

COMPUTERS & IT IN BUSINESS & MANAGEMENT

STUDY GUIDE FOR MODULE ONE

(A full 'Study & Training Guide' will accompany the Study or Training Manual(s) you will receive soon by airmail post.)

This Study Guide - like all our Training Materials - has been written by professionals; experts in the Training of well over three million ambitious men and women in countries all over the world. It is therefore essential that you:-

- * Read this **Study Guide carefully and thoroughly** BEFORE you start to read and study Module One, which is the first '**Study Section**' of a CIC Study or Training Manual you will receive for the Program for which you have been enrolled.
- * Follow the **Study Guide exactly**, stage by stage and step by step - if you fail to do so, you might not succeed in your Training or pass the Examination for the CIC Diploma.

* STAGE ONE

Learning how to **really STUDY** the College's Study or Training Manual(s) provided - including THOROUGHLY READING this **Study Guide**, and the full '**Study & Training Guide**' which you will soon receive by airmail post.

* STAGE TWO

Studying in accordance with the professional advice and instructions given.

* STAGE THREE

Answering Self-Assessment Test Questions/Exercises.

* STAGE FOUR

Assessing - or having someone assess for you - the standard of your answers to the Self-Assessment Test/Exercises.

* STAGE FIVE

Preparing for your Final Examination.

* STAGE SIX

Sitting the Final Examination.

Remember: your CIC Program has been **planned** by experts. To be certain of gaining the greatest benefit from the Program, it is **essential** that you follow precisely each one of the **SIX stages** in the Program, as described above.

STAGE ONE is your thorough reading of this 'Study Guide'

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ABOUT CIC STUDY and TRAINING MANUALS

A CIC Study or Training Manual (which comprises 4 or 6 Modules - the first Module of which follows) supplied by the College as part of your Course or Program is **NOT** simply a text book. It must therefore **not** be read simply from cover to cover like a text book or another publication. It **MUST** be **studied**, Module by Module, exactly as explained in the following pages. Each CIC Study or Training Manual has been designed and written by specialists, with wide experience of teaching people in countries all over the world to become managers, administrators, supervisors, sales and accounting personnel, business-people, and professionals in many other fields.

Therefore, it is in **your own best interests** that you use the Study or Training Manuals in the way CIC's experts recommend. By doing so, you should be able to learn easily and enjoyably, and master the contents of the Manuals in a relatively short period of time - and then sit the Final Examination with confidence. Every Study Manual and Training Manual is written in clear and easy to understand English, and the meanings of any "uncommon" words, with which you might not be familiar, are fully explained; so you should not encounter any problems in your Studies and Training.

But should you fail to fully grasp anything - after making a thorough and genuine attempt to understand the text - you will be welcome to write to the College for assistance. You must state the **exact** page number(s) in the Study or Training Manual, the paragraph(s) and line(s) which you do not understand. If you do not give full details of a problem, our Tutors will be unable to assist you, and your Training will be delayed unnecessarily.

Start now by reading **carefully** the following pages about Stages Two, Three and Four. Do **NOT**, however, start studying the first Study or Training Manual until you are **certain** you understand **how** you are to do so.

STAGE TWO - STUDYING A CIC MODULE

STEP 1

Once you have read page 1 of this document fully and carefully, turn to the first **study section** - called **Module One** - of **Study or Training Manual One**. (Note: In some Manuals the term "Chapter" is used instead of "Module").

Read the whole of Module One at your normal reading pace, without trying to memorise every topic covered or fact stated, but trying to get "the feel" of what is dealt with in the Module as a whole.

STEP 2

Start reading the Module again from the beginning, this time reading more slowly, paragraph by paragraph and section by section. Make brief notes of any points, sentences, paragraphs or sections which you feel need your further study, consideration or thought. Try to absorb and memorise all the important topics covered in the Module.

STEP 3

Start reading the Module again from its start, this time paying particular attention to - and if necessary studying more thoroughly - those parts which were the subject of your earlier notes. It is best that you do **not** pass on to other parts or topics until you are **certain** you fully understand and remember those parts you earlier noted as requiring your special attention. Try to fix everything taught firmly in your mind.

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Note: You may not wish to, or be able to, carry out Steps 1, 2 and 3 one after the other. You could, for instance, carry out Steps 1 and 2 and then take Step 3 after a break.

STAGE THREE - ANSWERING SELF-ASSESSMENT TESTS

STEP 4

When you feel that you have **fully understood and learned everything** taught in the whole Module (and if necessary after a further careful read through it) turn to the Self-Assessment Test set at the end of it, and read the Questions/Exercises in it carefully. You do not have to attempt to answer any or all of the Questions/Exercises in the Test, but it is **best** that you do so, to the best of your abilities. The reasons for this are:-

- ❁ By comparing your answers with the Recommended Answers printed in the Appendix at the end of the Module, you will be able to assess whether you **really have** mastered everything taught in the Module, or whether you need to study again any part or parts of it.
- ❁ By answering Questions/Exercises and then comparing your attempts with the Recommended Answers, you will gain experience - and confidence - in attempting Test and Final Examination Questions/Exercises in the future. Treat the Self-Assessment Tests as being “*Past Examination Papers*”.

Professional Advice on Answering Self-Assessment Test (and Examination) Questions and Exercises

1. You may answer the Questions/Exercises in a Self-Assessment Test in any order you like, but it is best that you attempt **all** of them.
 2. Read very carefully the first Question/Exercise you select, to be quite **certain** that you really **understand** it and what it requires **you to do**, because:
 - ★ some Questions/Exercises might require you to give full “written” answers;
 - ★ some Questions/Exercises (e.g. in English) might require you to fill in blank spaces in sentences;
 - ★ some Questions/Exercises (e.g. in bookkeeping) might require you to provide “worked” solutions;
 - ★ some Questions/Exercises (called “multiple-choice questions”) might require you only to place ticks in boxes against correct/incorrect statements.
- In your Final Examination you could **lose marks** if you attempt a Question/Exercise in the wrong way, or if you misread and/or misunderstand a Question/Exercise and write about something which is not relevant or required.
3. Try to answer the Question/Exercise under ‘**true Test or Examination conditions**’, that is, **WITHOUT** referring back to the relevant section or pages of the Module or to any notes you have made - and certainly **WITHOUT** referring to the Recommended Answers. Try to limit to about two hours the time you spend on answering a set of Questions/Exercises; in your Final Examination you will have **only two hours**.
 4. Although you are going to check your Self-Assessment Test answers yourself (or have a friend, relative or colleague assess them for you) practise writing “written” answers:-

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★ in clear, easy-to-read handwriting;

and

★ in good, grammatical language.

