Chapter No. 1
Introduction to Computer

1.01 Complete the following statements.
   i) A modern computer is an electronic _________________ device.
   ii) One of the first recognized calculating devices was the _________________.
   iii) _________________ is called the father of modern digital computer.
   iv) Pentium II is a _________________ generation computer.
   v) _________________ is a system of worldwide computer network for exchanging
       information.
   vi) UPS stands for ________________________________.
   vii) _________________ language consists of short phrases of alphanumeric symbols called
        mnemonics.
   viii) BASIC stands for _________________.
   ix) Interpreter translates a symbolic language into _________________.
   x) In OOP text based instructions are replaced by _________________.

   Ans: i) data processing  ii) Abacus  iii) Babbage  iv) fourth  v) Internet
   vi) Universal product Code  vii) Assembly  viii) Beginner’s All-Purpose Symbolic
       Instructional Code  ix) Machine Language  x) Symbolic Icons

1.02 Tick (      ) the following statements either true or false.
   i) Pascal used Napier’s idea of logarithm in Pascaline.
   ii) Fourth generation computers possess the ability of AI
   iii) Analog computers are faster than digital computer.
   iv) Assembly language is a HLL.
   v) C is the most favorite language for writing Operating System.

   Ans: i) False  ii) False  iii) True  iv) False  v) True

1.03 Encircle one choice A, B, C, or D in each of the multiple choice questions.
   i) The first computer that used vacuum tubes was:
      a. Mark-I  b. ENIAC  c. EDVAC  d. UNIVAC
   ii) Vacuum tube was invented in
      a. 1899  b. 1906  c. 1916  d. 1926
   iii) Which of the following is called the first generation computer?
      a. Abacus  b. Pentium I  c. Mark I  d. UNIVAC
iv) Transistor was invented in
   a. 1948       b. 1947       c. 1950       d. 1952
v) A transistor is a
   a. System Software       b. Low Level Language
   c. Translating Machine   d. Application Software

Ans:
   i) b       ii) b       iii) d       iv) b       v) a

Q.1.04 Match the items given in Column I with those given in Column II

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) ADA</td>
<td>a) Fifth Generation</td>
</tr>
<tr>
<td>ii) Operation System</td>
<td>b) 4 GL</td>
</tr>
<tr>
<td>iii) Artificial Intelligence</td>
<td>c) CAD</td>
</tr>
<tr>
<td>iv) Visual Basic</td>
<td>d) CAI</td>
</tr>
<tr>
<td>v) Transistor</td>
<td>e) LLL</td>
</tr>
<tr>
<td>vi) Microprocessor</td>
<td>f) Translator</td>
</tr>
<tr>
<td>vii) Software</td>
<td>g) Real Time</td>
</tr>
<tr>
<td>viii) Machine Language</td>
<td>h) C</td>
</tr>
<tr>
<td>ix) Teaching / Learning</td>
<td>i) VLSI</td>
</tr>
<tr>
<td>x) Compiler</td>
<td>e) Second Generation</td>
</tr>
</tbody>
</table>

Ans:
   i) g       ii) h       iii) a       iv) b       v) j
   vi) I       vii) c       viii) e      ix) d       x) f
Q.1.05 Describe various units of Babbage’s Analytical Engine.
Ans: Following is the various units of Babbage’s Analytical Engine.
   
i) Input:
The input unit had to enter data and instructions into the store. The input media had to be in the form of punch cards.

ii) Control:
Control unit had to control all the other units. Moreover it had to transfer the numbers and instructions from the store to the mill.

iii) Store:
This part had to store the numbers entered into the machine and those, which had to be generated at the time of processing.

iv) Mill:
This was the processing unit that had to perform all the Arithmetic operations.

v) Output:
The output unit had to display the results of calculations.

Q.1.06 Name various parts used in the first electromechanical calculator.
Ans: Following are the various parts used in the first electromechanical calculator:
   
(i) Relays
(ii) Gears
(iii) Levers

Q.1.07 Describe the basic features of first generation of computers.
Ans: First Generation of Computers:
   - First generation of computers used vacuum tube technology.
   - They were able to perform simple calculation,
   - Programming was doing in machine language.
   - Due to big in size they were required very large space.
   - Its weight was more than 30 tons
   - Large amount of heat was produced during processing.
   - It could perform 5000 additions and hundreds of multiplications per second.

