equipment.
- Lowered morale of workers.

21.6 Frequency and seriousness of accidents

Frequency is expressed as the number of accidents per time unit, for example 4 per 1 000 000 man hours.

Seriousness is expressed as lost time per time unit, for example 78 hours per 1 000 000 man hours.

21.7 Safety clothing

With regard to safety clothing, a supervisor should abide by the following:

- Offer a selection, if possible.
- Allow the worker to choose from a variety and help him to make a choice.
- Set an example in the wearing of safety clothes.
- Make use of the older workers' assistance and the informal leaders' assistance when deciding on safety clothing.
- Stubborn cases should be forced to wear safety clothing.

21.8 Safety Committees

When dealing with safety committees, the supervisor should use the following hints:

- Give the committee certain tasks to perform
- Expect results from the committee.
- Allow members to participate in accident investigations.
- Delegate duties.

21.9 Drawing up safety rules

The supervisor should take note of the following guidelines when draughting safety rules:

- Set new safety-record targets.
- Purchase safety equipment and clothing.
- Create a feeling of pride in safe work
- Develop a better safety programme.
- Elaborate on the safety theme.
- Dismiss unsafe workers who will not co-operate.
- Negotiate with insurance companies.
- Hold regular safety meetings.
- Investigate all accidents.
- Join and be active in safety organisations.
- Maintain a high standard of safety.
- Lay the workshop out with safety in mind.
- Post safety information to the home addresses of the workers.
- Nominate key workers for safety committees.
- Avoid sluggishness in safety.
- Praise safe workers and award prizes to them in public.
- Study accident figures.
- Communicate with workers and management about safety activities.
- Emphasise safety everywhere, not only at meetings.
- Train the workers in safety.
- Make use of safety posters, film shows, literature, and other aids.
- Investigate the safety programmes and procedures of other companies.
- Encourage and study safety suggestions.
- Mark all the places where accidents have already happened.
- Develop safety competitions, both departmental and inter -departmental.
- Protect the safety record and aim to improve it.

Activity 21.1

1. Except for the compensation a worker might receive after an accident, what other losses can the company suffer?
2. As a foreman, you are instructed to draw up a safety programme for your department. Explain, in not more than one page, how you will go about your task.

3. "The prevention of an accident is better than coping with the consequences". Discuss this theory briefly and say how you would go about putting it into practice.
4. Which five precautionary measures must you enforce at work?

Self-Check

I am able to:	**Yes**	**No**
• Describe the causes of accidents		
• Describe accident investigations		
• Describe safety programmes		
• Describe the results of accidents		
• Describe the frequency and seriousness of accidents		
• Describe safety clothing		
• Describe safety committees		
• Explain the drawing up of safety rules		

If you have answered 'no' to any of the outcomes listed above, then speak to your facilitator for guidance and further development.

Past Examination Papers

higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

August 2014

NATIONAL CERTIFICATE

SUPERVISORY MANAGEMENT N4

(4110504)

6 August (Y-Paper)
13:00 – 16:00

This question paper consists of 7 pages.

TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Start each question on a NEW page.
4. Number the answers according to the numbering system used in this question paper.
5. Keep subsections of questions together.
6. Write neatly and legibly

QUESTION 1: THE SUPERVISOR

1.1 The executive should spend about 80% of working time doing management work. Even at the first supervisory level, 40% of the time should be spent on management work.

With the temptation in mind to perform too much technical work, how can you best build a productive team? (4)

1.2 When the natural leader does not change his/her natural leadership style, problems or symptoms may occur.

State the SIX problems or symptoms that could occur. (6)

[10]

QUESTION 2: PLANNING

2.1 It is generally accepted that forecasting is an art, not a science, and it is difficult to predict the state of the economy, or an organisation's probably situation, with a great degree of accuracy in the future. However the better the forecasting, the better the plans will be.

State FIVE steps to be taken when forecasting (5 x 1)

2.2 Indicate whether, the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (2.2.1-2.2.5) at the ANSWER BOOK.

2.2.1 Planning is not an intellectual activity.

2.2.2 Planning reduces the chances of overlapping.

2.2.3 Research shows that companies that decrease their personnel take longer to re-establish their position in a competitive market if the economy should later recover.

2.2.4 The amount of attention that is devoted to a specific task need not correspond with the size and complexity of the specific task or objective to be attained.

2.2.5 People tend to oppose change if the change is gradual. (5 x 1) (5)

[10]

QUESTION 3: ORGANISING

3.1 Organising is a management function which deals with arranging activities and resources by allotting duties, responsibilities and authority to people, and the determination of relationships between them to promote collaboration and (4)

to achieve the objectives of the undertaking as effectively as possible (Van der Westhuizen, 1991: 162).

Name the FOUR Principles that form the core of organising.

3.2 A supervisor should supervise only as many people as he can control. The maximum number of subordinates over whom a supervisor can supervise depends on four factors. (4)

Name these FOUR factors.

3.3 Line organisation is the simple structure and foreseeable basic framework from where other types of structures can be built. (2)

State TWO characteristics of a line organisation.

[10]

QUESTION 4: LEADING

4.1 Decision making is regarded by many researchers as the most important management action. It involves mainly choosing between various alternatives.

4.1.1 What must a supervisor do before making a decision? (2)

4.1.2 Define *decision making* according to Allen. (3)

4.2 Complete the following sentences by filling in the missing word(s). Write only the words next to the question number (4.2.1-4.2.5) in the ANSWER BOOK. (12)

The purpose of communication is to:

4.2.1 Ensure flow of ... by conveying messages.

4.2.2 Publicise planning and ...

4.2.3 Ensure effective ... of the organisation.

4.2.4 Inform ... about what should be done and how it should be done as well as when it should be done, in order to ensure effective delegation.

4.2.5 Ensure the effective ... of various tasks. (5)

4.3 Most modern working environments satisfy the basic needs of their workers, because there are minimum wage laws, generally good working conditions, ever-increasing benefit packages and legal protection against injustices. (5)

There is an agreement that psychological needs are the most fertile ground for any motivational effort.