The Examiner who assesses your Final Examination answers will take into account that English might not be your national or main language. Nevertheless, to be able to assess whether you really **have** learned what we have taught you, he or she will need to be able to read and understand what you have written. You could lose marks if the Examiner cannot read or understand easily what you have written.

5. Pay particular attention to neatness and to layout, to spelling and to punctuation.
6. When “written” answers are required, make sure what you write is **relevant** to the Question/Exercise, and concentrate on **quality** - demonstrating your knowledge and understanding of facts, techniques, theories, etc. - rather than on quantity alone. Write fully and clearly, but **to the point**. If you write long, rambling Final Examination answers, you will waste time, and the Examiner will deduct marks; so practise the **right** way!
7. When you have finished writing your answer, read through what you have written to see whether you have left out anything, and whether you can spot - and correct - any errors or omissions you might have made.
Warning: some Questions/Exercises comprise two or more parts; make **certain** you have answered **all** parts.
8. Attempt the next Question/Exercise in the Self-Assessment Test in the same manner as we have explained in 1 to 7 above, and so on until all the Questions/Exercises in the Test have been attempted.

Note: There is no limit on how much time you spend on studying a Module before answering the Self-Assessment Test set on it, and some Modules are, of course, longer than others. You will, however, normally need to spend between twelve and fifteen hours on the thorough study of each Module - and that time may be spread over a number of days if necessary - plus approximately two hours on answering the Self-Assessment Test on each Module.

STAGE FOUR - ASSESSING YOUR ANSWERS

STEP 5

When you have answered all the Questions/Exercises set in Self-Assessment Test One to the best of your ability, compare them (or ask a friend, relative or a colleague/senior at work to compare them) with the Recommended Answers to that Test, printed in the Appendix at the end of the Module. In any case, you should thoroughly study the Recommended Answers because:-

★ As already explained, they will help you to assess whether you have really understood everything taught in the Module;

and

★ They will teach you how the Questions/Exercises in subsequent Self-Assessment Tests and in your Final Examination **should** be answered: clearly, accurately and factually (with suitable examples when necessary), and how they should be laid out for maximum effect and marks.

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MARKS AND AWARDS

To assist in the assessment and grading of your answers, the **maximum number of marks** which can be earned for each answer to a Self-Assessment Test Question/Exercise is stated, either in brackets at the **end of each one**.

The maximum number of marks for any one Test is 100.

Your answers should be assessed fairly and critically. Marks should be awarded for **facts** included in your answer to a Question/Exercise, for presentation and for neatness. It is **not**, of course, to be expected that your answers will be identical to all those in the Appendix. However, your answers should contain the **same facts**, although they might be given in a different order or sequence - and any examples you give should be as appropriate to the Questions/Exercises as those given in the relevant "Recommended" Answers.

Add together the marks awarded for all your answers to the Questions/Exercises in a Self-Assessment Test, and enter the total (out of 100) in the "Award" column in the **Progress Chart** in the middle of the full '**Study & Training Guide**' when you receive it. Also enter in the "Matters Requiring Further Study" column the number(s) of any Question(s)/Exercise(s) for which you did not achieve high marks.

GRADES

Here is a guide to the grade your Self-Assessment Test Work has achieved, based on the number of marks awarded for it:

50% to 59%	PASS	60% to 64%	HIGH PASS
65% to 74%	MERIT	75% to 84%	HIGH MERIT
85% to 94%	DISTINCTION	95% to 100%	HIGH DISTINCTION

STEP 6

Study again **thoroughly** the section(s) of the Module relating to the Question(s)/Exercise(s) to which your answers did not merit high marks. It is important that you understand where or why you went wrong, so that you will not make the same mistake(s) again.

STEP 7

When you receive the complete Study or Training Manual One** from the College by airmail post, '**revise**' - study again - Module One printed in it, and then turn to **Module Two** and proceed to **study it thoroughly** in exactly the same way as explained in Steps 1, 2 and 3 in this '**Study Guide**'.

When you have completed your **thorough study**, follow steps 4, 5 and 6 for the **Self-Assessment Test on Module 2**.

Continue in the **same way with each of Modules 3, 4, 5 and 6** until you have attempted and assessed your work to Self-Assessment Test 6, and have completed the study of Study or Training Manual One. But - and this is **important** - study the Modules **one by one**; complete Steps 1 to 6 on **each** Module **before** you proceed to the next one (unless during the course of your reading you are referred to another Module).

****Note:** When you receive Study or Training Manual One by airmail post, it will be accompanied by a 20-page '**Study & Training Guide**' (containing a '**Progress Chart**') which you **MUST read very carefully** before starting your study of Module Two.

TRAINING ON COMPUTERS IN BUSINESS & MANAGEMENT Module One

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COMPUTERS AND THE FUNCTIONS OF MANAGEMENT

Introduction - The Importance of Information

Effective management is a vital factor in any business if it is to continue to grow and to be successful. Regardless of how good the products are that a business manufactures and/or offers for sale, or how good are the services which it provides, and regardless of how much capital is invested in it, unless that business is well and capably managed it will ultimately fail to prosper or, indeed, to survive.

The introduction of computers into the worlds of commerce and industry has had a **huge impact** at all managerial levels. That is due to the great amount of **information** which can be stored, retrieved, organised, sorted and analysed by computers in a fraction of the time - and to a much greater degree of accuracy - than could ever be achieved "manually", that is, by human effort alone.

Information is the **vital resource** which any manager needs in order to make plans and to set objectives, to organise and to co-ordinate the implementation of those plans, to control and monitor the results, and to make decisions accordingly. If his or her information is incomplete or out of date - as to costs, trends, time factors, resources and the many other important elements of a project - the manager cannot make meaningful, effective and RIGHT decisions.

If plans are based on imperfect or incomplete information, the monitoring of their implementation will only partially reflect the true situation, and the end result could be far removed from the original objectives set for the enterprise, or department of it.

Practical Example

To illustrate to you the importance of information on the decision-making process, let us use a simple project from everyday life - undertaking a motor car/automobile journey to a new location, not previously visited. Before setting out, the driver of the vehicle would have to make the following decisions:-

- ❁ What route is the best one to take?
- ❁ How far is the distance to the destination?
- ❁ How long will it take to reach the destination?
- ❁ Does the vehicle have sufficient fuel to reach the destination, or should its tank be filled before setting out?

The answer to each of those questions - as is very often the case - depends on the answers to **another** series of questions; and the answers to those depend on **the information available**.

