

1st Year Computer Science Notes

All Chapters | Explanations, Important Points,
Short & Long Question-Answers, MCQs

Original study and revision notes only.

Not the official textbook. Not board papers. Not guaranteed questions.

- Original study and revision notes only.**

These notes are written in original, simple English for students preparing for 1st Year Computer Science. They are NOT the official textbook, NOT board papers, NOT leaked material, and NOT a guarantee of any exam question. Always revise from your prescribed textbook as well, and check your board syllabus for the exact chapter list in your session.

- How to use these notes:** Read the explanation first, learn the important points, practise the short and long question-answers in your own words, then test yourself with the MCQs. Do not memorise the MCQs only - understanding the concept is what helps in short, long and objective questions alike.

Chapter 1: Overview of Computer Systems

Explanation

A computer is an electronic machine that takes input, processes it according to instructions, and gives output. It works very fast and very accurately, and it does not get tired or bored. A computer system is not only the machine itself; it is the combination of hardware, software, data and people working together.

Hardware is the physical part of the computer that we can touch, such as the keyboard, monitor, mouse, CPU and printer. Software is the set of programs and instructions that tell the hardware what to do. Without software, hardware is useless, and without hardware, software cannot run.

Data is raw facts and figures, such as numbers, names and marks. When data is processed in a useful way, it becomes information. For example, the marks of students are data; a result card showing pass or fail is information.

Computers are used in education, business, banks, hospitals, offices, communication and entertainment. They help us store large amounts of data, search it quickly, and share it with others. Early computers were very large and slow, but modern computers are small, fast and powerful, and they are found in homes, schools, offices and even in our pockets as mobile phones.

A computer works in a cycle called IPO: Input, Processing, Output. Input devices send data into the computer, the CPU processes it, and output devices show the result. Storage is used to save data and programs for later use.

Important Points

- Computer: an electronic machine that processes data and gives useful results.
- Hardware: physical parts; Software: programs and instructions.
- Data: raw facts; Information: processed, useful data.
- IPO cycle: Input, Processing, Output, plus storage.
- A complete computer system needs hardware, software, data and users.

Short Question-Answers

- Q1. What is a computer?*

A computer is an electronic machine that accepts data as input, processes it with the help of programs, and produces useful output.

- Q2. What is the difference between hardware and software?*

Hardware is the physical part of a computer that can be touched, while software is the set of instructions and programs that control the hardware.

- Q3. What is the difference between data and information?*

Data is raw, unorganised facts. Information is data that has been processed and organised so that it becomes meaningful and useful.

- Q4. What is the IPO cycle?*

The IPO cycle is Input, Processing and Output. Data enters through input devices, is processed by the CPU, and the result is shown through output devices.

- Q5. Why is a computer called a versatile machine?*

Because it can perform many different kinds of work - writing, calculation, drawing, communication,

learning and entertainment - with the help of different programs.

Long Question-Answer

- Q1. Explain the parts of a computer system and how they work together.**

A computer system has four main parts. Hardware includes input devices, the CPU, memory, storage and output devices. Software includes the operating system and application programs that give instructions to the hardware. Data is the raw material that the computer works on, and users are the people who give instructions and use the results. When a user enters data through an input device, the CPU processes it according to the software instructions, stores it if needed, and shows the result through an output device. If any one part is missing, the system cannot work properly. For example, without software the hardware has no instructions, and without users the computer has no purpose.

MCQs

1. A computer is a/an _____ machine.

(a) mechanical (b) electronic (c) manual (d) chemical - Answer: (b)

2. Which of the following is hardware?

(a) Windows (b) MS Word (c) Keyboard (d) Program - Answer: (c)

3. Processed data is called:

(a) input (b) information (c) software (d) storage - Answer: (b)

4. IPO stands for:

(a) Input, Process, Output (b) Input, Processing, Output (c) Information, Processing, Output (d) Input, Program, Output - Answer: (b)

5. Which is NOT a part of a computer system?

(a) Hardware (b) Software (c) Data (d) Electricity bill - Answer: (d)

Chapter 2: Computer Memory

Explanation

Memory is the part of a computer where data and programs are stored while the computer is working, or for a longer time. Without memory, the computer could not remember instructions or results, even for a few seconds.