Name the other FIVE psychological needs. (5 X 1)

[15]

QUESTION 5: CONTROLLING

5.1 Name and explain the THREE principles of controlling. (6)

5.2 The control process follows four sequential steps. (4)
Name the FOUR steps in their correct sequence.

[10]

QUESTION 6: TRAINING

Complete the following paragraph filling in the missing word. Write only the missing word(s) next to the question number (6.1 - 6.10) in your ANSWER BOOK.

In on-the-job training the instructor (supervisor or a designated experienced non-supervising employee) must break down the (6.1) … to be learnt into meaningful packages and present them to the employee in a systematic sequence.

On-the-job training has the following advantages:

It (6.4), the trainee to learn on the (6.5) … equipment and in the environment of the job. There is a actual feeling of (6.6) … because the trainee produces useful products. It is (6.7) … for the employer, because only a few get the training. Knowledge and skills can be learnt in a relatively (6.8) … time. A great depth of (6.9) … can be acquired as compared to a (6.10) … situation. (10 x 1)

[10]

QUESTION 7: FINANCIAL COMPENSATION

Explain the following types of incentive pay plans:

7.1 Measured daywork system

7.2 Standard time plan

[10]

QUESTION 8: QUALITY CONTROL

Quality is a measure of the degree to which a process, product or service conforms to the requirements that have been established for it. Billions of rands are lost to poor quality. **[5]**

Explain the *corrective type of costs*.

QUESTION 9: LABOUR RELATIONS AND DISCIPLINARY CODES

9.1 Workers in any organisation perform a variety of tasks and work under different circumstances. It is therefore difficult to satisfy all workers in such circumstances or to keep them satisfied. (5)

Distinguish between a grievance and the grievance procedure.

9.2 Complete the following paragraph by filling in the missing word(s). Write only the missing word(s) next to the question number (9.2.1-9.2.5) in the ANSWER BOOK. (5)

The application of discipline is a fundamental (9.2.1) . . . and management responsibility. It can rightly be required of supervisors and managers to develop the necessary knowledge and skills, in order to accomplish this important management function effectively. The right to exercise discipline, however, does not authorise management to (9.2.2) . . . unfairly, inconsistently, or arbitrarily. Moreover, the purpose of discipline is not to punish a worker, but to help a worker to overcome (9.2.3) ... with respect to behaviour or work achievement. Only when attempts to reach this are not successful, or when (9.2.4) ... is so serious that it cannot reasonably be expected of an employer to retain an employee, (9.2.5) ... is considered.

[10]

QUESTION 10: LOSS CONTROL AND INDUSTRIAL HOUSEKEEPING

10.1 What is plant housekeeping? (2)

10.2 Why is housekeeping important and desirable. (4)

10.3 Give FOUR basic methods that a supervisor or employer could use to prevent accidents. (4)

[10]

TOTAL: 100

Marking Guidelines

higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

AUGUST 2014

NATIONAL CERTIFICATE

SUPERVISORY MANAGEMENT N4

(4110504)

QUESTION 1

1.1
- Train your people, counsel and coach them, so that they may take over more and more of the technical work.
- When you perform planning and controlling work, try to get the people who will carry out the plans and exercise the control to do as much as possible of the work.
- This will ensure a high degree of participation, so that people have a feeling of ownership and will strive to make their plans succeed.
- In doing so, they are also taking the monkey off your back. (4)

1.2
- Dissatisfaction amongst personnel
- Work impoverishment takes place
- Interest in work declines
- Rising costs as opposed to lower productivity
- A high personnel-turnover occurs
- Decision-making time lengthens (6)

[10]

QUESTION 2

2.1
- Identify the critical factors (money, customer demands, old or new product, et cetera) that will influence the end result.
- Gather enough information to know what happened in the past and why it happened.
- Arrange your assumptions from the 'worst case', 'best case' and 'most likely' options. (After a good brainstorming session).
- Communicate the progress at regular planning meetings - people will want to know what became of the ideas they contributed.
- Prepare for adaption in case your forecasting diverges from the reality. (5)

2.2.1 False

2.2.2 True

2.2.3 True

2.2.4 False

2.2.5 False (5)

[10]

QUESTION 3

3.1 Principle of goals.
- Principle of specialisation.

- Principle of span of control.
- Principle of management accentuation. (4)

3.2
- The nature of the work that must be done, in other words, the variety as well as the intricateness thereof.
- The area over which the subordinates are spread, in other words, how far they are placed from one another.
- The supervisor himself, in other words, does he have the ability to lead, to inform and to control people.
- The type of subordinates that the supervisor must control, are they qualified, disciplined, et cetera? Fully qualified subordinates, for instance, require less supervision and to a great extent, this relieves the work load of the supervisor. (4)

3.3
- Authority is vested in one person and staff only receive instructions from the head and report back to him.
- One person is in control of a particular task or instruction.
- Lines of authority are clear and each person's task is clearly outlined as well as the responsibilities of each. (Any 2 x 1) (2)

[10]

QUESTION 4

4.1.1
- The supervisor or leader should diagnose the situation and
- The various ways of acting. (2)

4.1.2
- The work managers supervisors perform
- To reach the conclusions and judgement
- Necessary for people to act, (3)

4.2.1 information

4.2.2 objectives

4.2.3 functioning

4.2.4 people

4.2.5 co-ordination (5 x 1) (5)

4.3
- recognition
- status
- affiliation
- esteem
- inclusion
- pride of accomplishment
- control of own work
- challenge-
- opportunity to contribute

- forms of power (Any 5 x 1) (5)

[15]

QUESTION 5

5.1
- The principle of critical few.
  'In any given group of occurrences, a small number of causes tend to give rise to the largest proportion of results.'
- The principle of point of control.
  'The greatest potential for control tends to exist at the point where the action takes place.'
- The principle of self-control.
  'Self-control tends to be the most effective control.' (3 x 2) (6)

5.2
- Establishment of standards
- Collect data to measure performance
- Compare results with standards (evaluation)
- Take corrective action (4 x 1) (4)

[10]

QUESTION 6

6.1 material
6.2 demonstrates
6.3 corrections
6.4 permits
6.5 actual
6.6 accomplishment
6.7 cheaper
6.8 short
6.9 theory
6.10 classroom (10 x 1) **[10]**

QUESTION 7

7.1
- This involves simply a fixed rate of pay by the hour for a defined and agreed standard of daily performance.
- Work measurement is used to establish the time standards for each job.
- Provided that the worker meets the targets set, he is guaranteed a regular weekly wage; if he fails consistently to reach the required standard, the worker is transferred to a less demanding job at a lower rate of pay.
- There is no incentive to exceed the predetermined level of output.
- Thus the workers on measured daywork system can either 'spin the work out', as the day wears on, or cease work altogether when they have done their quota for a day.