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The first two of the above questions could be answered by referring to a road map and/or any guidance or instructions provided. However, if either of those is incomplete or inaccurate or is out of date - e.g. roads might have been closed or new ones opened, or there might be “diversions” - or is unclear, the decision made could well be a wrong one, resulting in wasted time and distance travelled.

The answer to the third question depends on the answers to the first two, combined with any information available on weather conditions, the state of the roads generally, likely traffic congestion or otherwise, speed restrictions, and similar relevant facts; and also on the type and condition of the vehicle and its speed and performance. Again, lack of knowledge of any of those factors, or an incorrect answer to either of the first two questions, would lead to an inaccurate calculation of the travelling time involved. If, say, the journey was for business purposes, the foregoing inaccuracy might cause the driver to be late for an appointment.

As for the fourth question, the driver needs an accurate answer to the second question, plus a knowledge of the capacity and performance of the vehicle and its present fuel situation, in order to decide whether to “fill up” (possibly at a higher price than necessary) or to risk running out of fuel on the way. Information about any refuelling services provided along the way could, if available to the driver, also have a bearing on his decision.

The Constant Need for Information

The forgoing example illustrates in a simple way how we **constantly need information** at our disposal in order to make even the most mundane, everyday decisions. How much more important, then, is the **accuracy and availability of information** to the manager - whose decisions are so important and far-reaching!

One other very important fact is also demonstrated in the earlier example:

- ▶ It is the **driver** who must use his *judgement* and *experience* to assess the information before coming to any decision. The quantity and quality of the information to hand will clearly affect the ease and viability of any decision-making, but without *personal judgement and knowledge* the information is useless. A person with no experience of driving at all might not even know what questions to ask!

The Essential Role of Management

The **essential role of computers in management** is, then:

To provide accurate, clear information as and when it is needed.

It is the function of a manager to decide what information is needed and what form it should take; huge quantities of information not relevant to the subject in question is a hindrance rather than a help. Most importantly, it is the manager’s function then to assess the facts provided and to use *his or her judgement and experience* in order to make authoritative and well-based decisions.

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Computers are an exciting and imaginative addition to the worlds of business and management - their use can greatly increase the potential of managers and staff alike. It is essential, however, that they are regarded **ONLY AS TOOLS** to be used to achieve *more effective management*, and **never** as a replacement for the skill, judgement and leadership of a human manager.

THE FUNCTIONS OF MANAGEMENT

It is important for you to understand clearly what management is, and what functions are involved in management - regardless of the size or activities of an enterprise, or the size or activities of the section or department of it in a manager's charge.

The work of **any** manager comprises two different aspects:-

* The '**technical**' or '**functional**' aspect which is concerned with **the work to be performed** in a particular section, department or enterprise as a whole;

and

* the '**managerial**' or '**human**' aspect which is concerned with **the people who actually perform that work** in the section, department or enterprise in the manager's charge.

The "**technical**" or "**functional**" work of different managers might vary considerably; thus, the technical (and the word is used in the widest sense of its meaning) work of a factory manager will be very different from the technical work of a sales manager or an office manager, etc. Even the technical work of two computer operations managers working for different enterprises will differ in many areas.

The Managerial Aspect

Although the "**technical**" or "**functional**" aspects of the work of different managers will differ, the "**managerial**" aspect of the work of **all** managers must be similar - because it involves managing **the activities of other people**.

The management of people is an **ART**; men and women are unpredictable, and each person has his or her own different and complex character. The management of human beings requires the provision of leadership for a group of people and more. Those in the group require training, advice and guidance, supervision and control, and their work must be so organised and co-ordinated that they work together as a **team** to achieve a stated "objective", and in the most efficient and economic way. That "objective" might be the production and/or sale of an item, or the provision of an efficient service. Only a skilled manager can weld his or her staff into an efficient team.

The "**managerial**" aspect of any manager's job can be divided broadly into five **functions** - or five types of activities. They are:-

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- Planning:** This entails deciding how the **predetermined objectives** of the enterprise, or the department or section of it, **should be achieved** - in the most efficient and economical way - in accordance with policy.
- Organising:** This involves putting the “**theory**” (the plans) into “**practice**”, interpreting them, and so arranging the work to be performed that the objectives will be achieved as laid down in the plans.
- Co-ordinating:** This is closely related to organising, and must ensure that although different staff might perform different work, **all their efforts mesh smoothly together** and are directed towards achieving the common objectives.
- Motivating:** This involves providing **leadership for subordinates**, and also requires the ability to inspire them to give of their best in achieving the objectives, by creating a good morale or working spirit amongst all those employed by the enterprise.
- Controlling:** This comprises **supervising the people employed**, checking their work and the machinery and equipment used, to ensure that the end products are the desired objectives; it also includes the **recording of performances** to provide a guide for similar activities in the future.

We shall examine the **five functions of management** in greater detail shortly, and see how they interrelate and what they entail in actual practice. However, as they are all concerned with achieving **objectives**, let us first consider what those might be and who decides what they are to be.

The Objectives of Enterprises

Basically, objectives are the ‘**goals**’ which an enterprise aims to achieve; in fact the attainment of the objectives set or laid down for an enterprise is the principal reason for the very existence of that enterprise!

Before any enterprise is started or established, a person or a group of people has to decide **what** that enterprise is going to do. These are some examples:-

- * Is it going to manufacture something - if so what?
- * Is it going to buy and sell - if so what?
- * Is it going to provide a service - if so what?

The same applies to a new section of an enterprise, i.e. the establishment of an IT section.

In some cases the “answer” to the particular question raised is fairly straightforward. For example, a person might decide to open a bookshop, or an experienced painter/decorator might decide to set up on his own instead of working for others, or management might decide to establish a computer section.

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However, in other cases considerable thought as well as “research”, might be necessary before deciding to produce or to provide:

❖ something which is not already available;

or

❖ something which is likely to be able to compete successfully with similar goods or services already available.

Numerous factors - such as financial and other resources - which are available or which can be made available, the market potential, facilities which will be required and so on, might have to be considered before a decision on viable objectives of an enterprise is finally reached.

The Profit Motive

In the private sector, the specific objectives of a business are combined with the objective of **profit**; the result of achieving the specific objectives of the business must be that its owners **gain money**.

It is important for all managers to understand clearly what profit is and how it arises - after all, the performances of many managers are assessed by the profits earned by their businesses!

A simple example will help to make the concept clear to you:-

A shoemaker sells a pair of shoes he has made, and with the money he receives for it he buys food or clothing or buys materials or pays the rent of his workshop. What he has done is to **exchange** his materials and labour for the materials and labour of other people; money is only the medium which makes the exchange easier.