There are two main types of memory. Primary memory is fast, is connected directly to the CPU, and holds data and programs that are currently in use. It is usually volatile, which means its contents are lost when the power is switched off. RAM (Random Access Memory) and ROM (Read Only Memory) are the main examples.

RAM is read-write memory. The CPU can read from it and write to it quickly. More RAM usually means the computer can run more programs at the same time. ROM is read-only memory. It stores the basic instructions needed to start the computer, and its contents are not lost when the power is off. That is why ROM is called non-volatile.

Secondary memory is used for long-term storage. It is slower than primary memory but can store much more data, and its contents remain even after the power is off. Hard disks, SSDs, USB flash drives, CDs and DVDs are examples of secondary storage.

Memory is measured in units. A bit is the smallest unit, 0 or 1. Eight bits make one byte. Larger units are kilobyte (KB), megabyte (MB), gigabyte (GB) and terabyte (TB). Cache memory is a very fast, small memory inside or near the CPU that stores frequently used data so the CPU does not have to wait for main memory again and again.

Important Points

- Primary memory: fast, directly used by CPU, e.g. RAM and ROM.
- RAM is volatile; ROM is non-volatile.
- Secondary memory: long-term storage, e.g. hard disk, SSD, USB drive.
- 1 byte = 8 bits; KB, MB, GB, TB are larger units.
- Cache memory speeds up the CPU by keeping frequently used data close.

Short Question-Answers

- Q1. What is computer memory?**

Memory is the storage part of a computer where data, instructions and results are kept, either temporarily while work is in progress or for a long time.

- Q2. What is the difference between RAM and ROM?**

RAM is temporary, read-write memory whose contents are lost when power is off. ROM is permanent, read-only memory whose contents remain after power is off and which holds start-up instructions.

- Q3. Why is secondary memory needed?**

Secondary memory is needed for long-term storage of large amounts of data and programs, because primary memory is limited and mostly temporary.

- Q4. What is cache memory?**

Cache is a small, very fast memory near the CPU that stores data and instructions used again and again, so the CPU can work faster without waiting for main memory.

- Q5. What is a bit and a byte?*

A bit is the smallest unit of data, 0 or 1. A byte is a group of 8 bits and is used to represent one character.

Long Question-Answer

- Q1. Compare primary memory and secondary memory.**

Primary memory is fast, is directly connected to the CPU, and holds data and programs in current use, but it is limited in size and, in the case of RAM, temporary. Secondary memory is slower, is not directly used by the CPU for processing, but it can store a very large amount of data permanently, even without power. A computer needs both: primary memory for speed while working, and secondary memory for keeping files, programs and records safe for the future. When a program is opened, it is copied from secondary memory into primary memory so the CPU can work on it quickly.

MCQs

1. RAM is:

(a) non-volatile (b) volatile (c) permanent (d) optical - Answer: (b)

2. ROM is used to store:

(a) user files (b) start-up instructions (c) videos (d) games - Answer: (b)

3. One byte equals:

(a) 4 bits (b) 8 bits (c) 16 bits (d) 1024 bits - Answer: (b)

4. Which is secondary storage?

(a) RAM (b) Cache (c) Hard disk (d) Register - Answer: (c)

5. The fastest memory near the CPU is:

(a) hard disk (b) cache (c) DVD (d) USB drive - Answer: (b)

Chapter 3: Central Processing Unit

Explanation

The Central Processing Unit, or CPU, is called the brain of the computer because it controls all the work and performs processing. It takes instructions from programs, understands them, and carries them out step by step.

The CPU has three main parts. The Arithmetic Logic Unit (ALU) performs arithmetic operations such as addition and subtraction, and logical operations such as comparisons. The Control Unit (CU) controls and coordinates all the parts of the computer; it fetches instructions from memory, decodes them, and tells other parts what to do. Registers are small, very fast storage places inside the CPU that hold data and instructions for a very short time during processing.