(5)

7.2
- With the influence of scientific management, management began to look for 'more efficient' methods of working and offered to pay, not what had been agreed upon as the price for the job,
- but what was a 'fair' price based on some technique such as work study or time measurement.
- We can now not only fix a rate per piece, but an acceptable rate of production also.
- This 'acceptable rate' is called the 'standard time'and attracts a 'base rate payment'.
- This plan is essentially the same as piecework with a guaranteed minimum, with the exception of the fact that the standard is expressed in time instead of money. (5)

[10]

QUESTION 8

This is money down the drain for any of the following reasons:

- Damaged parts and materials that must be scrapped or reworked.
- The time and effort of redoing poor work.
- The cost of warranties that presume errors will be made that must be corrected later; and
- The cost of handling customer complaints.

Corrective quality is by far the most costly approach to quality problems (2 - 1 0%) of sales revenue. **[5]**

QUESTION 9

9.1 A grievance can be defined as:
- Any aspect of the work with which the workers is unhappy.
- Or in respect of which he feels that he is being offended.
- This grievance is brought to the notice of management.

A grievance procedure is merely the procedure:
- Which a worker must follow in order to bring his grievances to the notice of management. (5)

9.2
9.2.1 supervisor
9.2.2 act
9.2.3 shortcomings
9.2.4 misconduct
9.2.5 punishment (5 x 1) (5)

[10]

QUESTION 10

10.1
- Plant housekeeping means a place for everything and
- Everything in its place all the time. (2)

10.2
- It cuts down the time spent looking for goods, articles and tools.
- Space is saved when everything is stacked away tidily.
- Injuries are avoided when gangways and working areas are kept clear of superfluous materials.
- Fire hazards are reduced if combustible materials are kept in proper receptacles. (4)

10.3
- Engineering revision
- Education and training
- Employment practices
- Example setting
- Enthusiasm
- Enforcement (4)

[10]

TOTAL: 100

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Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

APRIL 2014

NATIONAL CERTIFICATE

SUPERVISORY MANAGEMENT N4

(4110504)

9 April (Y-Paper)
13:00 – 16:00

This question paper consists of 7 pages.

TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Start each question on a NEW page.
3. Read ALL the questions carefully and answer only what is asked.
4. Number the answers according to the numbering system used in this question paper.
5. Keep subsections of questions together.
6. Write neatly and legibly

QUESTION 1: THE SUPERVISOR

1.1 Mental and physical effort are used to convert natural resources and materials to real wealth with the aid of tools and machines. Technical work is applied directly to those resources. (5)

Draw a diagram which illustrates the way in which most supervisors manage their time.

1.2 The management leader in a company distinguishes between decisions that he/she must make himself/herself and aspects over which his/her subordinates can make decisions. He/she creates a climate in which delegation is purposefully applied in order to get the work done. The necessary authority and responsibility to make decisions are delegated to the level where the work, which is affected by the decision, is done. (1)

1.2.1 What type of leader is the above person? (1)

1.2.2 State FOUR other characteristics that the type of leader, mentioned in QUESTION 1.2.1 would typically display. (4)

[10]

QUESTION 2: PLANNING

2.1 According to Allen (1964:122) the definition of a goal is the starting point of management activity. A supervisor wanting to manage effectively must have clearly defined goals. (5)

State FIVE guidelines that you would apply to goals that you set as supervisor.

2.2 A standard is a specific performance goal that a product, a service, a machine, an individual or an organization is expected to meet, in other words, the criteria by which work and results are evaluated. (5)

State FIVE requirements of a standard.

[10]

QUESTION 3: ORGANISING

3.1 An organisation could be simply described as a specific structure or framework, which makes provision for the pursuit of certain common goals by people who find themselves in a relative position to one another. (5)

Give FIVE characteristics of organising.

3.2 Name TWO major characteristics of a formal organisation. (2)

3.3 Work which you give to your subordinates must, as far as possible, be relevant to their abilities, training and interest. Therefore, give work to the person who, at a given moment, is the best qualified for it. (3)

The quality of work will be much better if it falls within the abilities of the subordinate, if he/she had the necessary training to do it and if he/she is interested in what he/she has to do.

State THREE beneficial situations ensured by specialization.

[10]

QUESTION 4: LEADING

4.1 A primary fact that determines the success if a leader is the timing and quality of his/her decisions. Problem solving and decision making are interrelated and part of the same process.

Most decisions are made to solve problems and as most problems have a host of possible solutions, a decision has to be taken as to which solution to adopt. In many ways problem solving is decision making.

4.1.1 Describe what is a problem. (2)

4.1.2 What causes a problem? (1)

4.1.3 Describe how to recognize a problem. (2)

4.2 Complete the following sentences by writing only the missing word next to the question number (4.2.1 – 4.2.5) in the ANSWER BOOK.

4.2.1 Communication begins with the …

4.2.2 The information is transmitted over a …

4.2.3 Verbal communication may be … or oral.

4.2.4 Non-verbal communication may be made by … expressions, body language, eye contact, gestures and appearance. (5)

4.2.5 To accomplish improved communication, an effort should be made to create … (5)

4.3 Choose a description from COLUMN 8 that matches a need in COLUMN A. Write only the letter (A-E) next to the question number (4.3.1-4.3.5) in the ANSWER BOOK. (5)

COLUMN A	COLUMN B
4.3.1 Physical or survival needs 4.3.2 Safety and security needs 4.3.3 Social needs 4.3.4 Ego or esteem needs 4.3.5 Self-realisation needs	A Once the human being's most important physical needs are satisfied to at least a minimum and continuing degree, this is the next type of needs that become dominant. B These needs are also known as the belong and love needs. C As long as needs upon which health depends are unsatisfied, a person shows little interest in the other four types of needs. D These needs are aimed at self-fulfillment, the desire to become one's best self, to realize one's capabilities to the fullest. E The individual, whose physical needs, security and belonging and love needs are satisfied, becomes concerned with the needs for self-respect and respect from others.