In order to produce his shoes, the shoemaker has to make use of three resources: **land, labour** and **capital**, which are called the “*factors of production*”. Each is necessary, because:-

- ★ Without land there would be no place or workshop in which the shoemaker could work.
- ★ Without the shoemaker’s labour no shoes would be made.
- ★ Without capital there would not be the money which he needs to pay the rent of his workshop, to buy leather, tools, nails, etc, from which to produce more shoes, and to feed and clothe himself until the next shoes are made and sold.

The shoemaker must be sure in advance that his production will bring back the money he spends on materials, on labour, and on rent, and also bring a “**return**” on the capital employed; and it is this **return** which is called “**profit**”.

A return on capital in the form of profit **can** be justified. For capital is nothing more than the result of previous production; if the shoemaker works so well that he sells his products for more money than his immediate needs, he can use that extra money as capital to finance more production.

Policies and Policymaking

Hand in hand with the decision on the objectives of an enterprise, is the necessity to decide in broad terms **how** and **where** those objectives are to be achieved, that is, to lay down the basic **policies** of the business.

To return to our example of the intending bookseller, he (or she) must decide what type(s) of books the shop is going to sell; for example, will its objectives be to sell novels, paperbacks and less expensive publications, etc., or to sell text books, technical publications or expensive books, etc? Will the business sell only new books and/or buy and sell second-hand books?

- * The owner must then decide '**how**' the business is going to sell the books: by wholesaling, retailing (over the counter sales), in bulk, by mail-order, via a website, or by a combination of two or all.
- * Clearly the '**where**' is closely allied to the '**how**' and to the objectives. If, in the case of the bookshop, it is going to sell novels and paperbacks the shop needs to be located in a busy street area where its window displays will attract the attention of many passers-by, who will probably buy single copies of books for cash. On the other hand, if the shop is going to sell mainly text books, it needs to be located in the vicinity of schools, colleges or a university, but it need not be in a busy thoroughfare.

If the shop is going to sell single copies of books to students, they will probably pay in cash. But if the business is going to sell in bulk to the schools, etc., space will be needed in which to hold large stocks, and the business will probably have to allow its customers a "*period of credit*", that is, it will have to sell without receiving payment at once.

The foregoing is, of course, a very simple - but clear - example of how objectives are determined and how basic policies are laid down. In practical business situations - particularly in manufacturing businesses - the proceedings and decisions will be far lengthier and more complex.

Besides the matters of the type and size of premises which will be required and their location, it must be decided whether to rent or purchase them or have them specially built, and how much can be spent on them; what methods of production are to be used, e.g. whether the latest technology and machinery are to be employed, or whether tried and tested methods and machinery will be used; what methods or "channels" for distributing the manufactured items will be used, and so on - the list is long.

Changes and Modifications

Of course, objectives might have to be modified in the light of experience, market trends, commercial viability, etc., after a business has been established. A business (or indeed any enterprise) can only continue to exist for as long as there is a **need** for its products, or it can **create a need**.

Policies, being really the attitudes of the enterprise towards achieving its objectives, are rather more flexible, and can be adjusted to deal with problems that might arise in attaining the objectives, or as required by the operating position of the enterprise at a particular time. Such modifications of objectives and adjustments to policy are made by the owner(s)/partners of a business, or by the board of directors if it is a company.

The Interpretation and Implementation of Policies

Once the initial objectives and the basic policies of an enterprise have been decided upon, the actual achievement of those objectives is the responsibility of the members of the management team. In other words, they have to set in motion the various activities which will **actually gain those objectives IN PRACTICE.**

That involves two important factors:-

- ★ Firstly the policies must be **interpreted**. This means that the policies must be examined carefully, and “broken down” to see clearly what activities and tasks will have to be undertaken.
- ★ Secondly, once it is clearly understood what will be involved, it can be decided what steps must be taken to **implement** the policies - what actions are necessary to put them into practice.

In other words, the policies - the theory - have to be **‘translated’ into action.**

Unless an enterprise is very small, in addition to there being objectives for the enterprise as a whole, there should also be *departmental objectives* set by the board, with policies laid down for the attainment of them. Of course, the objectives of a particular department will be narrower in scope than those of the enterprise as a whole. Nevertheless, unless **each** department - including IT services - attains its set objectives, the overall objectives of the entire enterprise might not be achieved.

A departmental manager (who as a “specialist” might be able to advise or influence the board on setting the department’s objectives and in its policy making) will have to:-

- ★ **interpret** the policies laid down for his particular department;

and

- ★ **implement** those policies to achieve the department’s set objectives.

In doing so, he or she will have to set objectives and lay down policies for their achievement for each of the sections which make up his or her department. The objectives of each section will inevitably be narrower in scope than those of the department as a whole; but each must attain its set objectives.

Each section manager - under the guidance of the departmental manager - will then have to interpret the policies for his or her section and implement them. That will require the section manager, in turn, to set the even narrower objectives - and to lay down policies for their achievement - for each team in the section, which will be under the control of a supervisor or foreman.

Finally, each supervisor or foreman will have to interpret the policies and implement them. He/she must do that by explaining clearly to each member of his or her team - in clear and familiar terms - what he or she is to do, when and how.

For example, the basic objective of a computer department or section will be to provide an efficient service to some or all other departments/sections of the enterprise. The policies for the computer section/department (regardless of its size or the number of staff employed in it - possibly just one

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operator in a small business) will cover such matters as how the service is to be provided and from where, etc. (We repeat what we stated earlier: unless **every** department, computer services included, attains its set objectives, the overall objectives of the business as a whole might not be achieved).

So you can see that, stage by stage, the broad, overall objectives and the policies set by the board of directors, are broken down into the possibly very narrow range of tasks and activities to be performed by each individual employee.

The five functions of management are all concerned with the interpretation of policies and their implementation in order to achieve the set objectives. We must now turn our attention to a more in-depth study of them

Planning and Plans

Planning is the activity concerned with making or formulating **plans**. Plans should be looked upon as being **'routes to objectives'**.

Once the objectives of an enterprise have been set, planning is necessary to **work out how to achieve** those objectives within the framework of the policies formulated. Although we are concerned in this Module with planning as a managerial function, it must not be overlooked that planning is necessary in everyday living.

Even a shopping expedition might need some planning - what route to follow to get to the shops; what form or forms of transport to take and when/where to change from one to another; the order in which to visit shops, for instance to avoid purchasing the heavy items first and having to carry them around all the other shops to be visited; how to get back home with the parcels and bags of items bought, and so on.

