Chapter 1: An Introduction to Computer System

Solutions

Summative Assessment

Multiple-Choice Questions (MCQs)

1. Which of the following is not a feature of a computer system?
   a. Fast performance
   b. Executing logical operations
   c. Decision taking capability
   d. Never get tired

Ans. c

2. Which of the following defines a computer system more accurately?
   a. Hardware
   b. Software
   c. Hardware, software, and data
   d. Data, information, hardware and software

Ans. d

3. ..... is a special type of pen used to write text and select options on the LCD screen.
   a. Stylus b. PDA
   c. Embedded computer d. All of the above

Ans. a

4. Which of the following best defines 'data'?
   a. The output coming from the computer system
   b. Arranging processed data
   c. Report printed by the computer system
   d. Raw facts and figures

Ans. d

5. Which of the following activities are performed by a computer system for a train reservation system?
   a. Checking seat availability
   b. Displaying arrival and departure time
   c. Making reservation and printing tickets
   d. All of the above

Ans. d

6. Which of the following computer systems can be used while commuting by a train, bus, or plane?
   a. Mainframe Computer b. Personal computer
   c. Supercomputer d. Laptop

Ans. d

7. Which of the following computer systems is used in appliances, such as washing machines and cars?
   a. PDA b. Laptop
   c. Embedded computer d. Mainframe

Ans. c

Very Short Answer Questions

8. What do you mean by computer hardware?

Ans. Computer hardware refers to the physical parts of a computer, such as keyboard, mouse and monitor.

9. Specify an example of computer hardware and software.

Ans. Keyboard is an example of computer hardware and operating system is an example of computer software.

10. Keyboard is an optional component of computer. (True or False).

Ans. False

11. Give an example of data.

Ans. Example of data is 15.

12. What is the combination of IT and biotechnology known as?

Ans. The combination of IT and biotechnology is known as bio-informatics.

Short Answer Questions

13. What do you understand by a computer and how is it useful for you?

Ans. A computer is an electronic device which is used to perform a variety of operations on the basis of a set of instructions called program. Computer is considered as a useful device as it performs a wide variety of tasks within seconds.

14. List down the strengths and weaknesses of a computer system.

Ans. The following are the strengths of a computer system:
- Speed

- Storage capacity
- Reliability
- Accuracy
- Consistency
- Versatility

The following are the weaknesses of a computer system:

- No Power to Make Decisions
- No IQ
- No Heuristics

15. What are the various applications of computers in the field of entertainment?

Ans. Computers allow you to create music by using Musical Instrument Digital Interface (MIDI). Computers are also used for brightening or dimming the stage or studio lights. Almost all movies made today use computerized special effects.

16. What are the four basic constituents of a computer system?

Ans. The four basic constituents of a computer system are: input unit, processing unit, output unit, and storage unit.

17. What do you mean by workstations?

Ans. Workstations are computer systems that have greater memory and more extensive mathematical abilities than an ordinary computer. Workstations can be connected to other workstations or personal computers to exchange data.

18. Define technological convergence.

Ans. Technological convergence denotes merging of two or more existing technologies to invent a completely new technology with multiple benefits.

19. List the technologies that have emerged as a result of convergence of two or more technologies.

Ans. The following technologies have emerged as a result of convergence of two or more technologies:

- ICT
- Bio-informatics
- Material Convergence
- Intelligent Bioscience

Long Answer Questions

20. Do you think a computer system can be applied in business and medicine? Why?

Ans. Yes, a computer system can be applied in business and medicine in the following manner:

- **Computer Applications in Business:** Computers have become a necessity for performing various kinds of business activities, such as billing, budgeting, accounting, and reporting. For example, whenever someone want to pay bill in a shopping mall, he/she is benefited with the power and speed of computers.
- **Computer Applications in Medicine:** The computer also plays a vital role in the field of medicine. For instance, it handles the activities of monitoring patients, diagnosing diseases, and so on. There are also many computerized equipment and devices, such as pacemaker that is used to fix the heart-related problems of a patient. Medical students may also practice surgical procedures by using virtual labs.

21. In what ways a computer system can be applied in education and research?

Ans. Computers can be used in classrooms, libraries, and laboratories for preparing reports, displaying information, developing projects, and providing interactive learning aids. It is also possible to create virtual classrooms through computers if the instructor and students are situated in two separate geographical regions and read magazines and journals online.