Second Generation of Computers:
   - Second generation computers used Transistors.
   - As compared to vacuum tubes transistors are smaller, more reliable, and consume less power.
   - These computers were able to perform single operations in micro seconds.
   - These computers were extremely reliable, compact in size and less heat problems.
These machines used computer languages similar to simple English for programming.

**Third Generation of Computers:**
- In third generation computers Integrated Circuits (ICs) were used as the basic component of computer.
- Due to the use of ICs the sizes of computer became very small with better performance.
- Their storage capacity had largely been increased using integrated circuit.
- The speed of computers was in nanoseconds.
- They used operating systems and high level languages.

Q.1.08 **Name one model of each generation of computer.**

Ans: Following are the name of one model of each generation of computer:
- First generation computer: ENIAC
- Second generation computer: IBM 700 Series
- Third generation computer: ICL 1900
- Fourth generation computer: Apple-2
- Fifth generation computer: CRAY-2

Q.1.09 **Describe the basic difference between an analog and a digital computer.**

<table>
<thead>
<tr>
<th>Analog Computer</th>
<th>Digital Computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An analog computer accepts data in continuous or physical form.</td>
<td>A digital computer accepts data in digital form.</td>
</tr>
<tr>
<td>2. These are special purpose computers.</td>
<td>Digital computers are general purpose in use.</td>
</tr>
<tr>
<td>3. These are also used in industrial units to control various processes.</td>
<td>These computers are often using in business, education, super markets etc.</td>
</tr>
<tr>
<td>4. Analog computers are fast in their processing but are not accurate.</td>
<td>Digital computers are fast in their processing and are accurate.</td>
</tr>
</tbody>
</table>
Q.1.10 Describe some features of:

a) A Microcomputer

- A microcomputer is smallest and an inexpensive computer.
- Microcomputers are designed for the use of one person at a time.
- These are much slower than minicomputers and mainframe computers.
- It is used in all application areas.
- These computers are mainly used in accounting, database, word processing etc.
- Microcomputers have a greater impact on some people and business than any other type computer.

b) Supercomputer:

- Super computers are the largest, fastest and most expensive computers.
- These computers are designed to handle complicated problems.
- These computers have extraordinary computing power.
- These computers are very costly. Their prices are in millions of dollars.
- Supercomputers are used in large organizations, aerospace centers, etc.
- They are used in time sharing mode in which thousands of users can be attached to a supercomputer at the same time.

Q.1.11 What is Internet? Describe its important in society.

Ans: Internet:

Internet is a system of worldwide computer networks that enables the internet users to exchange information.

Importance of Internet in Society:

- Internet is an important and fast tool of exchange information form national level to international level.
- Internet provides many services to millions of people.
- We can find jobs on internet.
- We can get solution of our technical problems.
- We can sell products and conduct research.
- Internet has now become the need of most of us because the vast range of information.
Q.1.12 Write five advantages and five disadvantages of computer in our life.

Ans: Advantages:

(i) Computers make us more productive in many of our jobs.
(ii) In education they can help us for better understanding faster learning.
(iii) In hospitals we have better diagnosis, proper treatment and better healthcare.
(iv) In business they are used to record stocks of raw material as well as finished products, making customer’s bill etc.
(v) In banks they are used for day to day processing of customer’s accounts and payments.

Disadvantages:

(i) Unemployment due to automation
(ii) Wastage of time and energy in useless computer activities
(iii) Data security
(iv) Personal privacy
(v) Computer crimes

Q.1.13 List some reasons for the use of computers in banks.

Ans: Following are the some applications of computer in Banks:

- Computers are used for day to day processing of customers’ accounts.
- Computers inform when installment of loan will be due.
- At some places customers can make purchases at stores using credit cards.
- It registers an automatic credit to the merchant’s account at the bank.

Q.1.14 Describe some features of a computerized supermarket check-out system.

Ans: UPS is the key to computer controlled supermarket check-out. The computer used UPC to determine product’s number, name, description and price. The customer has an accurate detailed receipt at the check-out counter terminal.