In business, "top management", e.g. the board of directors of a company, is involved mainly with "long-term planning", which is often called **'strategic planning'**. That is concerned primarily with deciding what the objectives of the business should be in two, four, five or even ten years ahead, and the future policies of the business. Such planning is generally concerned mainly with the enterprise as a whole rather than with its individual departments or sections.

Senior management will be involved in **'tactical planning'**, that is, planning how the overall strategies are to be achieved. This often entails devising and operating short-term plans, for up to a year ahead.

Other levels of management, including supervisors and/or foremen, are involved mainly in very short-term **'activities planning'** - which is sometimes called **'operational planning'**. That involves planning the day to day running of departments or sections and individual assignments, for example planning the order in which data is to be input or the sequence in which reports will be run out, or deciding what each member of staff should be doing at any given time.

A good deal of the planning which a manager is called upon to perform involves making **routine decisions**, and is concerned with everyday matters; for example planning the work of a team of computer office staff, which might be similar week after week.

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However, plans must be **flexible** so that they can quickly and easily be modified in the light of events. For example, a manager might have decided how his staff will cope whilst another member is on holiday, and has planned the rearrangement of the work. But the day after the implementation of the new plan, another member of staff falls ill; so he must modify his plans, and determine how the work can be rescheduled with two staff away.

Much of such **routine planning** is an automatic process, requiring little conscious thought on the part of the manager, as his or her plans and decisions will be based largely on past experience with similar, or even with identical, problems. Other planning might require far more conscious thought, investigation and research before decisions are reached, and we shall return to this matter in Modules 10 and 11.

Organising and Organisation

Once the plans - the "theory" - have been formulated, a manager is involved in organising the *physical resources* at his disposal - the men and/or women, materials, machines and even the premises - to ensure that the objectives are achieved as planned.

Organising involves **much more** than simply instructing a given number of people to start work:-

- ★ There must be an adequate and competent staff to perform all the work necessary.
- ★ Each person employed must know exactly what he or she is to do (and if necessary must be taught or trained to perform that work), how the work is to be done, when it is to be done, and so on.
- ★ All the materials to be used must be readily available when and where they are needed;
- ★ All services and utilities necessary: electricity, water, fuel, etc., must be provided.
- ★ The best machinery and equipment, within the financial resources of the enterprise, should be available for use, regularly maintained and in perfect working order, and - if necessary - training must be given to those who will operate it.
- ★ The premises must be so laid out to provide the maximum efficiency and convenience, and to allow a smooth flow of work. For example, desks, filing cabinets, computers, printers and electrical points must be positioned to utilise the available amount of space in the most effective layout, to avoid wasted effort, duplication and unnecessary movement.

It is clear, therefore, that organising can be summarised as the managerial process of ensuring that:

*The right staff, the right materials and the right equipment
are in the right places at the right times and in the right quantities
so that work will proceed in accordance with the formulated plans,
without delays, hold ups or stoppages.*

Co-ordinating and Co-ordination

Organising and co-ordinating are very closely linked, and very frequently co-ordinating is an essential continuation of organising.

Co-ordinating involves:

Ensuring that all efforts move smoothly together in the same direction, that is, towards the common objectives.

Co-ordination is as essential at top management level as it is at junior management and supervisory levels. For example, the managing director or general manager must ensure that the efforts and activities of all the various departments of an enterprise are in harmony, and in co-operation. There would be no point, for example, in the sales department endeavouring to sell items not yet in production, or the production department manufacturing products which the sales department is unable to sell or for which there is no "market"!

Good relations and communications between departmental managers must be developed and fostered so that they all work together in harmony.

At the other end of the scale, a junior manager, supervisor or foreman must co-ordinate the work of his or her subordinates so that although different people might be performing different tasks, work will, when necessary, flow smoothly and continuously from one person to the next.

Practical Example

Here is an example of what has just been discussed:-

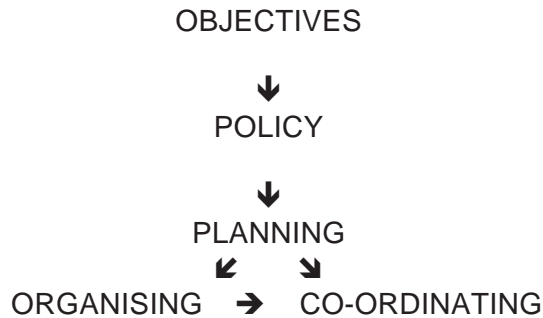
In an office, one clerk might draft or dictate a letter, which then has to be passed to a typist; after it has been typed or word processed, the letter has to be passed to another person for checking and signing, and the letter then has to find its way to the despatch department for franking, after which it will finally be posted. Furthermore, the copy of the letter and that to which it is in reply will have to be correctly filed for future reference.

Five or six or more people might be involved in this simple operation, but their different tasks must be so planned, organised and co-ordinated that the efforts of each mesh together like gearwheels.

Delays and backlogs would ensue if the clerk drafted or dictated fifty or sixty letters before passing any to the typist - who might be sitting idle waiting for typing work, and so on down the line.

Co-ordination does **not** simply "happen" by itself - it has **to be planned**. The relationships between planning, organising and co-ordinating are shown in Fig. 1/1.

Fig.1/1. The relationship between planning, organising and co-ordinating



Motivation and Motivating

Motivation is directly concerned with the people who work for a particular enterprise, and involves:

Encouraging them to work well and willingly in the most economical manner in the best interests of the enterprise, as well as in their own best interests.

The objectives of an enterprise - however automated or computerised it might be - can be achieved ONLY through *the efforts of people*; and people need to be **motivated** - induced, persuaded, prevailed upon (but **not** forced) - in a humane and understanding way to give of their best.

However, what motivates one person or group of people might not motivate another, and therefore for the best results a manager, supervisor or foreman should, as far as is feasible, get to know something about each of his or her subordinates.

- * Mere financial reward is more of an incentive than a motivation to many people, although the end result - greater effort or better performance - might appear to be the same.
- * Many people today are interested in gaining more from their employment than just money; they tend to look for what can be termed "*job satisfaction*", doing jobs which they enjoy, in which they feel that their skills/abilities are being utilized to the full, and of which the end products are worthwhile and are appreciated.
- * Many other people are interested in the likelihood of receiving training - increasing their computer skills and knowledge, for example.
- * Some people enjoy working in a group; and "group behaviour" can greatly influence the performance of all the members of a group.
- * The prospects for promotion - in achieving positions of responsibility and authority or status - are important to some people (and they will be motivated to do their best to prove their suitability for promotion).