The CPU works in a cycle: fetch, decode, execute. First it fetches an instruction from memory, then it decodes what the instruction means, and then it executes it. This cycle repeats millions or billions of times per second. The speed of a CPU is measured in hertz, such as megahertz (MHz) or gigahertz (GHz). A higher clock speed usually means faster processing, but the design of the CPU also matters.

Modern CPUs may have more than one core, which means they can handle more than one task at the same time more efficiently. The CPU is connected to memory and other parts through buses, which are paths that carry data and control signals.

Important Points

- CPU is the brain of the computer.
- ALU: arithmetic and logical operations.
- CU: controls, fetches and decodes instructions.
- Registers: small, fast, temporary storage inside the CPU.
- CPU cycle: fetch, decode, execute; speed measured in Hz.

Short Question-Answers

- Q1. Why is the CPU called the brain of the computer?**

Because it controls all operations, processes data, and makes decisions according to program instructions, just as the brain controls the body.

- Q2. What is the function of the ALU?**

The ALU performs arithmetic operations like addition, subtraction, multiplication and division, and logical operations like comparisons.

- Q3. What does the Control Unit do?**

The Control Unit fetches instructions from memory, decodes them, and controls and coordinates the work of all other parts of the computer.

- Q4. What are registers?**

Registers are small, very fast storage locations inside the CPU that temporarily hold data, addresses and instructions during processing.

- Q5. What is the CPU cycle?**

The CPU cycle is the repeated process of fetching an instruction, decoding it, and executing it.

Long Question-Answer

- Q1. Describe the main parts of the CPU and their functions.**

The CPU has three main parts. The ALU does all calculations and logical comparisons, which are the core of processing. The Control Unit acts as the manager: it reads instructions from memory, understands them, and sends control signals to the ALU, memory and input/output devices so that each step happens in the right order. Registers hold the data and instructions that are being used at that moment, so the CPU does not have to go back to main memory for every small step. Together, these parts allow the CPU to follow a program from start to finish, process data correctly, and produce the required output.

MCQs

1. CPU stands for:

(a) Central Processing Unit (b) Computer Personal Unit (c) Central Program Unit (d) Control Processing Unit - Answer: (a)

2. The ALU performs:

(a) only addition (b) arithmetic and logical operations (c) only storage (d) only printing - Answer: (b)

3. The Control Unit:

(a) stores files (b) controls and coordinates operations (c) displays output (d) types data - Answer: (b)

4. The CPU cycle order is:

(a) execute, fetch, decode (b) fetch, decode, execute (c) decode, execute, fetch (d) fetch, execute, decode - Answer: (b)

5. CPU speed is measured in:

(a) bytes (b) hertz (c) pixels (d) watts - Answer: (b)

Chapter 4: Inside System Unit

Explanation

The system unit is the main box of a computer that holds its most important internal parts. When we open the system unit, we see the motherboard, CPU, memory, storage devices, power supply and expansion cards, all connected together.

The motherboard is the main circuit board. All other parts are connected to it, directly or through cables, and it allows them to communicate with each other. The CPU and memory are fitted on the motherboard. Expansion slots on the motherboard allow extra cards to be added, such as a graphics card or a sound card, to improve the computer.

Input and output ports are found on the back or front of the system unit. USB ports connect keyboards, mice, printers, flash drives and many other devices. Other ports connect the monitor, speakers, microphone and network cable.

The power supply unit converts electricity from the wall socket into the correct form and voltage needed by the computer parts. Cooling fans inside the system unit remove heat, because the CPU and other parts become hot while working. Without cooling, the computer could slow down or stop working.

Storage devices inside the system unit include the hard disk or SSD, where the operating system, programs and files are stored. Optical drives, where present, read CDs and DVDs. Keeping the inside of the system unit clean and well-ventilated helps the computer work reliably.

Important Points

- System unit: the main box holding internal computer parts.
- Motherboard: main board connecting all parts.
- Expansion slots/cards add extra functions, e.g. graphics, sound.
- Ports connect external devices, e.g. USB, monitor, network.
- Power supply gives correct power; fans remove heat.

Short Question-Answers

- Q1. What is a system unit?**

The system unit is the main case of a computer that contains the motherboard, CPU, memory, storage devices, power supply and other internal parts.