[15]

QUESTION 5: CONTROLLING

5.1 Describe the basic purpose of controlling. (8)

5.2 What is meant by 'the principle of the critical few'? (2)

[10]

QUESTION 6: TRAINING

Complete the following sentences by writing only the missing word(s) next to the question number (6.1-6.1 0) in the ANSWER BOOK.

According to Bittel (1990:219), there are two major ways to identity (6.1) ... needs, which are gaps between (6.2) ... and actual performance.

These two ways of training, (6.3) ... and (6.4) ..., are both potentially useful.

Informally you should be alert for the following conditions

- Too much (6.5) ...
- Below-standard (6.6) ... rates
- Out-of-line (6. 7) ... costs
- A high (6.8) ... rate
- Excessive (6.9) ... and even a general state of poor (8.10) .... (10 x 1)

[10]

QUESTION 7: FINANCIAL COMPENSATION

The following are examples of kinds of benefits and services commonly found in organisations: pension, life insurance, hospitalization, etc.

Give TEN reasons why a company would adopt benefit and service programs. **[10]**

QUESTION 8: QUALITY CONTROL

Quality is the measure of degree to which a process, product or service conforms to the requirements that have been established for it. It is expected of supervisors to ensure, that mistakes are not made 1n the first place.

Briefly describe FIVE guidelines that should govern a supervisor's approach to quality.

[5]

QUESTION 9: GRIEVANCE PROCEDURE AND DISCIPLINARY CODE

9.1 Any organisation has a number of workers who perform a variety of tasks and who work under many different circumstances. Consequently it is difficult to satisfy all workers in such circumstances or to keep them satisfied. Management must therefore be mindful of this and be prepared for workers who have grievances or who can develop grievances. (6)

Explain what is meant by a grievance procedure.

9.2 Without the maintenance of proper discipline, good personnel management and the most favourable utilisation of personnel, productivity is just not possible. (4)

State FOUR basic methods of disciplinary action that an enterprise may apply.

[10]

QUESTION 10: LOSS CONTROL AND INDUSTRIAL HOUSEKEEPING

The following situations are caused either by the employer or the workers. Write only 'Employer' or 'Worker' next to the question number (10.1 - 10.10) in the ANSWER BOOK.

10.1 Working at unsafe speeds

10.2 Working without authority

10.3 Unsafe construction

10.4 Failure to secure machinery and materials

10.5 Rendering safety devices inoperative

10.6 Unsafe lighting

10.7 Arranging or placing objects unsafely

10.8 Fooling, teasing, abusing workmates

10.9 Lack of machine and other safety guards

10.10 Using equipment unsafely or using limbs instead of equipment supplied (10 x 1) **[10]**

TOTAL: 100

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Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

APRIL 2014

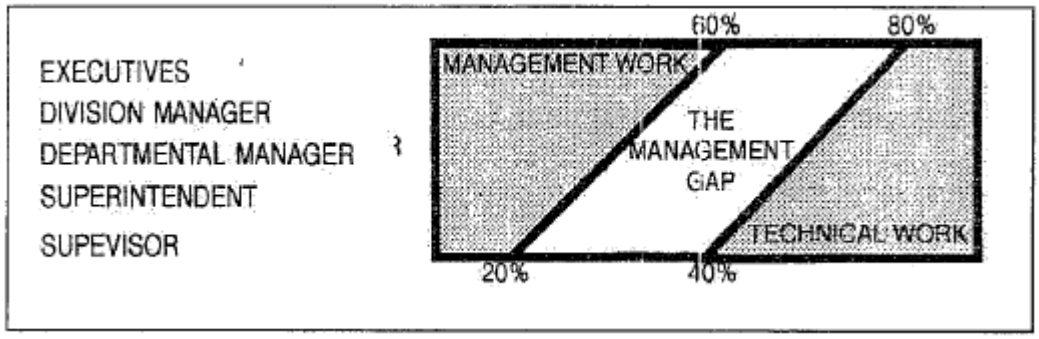
NATIONAL CERTIFICATE

SUPERVISORY MANAGEMENT N4

(4110504)

QUESTION 1

1.1 (5)



A TYPICAL WAY OF MANAGING TIME

1.2.1 Leader who manages scientifically (1)

1.2.2 (4)
- Specialises in management work
- Acts logically
- Promotion of group interests
- Maintains effective communication
- Controls by means of exception
- Organises rationally
- Decentralises authority (Any 4 x 1)

[10]

QUESTION 2

2.1 Goals should be: (5)
- Generally understood
- Concrete and specific
- Acceptable to those involved
- Balanced
- Achievable

2.2 A standard should be: (5)
- Realistic - not too high or too low
- Practically acceptable to those who have to carry out the task
- Measurable (time, rate, tolerance, etc.)
- Flexible and adjustable
- Based on planning and should be related to objectives, programmes, schedules, budgets, policy, regulations and procedures

[10]

QUESTION 3

3.1 (5)
- It is concerned with grouping of tasks (the division of work) in such a way that planning is affected.

- It is concerned with allocating duties, authority and responsibility without abdicating final responsibility.

- It is concerned with determining relationships between various people to promote collaboration by means of co-ordination and job and duty descriptions.

- It is concerned with a common effort to achieve set goals.

Organizing is in essence, intellectual work or work that involves thought processes which carry out the planning process and therefore involves desk work.

3.2
- Well-defined structure
- Precisely identified beginning
- Longer life span
- Membership (by choice)
- Definite aims
- Division of work

(2)

3.3
- A high level of proficiency will be maintained.
- Maximum effectiveness will be attained and .
- Resources will be applied economically .

(3)

[10]

QUESTION 4

4.1.1
- A problem can be described as a disturbance of an unsettled matter that demands a solution for productive functioning of an organisation.
- It is an obstacle that stands in the way of achieving an objective.