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- * Other people might want jobs in which they can use initiative or can get away from being “desk bound” or from being tied to a routine or regular hours.

(It must not be overlooked, however, that some employees are content with routine or repetitive work, and being allowed to remain on that type of work is in itself a form of motivation for them).

- * Other people are interested in “recognition” or various other rewards.

So you can see that the range of motivations can be great and, of course, often *more than one* - different - motivation might stimulate a particular person or group of people. However, a manager must endeavour to get the best from **each** individual member of his or her team, and that might require motivating different members in different ways, whilst still motivating **the team as a whole**.

The latter requires the building of a **good ‘working atmosphere’** based on a spirit of trust and co-operation between management and staff. Good working conditions help in generating a good working relationship. And although a junior manager, or supervisor might have little control over working conditions - or say in the matter of salaries/wages, overtime, holidays, etc - the staff must be able to trust their superior to put their case, when possible, to his immediate superior, and to trust that person to take action or to press the matter upwards, and so on.

There must also be two-way communication within the enterprise, and all employees must be kept informed about matters which affect - or might affect - their jobs and livelihoods. The effects of the introduction of computerisation into an enterprise, or the development and expansion of an existing computer systems are good examples of situations in which employees need to be “kept informed”, and even to be encouraged to participate. We return to this important aspect in Module 12.

Job security is important in forming a good working atmosphere and encouraging employees to work well. Threats of dismissal or layoffs might sometimes induce better efforts in the short-term, but they are **not** to be recommended in modern management, and they are more likely to result in disgruntled workers and in disputes.

Subordinates want to know that they are looked upon **not** as mere “working units” or “production units” but as **human beings**, and that their manager(s) are genuinely interested in them as such. They require - and expect - an evenhanded, fair, unbiased approach from their managers, in addition to that essential quality called “leadership”.

It is important for all those involved in management and supervision to appreciate that successful motivation by a good manager produces a measure of self-discipline in his staff; they will have sufficient self-respect, and loyalty to their manager, to work well and willingly, and without needing constant supervision. So proper motivation instils a good mental attitude towards work, which mere financial incentives cannot buy.

Controlling

Controlling is the function of management which checks whether what was *planned* to happen actually **does** happen and, if necessary, ensures that corrective action is taken - and without delay.

Within this framework it can be seen that:

- ❖ the work of all employees must be **supervised** and **checked** (and further instruction, guidance or training given when required);

and

- ❖ That all operations or processes must be **checked** or **inspected**, with **performances** being **measured** against the *targets* set in the plans and against **set standards**.

Standards

A '**standard**' in this context means a level to be aimed at, or a measure with which others must conform, or by which the accuracy of others is judged. A simple example is a business letter: certain standards will be laid down which it must meet: concerning the type, size and colour of paper on which it is to be typed or printed; the layout of the typed or word processed work, the position of the addressee's name and address, the date and reference (if any); whether paragraphs are to be indented; whether the signer's name and/or designation will be typed - and the typed letter will be expected to reach certain standards of neatness, without spelling mistakes, erasures, smudges or over-typing.

Of course, standards apply in everyday life, too: the Laws of a country are the standards by which citizens have to abide; students and trainees are expected to attain certain standards of work and their examination work will be assessed against set standards or levels; to pass a driving test a certain level of proficiency must be possessed, and so on.

In management, standards are a measure of the performance of a process or a routine or of equipment, and they are used as a **comparison** to check that one item or process matches - in quantity or quality - that which is set as the standard. The standards set might not represent perfection, but they represent the best method or item that can be produced at a given time within limits imposed by such factors as cost - or what consumers are prepared to pay - equipment available, quality and availability of materials, etc.

The management of an enterprise will establish its own standards for the various types of work performed, and for its end products; although in some countries there might be laws to ensure that various products meet certain quality or safety standards - and of course often consumers will indicate the standards which they expect from products. Standards apply in virtually all enterprises, whether they are industrial, commercial, trading or distributive, service-providing or state-owned.

Standards must also be flexible so that they can be amended in the light of circumstances; for instance, changes in consumer demand, rising costs, technological developments, etc.

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Controlling includes ensuring that employees perform the work allocated to them in the ways laid down, and with no wastage or duplication of time, effort or materials. That involves much more than simply instructing a given number of employees to perform work; they must be supervised and managed so that their efforts achieve the desired results, and this requires, as we have already explained, that they be motivated, checked, guided, taught and encouraged.

All employees are human beings, with human failings, and their efforts cannot simply be “switched” on or off like a light bulb; and they look towards, indeed depend upon, their supervisors/managers for direction.

Maintaining Records

An important part of the function of controlling entails the maintaining of **records of performance**. Such records, whether they are concerning sales, production, output, etc, are vital as a guide to future planning and in the setting of new or revised standards. Daily or weekly or monthly reports to higher management provide vital information which enables control to be exercised over all activities of the organisation, and assists in the co-ordination of the efforts of the organization as a whole.

Computers can play a very important role in the maintaining of records, and in the production of a wide range of statistics, analyses and reports as required by the various managers of an enterprise. We discuss many of the uses of computers in these vital areas as we proceed through the Modules in this Program.

The Functions of Management in Practice

In practical everyday management, the five functions - which we separated so that you can examine them more easily - might not always be apparent or be recognisable as being “distinct” from one another. That is because together they form one continuous process, in which the individual functions blend, run into and interrelate with one another. That is as it should be; management should **not** be a job which a person has to force him/herself to perform, step by step, but a task which flows, without great conscious thought; stemming from his/her experience, training and understanding of human nature.

You will, no doubt, have spotted the enormous value of computers to a manager in the performance of each of the five functions of management, and those advantages are expanded upon in later Modules in this Program.

It is therefore *essential* for managers to remember **always**:

- ◆ That computers are **only an aid** to good and effective management and administration;
and
- ◆ That computers are **in no way a replacement** for that management and administration - by human managers.

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As we shall show you in later Modules, a computer can process information, retrieve and sort it, and provide answers, statistics, analyses and reports. But a computer **CANNOT** and **CAN NEVER** replace the personal expertise of a human manager in actually *making use* of that information.

More importantly, a computer **CANNOT** undertake the “managerial” aspect - the **human-related** aspect, remember - of the work of any manager. That aspect should be considered as involving:

*Getting the job done in the best and most economical way -
through the medium of human effort.*

Again, a computer can certainly **assist** the manager in the performance of that work, for example in maintaining personnel and stock records, in producing production schedules, and so on - but it is the **manager himself or herself** who must skilfully motivate his or her team of staff, plan, organise, co-ordinate and control their efforts, and provide leadership for the team.