Q.1.15 What is UPC?

Ans: The black and white bar-code printed on most of the products in supermarkets is called Universal Product Code (UPC). UPS is the key to computer controlled supermarket check-out.

Q.1.16 What is meant by CAI?

Ans: CAI stands for Computer Assisted Instructions. It does not involve teaching about computer but rather using computers as help in teaching a subject. CAI is a system of
individualized instruction that uses a program presented by a computer as a learning medium.

Q.1.17 Briefly define computer science education.

Ans:  The ability to use computers is a basic and necessary to a person’s formal education as reading, writing and arithmetic. There are number of methods in which educational institutions can use computers to educate the students. Like CAI, CMI,

Q.1.18 List some reasons for using computers in hospitals?

Ans:  
- It is used for basic task such as keeping track of patient’s appointments, diagnosis and treatment procedures.
- It stores histories of millions of patients and made it available in seconds.
- The computer thus acts as a sort of medical consultant.
- It can help a doctor to diagnose a disease and to prescribe best suitable treatment.
- The largest use of computers in the hospital is in the hospital administration in addition to patient’s health care and medical research.

Q.1.19 What is meant by CMI?

Ans:  CMI stands for Computer Managed Instruction. In CMI system, instead of teaching the students directly, the computer assigns a student to read certain book, listen certain tape; attend certain lecture and so on. On completing the assignment, the student returns to the computer for testing and further assignment.

Q.1.20 Define a computer program.

Ans:  A computer program is a set of instructions given to a computer to perform a certain task. In other words programming is a way to communicate with computer. For example MS Windows, MS Word etc..

Q.1.21 Why machine and assembly languages are called low level languages?

Ans:  Because digital computer uses binary number system having digits 0 and 1. The grouping of 0’s and 1’s in a certain sequence is called machine language. That’s why machine language is called low level language. Assembly language is also called a low level language because it is very close to the machine code of a computer.

Q.1.22 What do you understand by Mnemonic code? Write down some of the Mnemonic codes along with the operations assigned to these codes.
Ans: Assembly language consists of short symbolic phrases. These phrases are made up of alphanumeric symbols called mnemonics. Given below are the mnemonics code assigned to a few instruction set.

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Operation</th>
<th>Mnemonics Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop Processing</td>
<td>000 000</td>
<td>HLT</td>
</tr>
<tr>
<td>Add the number in memory</td>
<td>000 010</td>
<td>ADD</td>
</tr>
<tr>
<td>Multiply number in memory</td>
<td>000 100</td>
<td>MUL</td>
</tr>
</tbody>
</table>

Q.1.23 What are high level programming languages? How they differ from Assembly language?

Ans: High Level Programming Languages:

High level programming languages are English like words which a user can understand more easily. Like Java, C, C++ etc. The program written in these languages are then translated into machine language.

Difference between High level language and Assembly language:

High level languages are more suitable than assembly languages for human use and enable programmer to write instructions easily. High level languages are completely general in application. Assembly language consists of short symbols called mnemonics.

Q.1.24 Write short note on the following:

a) BASIC  
b) PASCAL  
c) FORTRAN

Ans: a) BASIC (Beginner’s All-Purpose Symbolic Instruction Code)

BASIC was developed in 1964. It is sufficiently closed to English and is one of the most widely used and easy to learn high level language. Even a person with a little or no knowledge of computer programming can learn it quickly.

b) PASCAL

PASCAL is a programming language named after the French mathematician and scientists Blasé Pascal. It was developed during the early 70’s Pascal is a highly structured programming language which is extremely popular in computer science.

c) FORTRAN (FORmula TRANslating)
FORTRAN was developed in 1947 for IBM computers. It was designed to solve mathematical, scientific and engineering problems. FORTRAN was one of the earliest languages to introduce the concept of modular programming

Q.1.25 What is a compiler? How it differ from an interpreter?

Ans: Compiler:

A compiler is complex system software that automatically converts entire program written in high level language into low level machine language.

Difference between compiler and interpreter:

A compiler converts entire program written in high level language into low level machine language but interpreter translates the statement in high level language one by one and executes it before translating the next statement of source program.