(2)

4.1.2 Change (1)

4.1.3 You find a problem by spotting a gap (deviation or change) between the actual and expected performance. (2)

4.2.1 Sender

4.2.2 Channel

4.2.3 Written

4.2.4 Facial (5)

4.2.5 Understanding (5 x 1) (5)

4.3 4.3.1 C
4.3.2 A
4.3.3 B

(5)

4.3.4 E
4.4.5 D

[15]

QUESTION 5

5.1 The basic purpose of controlling is to ensure that: (8)

- Employees are at work on time
- Materials are not wasted or stolen
- Some persons do not exceed their authority
- Helps to guide you and your department to production goals and quality standards
- Managers realise planning
- Managers evaluate planning
- Managers make the necessary adjustments
- Managers establish if the actual activities are the same as the planned activities

5.2 'The principle of the critical few' (2)
In any given group of occurrences, a small number of causes tends to give rise to the largest proportion of results.

[10]

QUESTION 6

6.1· Training
6.2 Expected
6.3 Informal
6.4 Formal
6.5 Scrap
6.6 Production
6.7 Operating
6.8 Accident
6.9 Overtime
6.10 Morale (10 x 1)

[10]

QUESTION 7

- A primary reason is competition for employees.
- The companies providing these benefits and services soon become known as 'good' workplaces. In order to recruit and retain workers, other companies do likewise.
- Some kinds of benefits are established to recruit and retain certain kinds of personnel.
- It is an investment by a company to spend money for the development of professional talent.
- This should pay off in the long run in improved performance.

- Some benefits are provided by employers because of a concern for the welfare of their employees.
- Health insurance plans offered by insurance companies are designed primarily for groups, thus lower costs.
- Enlightened self-interest is a motivating force.
- Employers know that prompt and proper medical treatment of illnesses yields a healthier work force.
- Top management feels that these programs will enhance employee morale, generate greater loyalty towards the firm, and thus provide a positive public relations image. [Beach, 1985:556/7] (10 x 1)

[10]

QUESTION 8

FIVE guidelines for a supervisor:

- Quality must be built into a product. It cannot be done through inspection.
- Refuse to allow commonly accepted levels of delay or of mistakes, defective material or defective workmanship.
- Search continually for problems and seek ways to improve the system.
- Focus supervision on helping people to do a better job.
- Provide the tools and techniques that will enable people to have pride in their workmanship.
- Eliminate fear and encourage two-way communication.
- Break down barriers between departments. Encourage problem solving through teamwork.
- Implement a vigorous program of education and training to keep people abreast of new developments in materials, methods and machinery.

(Any 5 x 1)

[5]

QUESTION 9

9.1 A grievance procedure: (6)

- A grievance procedure is merely the procedure which a worker must follow in order to bring his/her grievances to the notice of management.

- A grievance procedure assumes that management is prepared to listen to workers' grievances, and affords every worker the opportunity to approach management with his/her grievances, without fear of intimidation, discrimination or harm.

- A grievance procedure further says that each worker can depend on it that his/her grievances, where necessary, will receive attention at management level.

- A grievance procedure explains, point by point, what path a worker must follow.

- It therefore creates a channel for communication from the worker to management, a so-called upwards communication channel.

9.2 FOUR basic methods of disciplinary action: (4)

- An oral warning
- A written warning which is kept on the offender's personal file
- A temporary suspension
- Dismissal

[10]

QUESTION 10: LOSS CONTROL AND INDUSTRIAL HOUSEKEEPING

10.1 Worker
10.2 Worker
10.3 Employer
10.4 Worker
10.5 Worker
10.6 Employer
10.7 Worker
10.8 Worker
10.9 Employer
10.10 Worker

[10]

TOTAL: 100

Past Examination Papers

higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

APRIL 2013

NATIONAL CERTIFICATE

SUPERVISORY MANAGEMENT N4

(4110504)

9 April (X-Paper)
09:00 – 12:00

This question paper consists of 6 pages.

TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each question on a NEW page.
5. Keep ALL questions and subsections of questions together.
6. Write neatly and legibly

QUESTION 1

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number {1.1-1.20) in the ANSWER BOOK.

1.1 Supervisors do not report directly to executive managers.

1.2 The natural leader organises rationally.

1.3 Planning is an intellectual activity.

1.4 Objectives are usually formulated for the short term

1.5 The timing and quality of his/her decisions' determine the success of a supervisor.

1.6 Responsibility refers to the person's duty to give an account of having executed his/her work in terms of set criteria and determined standards.

1.7 Routine problems are problems that occur infrequently.

1.8 One of the purposes of communication is to make planning and objectives known.

1.9 A person is completely happy when his/her physical and security needs as well as needs to belong and to be loved are satisfied.

1.10 A supervisor who exercises direct control does not gain the trust of his/her subordinates.

1.11 Corrective control takes place during work operations.

1.12 The purpose of education is to develop the individual.

1.13 During role play trainees have to memorise lines and rehearse.

1.14 Under the piecework system workers are paid a fixed amount for each item produced, regardless of the time taken to do the work.

1.15 Fringe benefits form part of the regular remuneration of an employee.

1.16 Quality must be defined in specific terms.

1.17 The employer initiates a disciplinary procedure.

1.18 A grievance procedure can be defined as an action on the part of management aimed at stopping the employee's disruptive behavior.

1.19 An example of an unsafe situation is when an employee takes chances.

1.20 An accident is an undesired event that results in physical harm to a person and/or damage to property. (20 x 1)

[20]

QUESTION 2: INTRODUCTION TO SUPERVISION

2.1 A supervisor is a member of a team ~nd de&ls with various groups of people. (4)

Briefly state these groups of people.

2.2 As a supervisor you need to manage resources in the most effective way. To accomplish this-you need to carry out certain activities. (4)

State the activities of the management process.

[8]

QUESTION 3: PLANNING

There are various principles of planning which can assist the supervisor to plan more effectively. **[8]**

Name EIGHT general principles of planning.

QUESTION 4: ORGANISING

To be an effective supervisor you need to delegate duties and responsibilities to your subordinates. **[8]**

State the different steps in the process that you as supervisor need to follow to achieve effective delegation in your department.