It is **ONLY** the human manager who can build and train an efficient team, and motivate all the individual members of it to work well and willingly in the best interests of the enterprise. And that the manager can do only:

- * by developing good working relationships,
- * by setting his staff good examples to follow, and
- * by dealing with them fairly and with respect as fellow human beings.

Note: Purely for simplicity, we shall often refer in our Modules to a manager as being male. Please read the word “*he*” as really being “*he or she*”, and the word “*his*” as really being “*his or hers*”. We imply no disrespect to the many, many good female managers and supervisors today working in all types and sizes of enterprises.

SELF-ASSESSMENT TEST ONE

Recommended Answers to these Questions - against which you may compare your answers - will be found on page 24. The maximum mark which may be awarded for each Question appears in brackets at the end of the Question. Do **NOT** send your answers to these Questions to the College for examination.

No.1. (a) What do you feel is the main contribution that computers can make to the effectiveness of modern management? (maximum 15 marks)

(b) Explain the importance of information in management. (maximum 15 marks)

No.2. Why are skilled managers necessary in any business, whether it is computerised or not? (maximum 20 marks)

No.3. With what two different aspects will the work of any manager be concerned? (maximum 10 marks)

No.4. List and describe briefly the five functions of management. (maximum 20 marks)

No.5. Place a tick in the box against the **one correct** statement in each set.

(a) *Up to date, accurate information is important in business because:*

- 1 the manager needs to know what his or her staff think about him or her.
- 2 without it a manager cannot make useful decisions.
- 3 it is constantly changing.
- 4 a business cannot employ good staff without it.

(b) *The essential role of computers in management is:*

- 1 to make work easier for staff.
- 2 to provide a good medium for typed personal letters.
- 3 to provide accurate, clear information as and when it is needed.
- 4 to bring the business into the computer-literate world.

(c) *The functions of management relate to:*

- 1 planning the day to day operations of a business.
- 2 ensuring that electrical equipment is in good working order.
- 3 conventions, seminars, business meetings and parties attended by managers.
- 4 achieving the objectives set for a business in the best and most economical ways.

(d) *Plans in business are:*

- 1 concerned with deciding how an enterprise can achieve its objectives.
- 2 provided by the staff who have ideas about new facilities.
- 3 drawings depicting the layout of a company's building.
- 4 inflexible as all staff must follow them exactly.

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(e) *Co-ordination involves:*

- 1 ensuring that all colours and decoration in the office match.
- 2 the level of efficiency of a company's directors and managers.
- 3 ensuring that all efforts are geared towards attaining the common objectives of a business.
- 4 deciding the working hours for staff so that maximum efficiency is reached.

(4 marks for a statement correctly ticked - maximum 20 marks)

RECOMMENDED ANSWERS TO SELF-ASSESSMENT TEST ONE

No.1. (a) Computers have the ability to store, retrieve, organise and analyse information at considerable speed, and with a very high degree of accuracy. The use of computers thus enables management time to be better spent concentrating on the decision-making and control processes, rather than on the manual retrieval, checking and sorting of the required information.

(b) Any manager must have comprehensive, up to date and accurate information available in order to take decisions which will be effective and meaningful. Such information must be up to date, as otherwise a wrong decision could be taken; it must be clear and in an easily usable form, or much of it will be wasted; it must be relevant to the subject in question, as otherwise it will be useless and might confuse; it must be comprehensive in its coverage of all aspects, as otherwise it will not give a true picture. With such information at his disposal, the manager can use his judgement, skill and experience to take full advantage of the situation.

No.2. Skilled management is essential in any business if it is to be able to prosper and, indeed, to survive. Good management is essential in order to provide leadership, advice, guidance, supervision, control and motivation to all the staff of the business, so that they work well and willingly together as an efficient team in the attainment of the objectives of that business. Only a skilled manager can forge his subordinates into a cohesive team capable of achieving those objectives in the best and most economical way.

No.3. Management is the art of managing the activities of other people, getting them to work well and willingly, and directing their activities towards the attainment of the common objective. Firstly a manager will be concerned with the technical or functional aspect of his job, that is, with the specific work to be performed by his section, department or enterprise as a whole. Secondly he will be concerned with the managerial or human aspect of his job, that is, with the people who will actually perform the work in his section, department or enterprise.

No.4. The five major functions of management are:

Planning the way in which the laid down policy is to be carried out to achieve the set objectives.

Organising, involving putting into practice the plans made, that is, implementing them.

Co-ordinating the various activities and efforts involved in the implementation of the plans so that they run smoothly together.

Motivating the staff towards the achievement of the set objectives, so that they work well and willingly.

Controlling the work performed by all staff and machines, by checking and supervision, and by maintaining records of performance.

No.5. The correct statement in each of the sets selected and ticked.

(a) 2 ✓ (b) 3 ✓ (c) 4 ✓ (d) 1 ✓ (e) 3 ✓

WHAT YOU WILL LEARN IN MODULES 2 TO 12 OF THE CIC TRAINING PROGRAM ON COMPUTERS & IT IN BUSINESS & MANAGEMENT

Module 2 - Computers in Business and Administration

The place and use of machines in business and administration
The rise and development of the computer:
The beginning, first generation computers
Second generation, mainframe computers
Third generation, minicomputers
Fourth generation, microcomputers
The PC revolution and standard
Characteristics of computers:
Speed, storage and retrieval of data, diligence, accuracy
Limitations of computers, the manager's role in their proper use
The use of computers in a variety of business situations

Module 3 - The Parts and Functions of a Computer

A simple manual operation analysed:
input, storage, arithmetic, output and logic
the stages and activities involved
Processing and control
A program as a sequence of predetermined instructions
How a computer works:
accepting input
processing
producing output
The central processor:
its essential functions
Machine code:
the binary system
Assemblers and compilers
ROM, read only memory
RAM, random access memory, measuring size of RAM
How data is processed:
calculations
matching
updating
The VDU screen and keyboard - the main input device
Storage devices:
magnetic tape storage
magnetic disc storage, hard discs, floppy discs/diskettes
compact discs (CD-ROM)
digital versatile disc (DVD)
measurement of storage capacity
The power of the central processor
Boards and expansion slots for system upgrading
Printers: impact printers:
dot-matrix
daisywheel
non-impact printers:
laser
ink or bubble jet
Online and off-line printing