Moreover, computers can also be used in research as various research scholars and scientists utilize computers to experiment, design, and develop projects. A large number of sophisticated instruments and devices are used in all facets of research and development activities. For example, nuclear reactions in large nuclear reactors are controlled by computers. Computer aided devices can forecast the weather and most natural disasters, such as tsunami and earthquake.

22. How computer systems can be applied in communications?

Ans. Computers provide a wide range of communication technologies, such as e-mail, chat, Web conferencing, and Voice over Internet Protocol (VoIP). E-mail helps users send textual messages and other types of data to their friends and relatives who may be living far apart. Video conferencing or Web conferencing is an effective medium of interaction between two or more persons simultaneously. Chatting provides text-based interaction between two or more persons. VoIP allows sending voice calls using a broadband or a wireless connection instead of a telephone line. The voice call saves the user from typing a long offline message.

23. Do you think computer systems can be applied in the field of manufacturing? Why?

Ans. Yes, a computer system can be applied in the field of manufacturing. It is a challenge to regulate and control a real time manufacturing process, such as preparation and packaging of soft drinks. The use of computer system controls the entire production process in the manufacturing process. In manufacturing, all the activities are automated and controlled by computers. Manufacturing activities, such as putting the cork on the bottle, are accomplished by real-time computer software because it requires high precision and accuracy. Different computer applications may be used to control the tools and equipments in the manufacturing of the products.

24. How computer systems are implemented in governance and defence?

Ans. Computers are used by the government to maintain or deal with bulk of data, such as maintaining census details, measuring per capital income, reserving tickets, paying bills and taxes, etc. The use of computer in government offices also include the e-mail functions, distributing the payments, keeping the records and for direct-mailing the promotions.

Computers are used by the defence staff to perform many important tasks, such as evaluating the trajectories of missiles and broadcasting information. For example, Distributed Common Ground

System-Army (DCGS-A) is an application developed for Army specifications by a consortium of defence contractors. It is a United States Army's primary system for posting and processing the information.

25. What are the basic constituents of a computer? Name them and provide a definition for each.

Ans. The basic constituents of a computer are as follows:

- **System Unit:** Consists of various smaller components, such as Motherboard, Hard disk, Random Access Memory (RAM), Central Processing Unit (CPU) and Sound card.
- **Monitor:** Displays the output of a computer. It is television-like equipment which can be Cathode Ray Tube (CRT), Liquid Crystal Display (LCD) and Light Emitting Diode (LED).
- **Mouse:** Refers to a pointing device that perfectly fits in the user's palm and allows him/her to perform certain activities on screen, such as clicking a button and placing the cursor at a specific location.
- **Keyboard:** Refers to a device that contains keys to feed information into a computer.

26. Computers are unable to take decisions on their own; instead, they depend upon the input being provided by humans. Give explanation in support of your answer.

Ans. Computers are machines and, therefore, we need to provide input to make them work. Although computers provide accurate results, yet they have some limitations as compared to human beings.

One of its limitations is that they do not have self-intelligence and therefore no power to make the decisions on their own. They are helpful in taking the decisions but they cannot take their decisions on their own as they do not possess the key elements required for decision making. These essentials include IQ, knowledge, intelligence, wisdom, ability to judge, etc. They need to be informed time to time regarding the tasks to be performed.

Formative Assessment

Application-Oriented Questions

1. Collect pictures of the applications of computers in different sectors—education, health, entertainment, science and research, etc. Paste these pictures on a chart and write a brief description of each of these applications.

Ans.

Smart Classes (Education)

Computers facilitate a digital learning environment in both classrooms as well as distance learning schemes

Patient Monitoring System (Health)

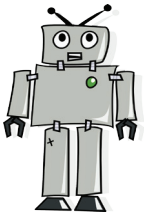
Patient monitoring systems help doctors in accurately tracking the status of patients.

Music Player (Entertainment)

It is a quick, convenient and easy way to listen to the music anytime, anywhere.

Weather Forecasting System (Research)

It is a system for numerical weather prediction.



Robot (Engineering)

A robot is an artificial agent controlled by a computer to perform repetitive and dangerous tasks that humans are unable to do.

2. List all the electrical and digital devices that you see around you, and identify whether the device has been resulted from any type of technological convergence. If you do not have much knowledge of the devices, ask your parents. Conduct a research on all the devices, and make a report, describing the features and functionalities of all the devices.

Ans.