QUESTION 5: LEADING

5.1 Explain problem solving and decision making in terms of who makes decisions, the aims of the organisation, the success of the leader and the relationship between problem solving and decision making. (4)

5.2 Briefly state FOUR points to keep in mind to rectify a breakdown in communication in your department and to create understanding. (4)

5.3 5.3 Complete the following sentences regarding Herzberg's two motivational tracks by writing only the missing word next to the question number (5.3.1-5.3.4) in the ANSWER BOOK. (4)

Herzberg says that every human being has two motivational tracks. On a lower level people are motivated by hygiene, (5.3.1) ... and care factors. These factors physically maintain the existing physical situation, but do not motivate. If they are not present in the workplace, an employee will be dissatisfied and may look for another job that will provide these factors. They are called (5.3.2) ... motivators.

He says that people are motivated on a higher level by motivators which are embodied in the work itself. These motivators (or intrinsic factors) urge the workers towards better (5.3.3) . . . . Herzberg calls the job factors that provide genuine, positive motivation (5.3.4) ... .

[12]

QUESTION 6: CONTROLLING

The controlling process requires continuous corrective action.

Draw a diagram showing a simple feedback process in the control of any operation.

[10]

QUESTION 7: LABOUR RELATIONS

7.1 One of your employees started a fight with a fellow employee. (1)

Name the procedure that you would follow.

7.2 State SEVEN important points which should receive attention during the procedure mentioned in QUESTION 7.1. (7)

[8]

QUESTION 8: TRAINING

8.1 Name the TWO major ways according to Bittle of identifying training needs. (2)

8.2 Name any SIX organization and production problems. (6)

[8]

QUESTION 9: FINANCIAL COMPENSATION

Briefly discuss the major purposes of wage and salary programs. **[8]**

QUESTION 10: INDUSTRIAL HOUSEKEEPING

10.1 In terms of accident prevention, generally accepted percentage values are given for each of the following statements:

Write only the percentage next to the question number (10.1.1 – 10.1.4) in the ANSWER BOOK.

10.1.1 What percentage of all accidents can be prevented? (1)

10.1.2 What percentage of all occupation-related accidents are caused by unsafe acts? (1)

10.1.3 What percentage of all occupation-related accidents are caused by unsafe conditions? (1)

10.1.4 What percentage of all occupation-related accidents are caused by acts of providence? (1)

10.2 There are several basic methods that can be used to prevent or reduce accidents. (4)

State TWO such methods and give ONE example for each one.

[8]

QUESTION 11: QUALITY CONTROL

As supervisor you discover that your employees are not concerned about the quality of the products they produce. **[4]**

Briefly state FOUR ways in which you would attempt to rectify this situation.

TOTAL: 100

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APRIL 2013

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SUPERVISORY MANAGEMENT N4

(4110504)

QUESTION 1

1.1 True

1.2 False

1.3 True

1.4 True

1.5 True

1.6 False

1.7 False

1.8 True

1.9 False

1.10 True

1.11 False

1.12 True

1.13 False

1.14 True

1.15 True

1.16 True

1.17 True

1.18 False

1.19 False

1.20 True

[20]

QUESTION 2: INTRODUCTION TO SUPERVISION

2.1
- Own immediate supervisor
- Subordinates
- Colleagues
- Specialists

(4)

- Trade union representatives

2.2
- Planning
- Organising
- Staffing
- Activating/directing
- Controlling

(4)

[8]

QUESTION 3: PLANNING

- influence of present choice
- positive action
- concurrent action
- planning stability
- coordinated planning
- integrated planning
- continuous planning
- resistance to change
- critical minority

[8]

QUESTION 4: ORGANISING

- define the objectives
- determine and define responsibility, authority and accountability
- motivate subordinates
- clarify performance standards
- use the doctrine of completed work
- provide training and retraining
- determine suitable controls

[8]

QUESTION 5: LEADING

5.1
- Purposeful and effective planning depends on effective decision-making.
- Decisions are made by all people at all levels of society but we are dealing here with decision-making to achieve the aims of the organisation.
- A primary fact that determines the success of a leader is the timing and quality of his/her decisions.
- Problem-solving and decision-making are so interrelated that they are really part of the same process. Most decisions are made to solve problems which require decisions to adopt solutions. In many ways problem-solving is decision-making.

(4)

5.2
- Know what you want to say.
- Know your audience.
- Gain favourable attention.
- Promote understanding.

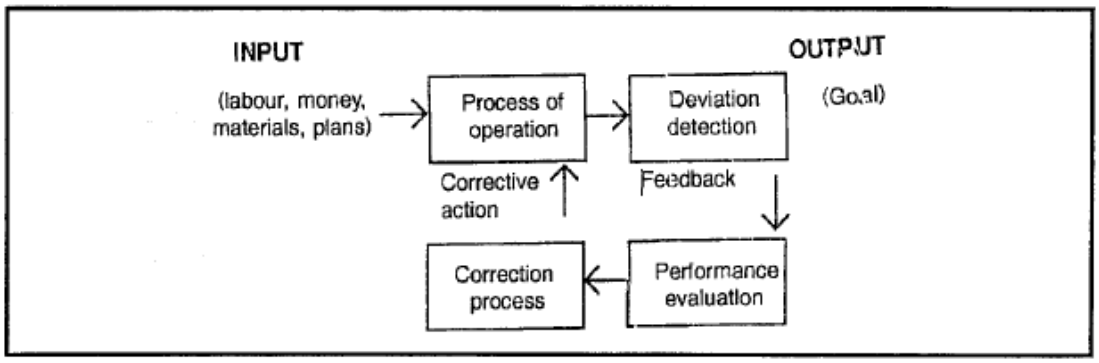
(4)

- Ensure retention and reproduction.
- Encourage feedback.
- Emphasise application.