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Module 4 - Computer Programs and the Organisation of Data

The software - computer programs
The operating system:
 the computer's own manager
The utilities and what they determine
PC compatibility
Tailor-made programs:
 why they may be written
 their cost
General applications packages of programs
Specific applications packages of programs
Reasons for the popularity of applications packages
What to look for in applications packages
Single-user systems
Multi-user systems:
 record locking
Computer programming languages:
 machine code
 low-level languages
 high-level languages
The importance and essentials of good software:
 the systems analyst
 thorough testing
The organisation of data
Files, records and fields
Master data
Movement data:
Updating
Practical example of computerised invoice production:
 comparison with manual production
Codes and their uses in:
 identifying
 matching
 sorting
 avoiding repetition
 specifying
 linking
record keys
Database systems:
 the concept of shared data
 avoiding duplicated input
 reducing duplicated data
single-user systems
multi-user systems:
 avoiding corrupted data

Module 5 - Practical Uses of Computers

Some examples of practical applications
of computers in business:
 invoicing
 order processing
 stock control
 estate agency operation
 property management
hotel services:
 reservations and room management

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- guest charging and billing
- menu production
- insurance broking
- retailing - clothing and footwear
- football club management
- sales and marketing management

General purpose database packages:
a database package as a computerised filing system
the "user friendly" concept
design and format of screen layouts:
reports and analyses
the report and enquiry functions
sorting
advantages of database packages
selecting a package:
what to look for
pitfalls to avoid

Module 6 - Computers and Management Information

Planning and decision-making in management
Keeping up with changing circumstances
and developments
Management's need for fast and reliable information:
dangers in the lack of reliable and up to date data
A practical management problem:
- handled manually
- handled with the aid of a computer
- the comparison
Information technology
The use of computers for management information:
statistics and reports
forecasting and modelling
spreadsheets
graphs and charts

Module 7 - Computers and Accounting

Management's need for accurate and up to date accounts
Bookkeeping as the recording function of accounting
Bookkeeping as a manual system examined briefly:
The Ledger, the main book of account, what it records
Ledger Accounts, debit and credit sides, what they record
Double-entry bookkeeping, why the system has evolved
The Cash, Sales, Purchases and Returns Books,
the Journal
The volume of manual recording work
Extracting and agreeing a Trial Balance
Trading Accounts - gross profit
Profit & Loss Accounts - net profit
The Balance Sheet - what it shows
Keeping accounts by computer:
The great advantages of speed and accuracy
Data input only once -
both "entries" automatically made
Invariable agreement of trial balances
Use of account numbers

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Accounting software packages;
modular and integrated systems
Modules for costing, payroll, stock control, etc.
Selecting the package and/or module(s)
- dangers to avoid

Module 8 - Computers and Communication

The importance of effective communication in management
Internal and external communication
Technological developments:
speed and ease of transmission
the continued need for clarity
Developments in telephone technology:
answering and recording devices
portable and mobile/cell phones
text messaging
Fax transmission
uses and advantages
fax machines and phone/fax machines
computers with fax cards
Communication by computer
the modem
dial-up connection
ADS and broadband
remote access - VPN connection:
the firewall
benefits
The Internet - the worldwide web:
its increasing importance in communication
Internet service providers (ISP)
websites and website addresses
Email:
advantages over other methods
the local area network (LAN)
email addresses
emails via the Internet
email packages:
standard features and facilities
Computer viruses:
the need for protection
antivirus software
Bar codes
Magnetic Strips
Smart cards
OCR and scanning

Module 9 - Word Processing and Desktop Publishing

Word processing (WP):
The impact of word processing developments
Dedicated word processors
Word processing packages for computers
Advantages of WP over other methods of document production
Standard features of WP software packages

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- Spell check and Thesaurus facilities
- Personalising circular and form-type letters
- Printers and output appearance
- Selecting the right WP package
- Desktop publishing (DTP):
 - DTP as the extension of WP, compatibility of software
 - Advantages which can accrue from in-house DTP facilities
 - Differences between WP and DTP functions
 - Flexibility afforded by DTP packages to improve formats and the appearance of documents, to publishing quality
 - DTP processing power and memory space requirements
 - Complexity of DTP software, training needs
- Graphics:
 - What can be produced
 - Methods of production - by mouse, digitiser, scanning
 - Text wrapping
 - Full colour graphics, photographic films and slides
- Printers

Module 10 - Choosing the Right Computer System

- Reasons why computerisation may be considered
- Analysing the needs of the enterprise - current and future
- Identifying the areas to be affected:
 - Areas which will benefit from computerisation
 - Areas which may not benefit from being computerised
 - Phased computerisation, deciding on the sequence, priorities
- Evaluating the available options:
 - Advantages and disadvantages of a bureau service and an in-house system
 - Capital costs and operating costs, direct and indirect benefits
- Producing a Requirements Statement - information it should contain
- Seeking a suitable supplier:
 - Equipment manufacturers
 - Software houses
 - Dealers or stockist
- Evaluation of the proposals
- Making the final decision
- The use of a computer consultant

Module 11 - The Implementation of a Computer System

- Preparing the plan for implementation
- Negotiating the computer contract; the essentials
- Stages of the implementation plan:
 - Appointing a project manager or team
 - Co-ordinating activities with the supplier
 - Preparation of the site
 - Ordering consumables
 - Agreeing the system specifications
 - Reorganising staff, recruiting new staff if necessary
 - Organising manual data for input
 - Taking delivery of the system
 - Training and setting up operating procedures
 - Testing the system, test data

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- Inputting live master data
- Inputting live movement data and the parallel run
- Going live
- The importance of staff involvement:
 - Allaying fears, encouraging participation
 - Keeping staff fully informed - communication
 - Training and retraining, incentives

Module 12 - The Efficient Running of a Computer System

- Factors essential for successful computerisation
- Operating discipline
- The functions of the operations supervisor
- Physical security of equipment
- Equipment cleaning
- Data security:
 - Backing-up to discs or tapes
 - Recording and monitoring backup copies
 - Fireproof safes
 - Passwords and security codes
 - Data deletion
- Preparing data for input:
 - Constructing and using codes
 - Ensuring the accuracy of input
 - Batch processing
- Software maintenance - the need for and the essentials of a good software maintenance contract
- The essentials of a good hardware maintenance contract
- System insurance - risks to be covered
- Development and expansion of the system:
 - Why and how that might come about
 - Encouraging the active participation of staff

Glossary of Computer Terms

Checklist of Costs Associated with a Computer System

Checklist of Questions Relevant to the Choice of a Computer System