1. **Laptop (Information Technology, Telecommunication Technology, and Entertainment Technology):** A laptop is a portable computer that is integrated with a display screen, keyboard, trackball, processor, and memory. The entire machinery of a laptop runs on a rechargeable battery. You can carry a laptop anywhere; therefore, you do not have to stick at one place to work on it.
2. **Smartphone (Information Technology and Communication Technology):** A smart phone is basically a mobile phone that provides additional features to perform day-to-day tasks. These features include sending mails and accessing the Internet. In smart phones, you find a built-in camera and music player. You can perform almost all tasks of a desktop computer with smart phones.
3. **Digital clock (Electrical Technology and Digital Technology):** A digital clock displays the time in numerals (digitally) unlike an analog clock, where the time is shown by the positions of rotating hands.

3. Classify the following as features or limitations of a computer:

   a. Computers run at a great speed and process all computations in fractions of seconds.

b. Computers are not able to learn from their past experiences.

c. Computers are able to perform a task repetitively.

d. Computers are machines and, therefore, we need to provide input to make them work.

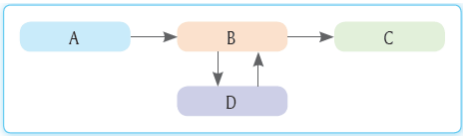
e. Computers are unable to take decisions on their own.

f. Computers are more reliable than humans.

Ans.

a. Feature
b. Limitation
c. Feature
d. Limitation
e. Limitation
f. Feature

4. Consider the following figure:



Identify A, B, C, and D from the following options:

a. Processing Unit b. Output Unit
c. Input Unit d. Storage Unit

Ans. A – Input Unit
B – Processing Unit
C – Output Unit
D – Storage Unit

5. Match the following application software with their domains:

a.	Budgeting software	:	Education
b.	Video conferencing software	:	Engineering
c.	Computer-Aided Engineering software	:	Governance
d.	Income Tax Processing software	:	Business
e.	E-learning application software	:	Communication

Ans.

a.	Budgeting software	:	Business
b.	Video conferencing software	:	Communication
c.	Computer-Aided Engineering software	:	Engineering
d.	Income Tax Processing software	:	Governance
e.	E-learning application software	:	Education

6. Write the full forms of the following acronyms:

a. PDA b. CAD
c. CRT d. LCD

Ans. a. Personal Digital Assistant
b. Computer-Aided Design
c. Cathode Ray Tube
d. Liquid Crystal Display

7. Visit a departmental store and find out the type of computer systems used there. In addition to that, list down the names of the software that are being used in the computers.

Ans. Desktop computers and Laptops are used in the departmental store. Names of the software that are used in departmental stores are as Spreadsheet application, Accounting software (For example, Tally), and Billing software.

8. Prepare a chart on the various basic computer applications. Associate each application with a picture that depicts an example of the computer application.

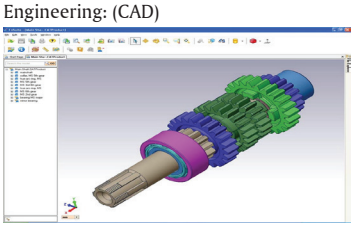
Ans.

Business: (Billing Software)

Law enforcement: (Speaker)

Communication: (Chat)

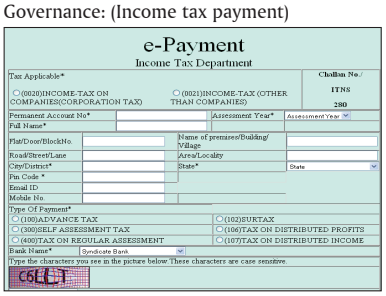
Engineering: (CAD)



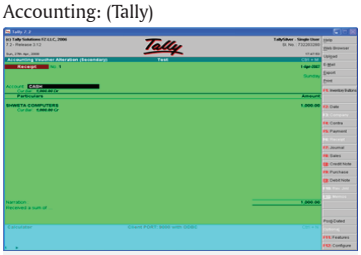
Health care: (Patient Monitoring System)

Films & television: (3D Movie)

Governance: (Income tax payment)



Accounting: (Tally)



Receipt Voucher Entry in Tally

9. Classify the following as the basic and optional components of a computer:
   a. Processor
   b. Printer
   c. DVD Drive
   d. Mouse
   e. Speaker

Ans.

a. Basic
b. Optional
c. Optional
d. Basic
e. Optional