5.3 5.3.1 maintenance (4)
5.3.2 external
5.3.3 achievements
5.3.4 satisfiers

[12]

QUESTION 6: CONTROLLING



Simple feedback

[8]

QUESTION 7: LABOUR RELATIONS

7.1 Disciplinary procedure (1)

7.2 (7)

- Ensure that all relevant persons are present or readily available.
- Ensure that the accused has been positively identified.
- Explain the procedure to the accused.
- Explain the rights of the accused to him/her and his/her representative.
- Ensure that the nature of the alleged offence and any written statements describing the events of the offence are made known to those present.
- Hear evidence in an orderly manner.
- Ensure that the accused understands all the evidence as interpreted .
- Summarise evidence to ensure adequate comprehension by all concerned.
- Allow the accused or his/her representative to ask questions of clarification to any witness.
- Allow the accused should he/she wish to call his/her own witnesses or to make a formal statement.
- Allow the employee's representative to introduce any evidence on behalf of the employee.
- Give the opportunity at any point during the proceedings to the employee and his/her representative to leave the enquiry to discuss the evidence presented.

- If the accused admits guilt, hear any pleas of mitigation before closing the enquiry. (Any 7x 1)

[8]

QUESTION 8: TRAINING

8.1
- Informal way
- Formal way

(2)

8.2
- Low productivity
- High costs
- Poor material control
- Excessive scrap and waste
- Excessive grievances
- Excessive violation of rules of conduct, poor discipline
- High employee turnover
- Delayed production, schedules not met
- High accident rate
- Excessive overtime (Any 6 x 1)

(6)

[8]

QUESTION 9: FINANCIAL COMPENSATION

- **To recruit people to the firm** **[10]**
- Firms must be reasonably competitive in their rates to entice job applicants.
- **To control payroll costs**
- Supervisors-are not allowed to pay employees above the job rate.
- **To satisfy people: To reduce quitting, grievances, and friction over pay**
- The salary must be fair and favouritism and discrimination should not play any part in the allocation of money.
- **To motivate people to superior performance**
- Those who produce more should be paid more.

QUESTION 10: INDUSTRIAL HOUSEKEEPING

10.1.1 98% (1)

10.1.2 88% (1)

10.1.3 10% (1)

10.1.4 2% (1)

10.2
- **Engineering revision**
- Improvements to guarding, work environment and work processes and
- procedures
- **Education and training**

(4)

- Proper job instruction techniques used to improve skills
- Training in safe work practices and procedures to change or reinforce attitudes
- General safety education
- **Employment practices**
- Selection of personnel to meet physical and mental demands
- Retrain those who are moved from one job to another
- Select and train personnel to perform new jobs
- **Example setting**
- Always set a good example for all to see by obeying safety rules
- **Enthusiasm**
- Leading in an enthusiastic way
- Acknowledging safety achievements
- **Enforcement**
- Discipline those who break safety rules

[8]

QUESTION 11: QUALITY CONTROL

- Sell the importance of quality to the workers **[4]**
- From day one stress quality as well as output
- Emphasise that quality and quantity go hand in hand
- Be specific as to what kind of work is acceptable
- Explain reason behind product or service quality limitations
- Show them the little tricks of the trade

TOTAL: 100

Past Examination Papers

higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NOVEMBER 2012

NATIONAL CERTIFICATE

SUPERVISORY MANAGEMENT N4

(4110504)

23 November (X-Paper)
09:00 – 12:00

This question paper consists of 4 pages.

TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Start each question on a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Keep subsections of questions together.
6. Write neatly and legibly

QUESTION 1: INTRODUCTION TO SUPERVISION

Bittel defines leadership as follows: 'Leadership is the knack of getting other people to follow you and to do willingly the things that you want them to do'. Describe FIVE characteristics of a natural leader. **[10]**

QUESTION 2: PLANNING

The programming process forms part of the planning process. Give a description of the programming process. **[10]**

QUESTION 3: ORGANISATION

Complete the following sentences by filling in the missing word(s). Write only the word(s) next to the question number (3.1 - 3.1 0) in the ANSWER BOOK. **[10]**

Organising is concerned with the grouping of (3.1) ... (division of work) in such a way that (3.2) ... is effected.

Organising is concerned with the (3.3) ... of duties, authority and responsibility without abdicating final (3.4) ....

Organising is, concerned with determining (3.5) ... between various (3.6) ... to promote collaboration by means of co-ordination, job and duty descriptions.

Organising is concerned with a common (3.7) ... to achieve set goals.

Organising is, in essence, (3.8) ... work or work that involves thought (3.9) ... which carry out the planning process and therefore involves (3.1 0) ... .

QUESTION 4: PROBLEM-SOLVING, COMMUNICATION AND MOTIVATION

4.1 Briefly state any FIVE aspects a supervisor needs to consider when they carry out problem-solving and decision-making systematically. (5)

4.2 A supervisor notices that there is a breakdown in communication in his/her department. Briefly state FIVE points the supervisor would keep in mind to rectify this situation and create understanding in the department. (5)

4.3 State FIVE points that a supervisor would use to design jobs for workers so that they are happy in their work. (5)

[15]

QUESTION 5: CONTROL

You notice that your workers do not like being controlled. How would you as their supervisor rectify this situation? **[10]**

QUESTION 6

6.1 Write the words that have been left out in the following definition of 'discipline'. Write only the answer next to the question number (6.1.1 - 6.1.5) in the ANSWER BOOK. (5)

'Discipline' can be, defined as an (6.1.1) ... , on the part of the (6.1.2) ... in control of a (6.1.3) ... system, which is aimed at (6.1.4) ... the trespassers' behaviour because it (6.1.5) ... to disrupt the functioning of the system.

6.2 Describe FIVE general rules that could apply to a grievance procedure. (5)

[10]

QUESTION 7: TRAINING

7.1 The only dependable way of training is systematic and structured. Define training. (2)

7.2 There are many ways of training people. The correct method depends upon the situation. Describe the FOUR steps in job-instruction-training. (8)

[10]

QUESTION 8: FINANCIAL COMPENSATION

8.1 Define the term wage. (4)

8.2 Fringe benefits means: 'something in addition to wages or salary that forms part of the regular remuneration from one's employment'. Name SIX types of benefits that employees receive besides payment in money. (6)

[10]

QUESTION 9: INDUSTRIAL HOUSEKEEPING

One of the major waste-causing agents is accidents which result in damage to equipment, property and in worker death or disablement. Give 10 examples of unsafe acts (NOT unsafe conditions). **[10]**

QUESTION 10: QUALITY

Explain the meaning of the terms *defect* and *rework*. **[4]**

TOTAL: 100

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QUESTION 1

Characteristics of a natural leader: **[10]**

- Emphasises technical work:
  As a result of previous successes as a technical specialist, the natural leader tends to carry on doing the same technical work when he/she is in the position as manager.
- Centralises decision-making:
  Natural leaders make most of the decisions for their groups.
- Takes intuitive action:
  Natural leaders tend to act first and think later.
- Communicates one-way:
  Natural leaders are concerned primarily with making others understand what they want and how they want it.
- Organises in terms of personalities:
  When natural leaders assign work to others, their primary concern is whether the person has the ability and skill to do the work, not whether that person is the logical one to do it.
- Controls by inspection:
  The natural leaders want to see everything themselves and they control by means of personal inspection. (Any FIVE)

QUESTION 2

The systematic planning process (programming): **[10]**

- Develop a master plan:
  This should focus on your main objective.
- Draw up supporting plans:
  This requires that you think about how each activity in your department can contribute to your master plan.
- Put numbers and dates on everything you can:
  Plans work best when employees know how much or how many are required of them.
- Pin down assignments:
  Responsibilities for carrying out each part of a plan or procedure should be assigned to a particular individual.
- Explain the plan to all concerned:
- The leader's/plan's rationale should be explained and the goals justified
- Review your plans regularly
  Your plans should be examined periodically to see whether they should be changed too.

QUESTION 3

3.1 Tasks **[10]**
3.2 Planning.
3.3 Allocating
3.4 Responsibility
3.5 Relationships

3.6 People
3.7 Effort
3.8 Intellectual
3.9 Thinking processes
3.10 Deskwork

QUESTION 4

4.1 **Identify the problem:** (5)

- Collect relevant information
- Establish the cause of the problem
- Determine alternative solutions
- Evaluate the pros and cons of the alternatives
- Choose the solution you think is best
- Plan of implementation
- Evaluate progress and results (Any FIVE)

4.2 **To improve communication and create understanding:** (5)

- Know what you want to say
- Know your audience
- Gain favourable attention
- Promote understanding and comprehension
- Ensure retention and reproduction
- Encourage feedback
- Emphasise application (Any FIVE)

4.3 **Job design:** (5)

- A whole job from beginning to end
- Regular contact with consumers or clients
- Use of variety of tasks and skills
- Freedom of self-direction
- Direct feedback from the work itself
- A-chance for self-development (Any FIVE)

[15]

QUESTION 5

How to reduce employee resistance to control: **[10]**

- Emphasise the value of control to employees:
  Standards provide employees with feedback that tells them whether they are doing well or not.
- Avoid arbitrary or punitive standards:
  Employees respond better to standards that can be justified by past records that support the standards.
- Be specific: Use numbers if possible:
  Avoid such vague expressions as 'improve quality', 'show us better attendance' etc.
- Aim for improvement rather than punishment:

- When the work is below standard, help employees find out what it is that is preventing him/her from meeting standards.
- Avoid threats that you can't or won't back up:
  If you make a specific threat, make certain in advance that the company will help you make it stick.
- Be consistent in the application of control:
  Make sure that everyone measures up to the standards you have set.

QUESTION 6

6.1 **Discipline:** (5)

6.1.1 Action
6.1.2 Authority
6.1.3 Social
6.1.4 Stopping
6.1.5 Threatens

6.2 **The following general rules apply in connection with a grievance procedure:** (5)

- The employee should be granted the opportunity to bring his/her grievance, albeit in stages, to the attention of top management.
- He/She should be permitted representation, if so desired.
- Management, at the various levels, should give careful consideration to the grievance and make genuine attempts to resolve it.
- Time limits should be established for each stage of the procedure.
- The grievance will not be resolved before the employee declares himself/herself satisfied.
- The employee has the right, if the grievance remains unresolved, to declare a dispute.
- Grievances should, wherever possible, be handled by line management, but staff, in the form of the personnel department, may act in an advisory capacity.

[10]

QUESTION 7: TRAINING

7.1 **Training defined:** (2)

- Training is the organised procedure
- By which people learn knowledge and/or skills for a definite purpose.

7.2 **FOUR steps, structured job training has** (8)

1. Get the workers ready to learn.

- Workers who want to learn are the easiest to teach train.
- Let them know why the job is important.

2. Demonstrate how the job should be done.

- Tell and show them the correct procedure to do a job.
- Do this a little at a time.

3. Try the workers out by letting them do the job.

- Let the employees try doing the job under your guidance.
- Stay with them and observe how they are doing.
- Praise them when they are doing well and provide constructive feedback when they are making mistakes.

4. Put the trainers on their own gradually.

- Sooner or later they have to 'fly' alone.
- Leave them alone on the job, but don't abandon them completely.
- Checking on their progress and workmanship regularly.
- Never think they are completely trained.

[10]

QUESTION 8: FINANCIAL COMPENSATION

8.1 **Definition of wage:** (4)

- Money payments to workers
- Whose pay is calculated
- According to the number of hours worked
- Or is based on piecework.

8.2 **SIX fringe benefits:** (6)

- Company cars /
- Pension schemes
- Sick pay/leave
- Housing assistance-
- Low-interest loans
- Discount purchases, etc.

[10]

QUESTION 9: INDUSTRIAL HOUSEKEEPING

Unsafe acts: **[10]**

- Unsafe speed of working
- No authority - failure to secure or warn
- Safety devices made inoperative
- Arranging or placing objects unsafely
- Fooling or teasing, abusing
- Equipment unsafe use of e.g. using hands instead of push stick.
- Adjusting moving, dangerous equipment.
- Chance taking

- Taking up unsafe positions
- Safety attire: failure to use.

QUESTION 10: QUALITY

Defect and Rework: **[4]**

Defect:

- Any variation of the product or service
- That falls outside the prescribed tolerances.

Rework:

- To remanufacture, do over, adjust, modify,
- Otherwise repair a product or service
- That has been rejected because of an observed or reported defect.

TOTAL: 100

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