- Q2. What is the function of the motherboard?**

The motherboard connects all the parts of the computer and allows them to communicate and work together.

- Q3. What are expansion cards?**

Expansion cards are extra cards fitted into slots on the motherboard to add or improve a function, such as better graphics or sound.

- Q4. Why does a computer need a cooling fan?**

Because internal parts, especially the CPU, produce heat while working. Fans remove this heat and prevent overheating and damage.

- Q5. What is the function of the power supply unit?**

It converts electricity from the mains supply into the correct voltage and form needed by the

computer's internal parts.

Long Question-Answer

- Q1. Describe the main components inside a system unit.**

Inside the system unit, the motherboard is the base that connects everything. The CPU, fitted on the motherboard, does the processing, and memory modules hold data in use. The hard disk or SSD stores the operating system, programs and files permanently. The power supply unit provides power to all parts, and cooling fans keep the temperature safe. Expansion slots allow extra cards for graphics, sound or network functions, and ports on the case connect external devices such as the keyboard, monitor and printer. All these parts work together through the motherboard, so that input can be processed and output can be produced smoothly.

MCQs

1. The main circuit board of a computer is the:

(a) hard disk (b) motherboard (c) monitor (d) keyboard - Answer: (b)

2. A graphics card is an example of:

(a) a port (b) an expansion card (c) memory (d) software - Answer: (b)

3. USB is a type of:

(a) software (b) port (c) processor (d) file - Answer: (b)

4. The power supply unit:

(a) displays images (b) converts and supplies power (c) stores data (d) cools the CPU - Answer: (b)

5. Cooling fans are needed to:

(a) make noise (b) remove heat (c) store files (d) speed up printing - Answer: (b)

Chapter 5: Network Communication and Protocols

Explanation

A computer network is a group of computers and other devices connected together so that they can share data, programs, hardware and information. Networking allows people in different places to communicate, work together, and use shared resources such as a printer or an internet connection. There are different types of networks by size. A LAN (Local Area Network) connects computers in a small area, such as a room, school or office. A WAN (Wide Area Network) connects computers over a large area, such as cities or countries; the internet is the largest WAN. A MAN (Metropolitan Area Network) covers a city or a large campus, larger than a LAN but smaller than a WAN.

Networks can be connected in different layouts called topologies. In a star topology, all computers connect to a central device such as a switch. In a bus topology, all computers share one main cable. In a ring topology, computers are connected in a circle, and data travels around the ring.

For computers to communicate, they must follow rules. These rules are called protocols. A protocol is a set of rules that controls how data is sent, received and understood. Common examples include TCP/IP, which is the main set of rules used on the internet, HTTP for web pages, and FTP for transferring files. Without agreed protocols, computers from different makers could not understand each other.

Network devices help data travel correctly. A switch connects devices in a LAN and sends data only to the correct device. A router connects different networks together, for example a home network to the internet. A modem converts signals so that a computer can connect through telephone or cable lines.

Important Points

- Network: connected computers sharing data and resources.
- LAN: small area; MAN: city area; WAN: large area, e.g. internet.
- Topologies: star, bus, ring.
- Protocol: agreed rules for communication, e.g. TCP/IP, HTTP, FTP.
- Switch: connects devices in a LAN; Router: connects networks.

Short Question-Answers

- Q1. What is a computer network?*

A computer network is a system of connected computers and devices that share data, hardware, software and information with each other.

- Q2. What is the difference between LAN and WAN?*

A LAN covers a small area like a school or office, while a WAN covers a large geographical area like cities or countries. The internet is an example of a WAN.

- Q3. What is a protocol?*

A protocol is a set of rules that computers follow to send, receive and understand data correctly during communication.

- Q4. What is the difference between a switch and a router?*

A switch connects devices within a local network and forwards data to the correct device, while a router connects different networks together, such as a local network to the internet.

- Q5. What is star topology?*

In star topology, every computer is connected to a central device, usually a switch. If one computer fails, the others can still work, but if the central device fails, the network stops.

Long Question-Answer

- Q1. Why are computer networks useful, and why are protocols needed?*

Networks are useful because they allow sharing. Many users can share one printer, one internet connection, and common files and programs, which saves money and time. Networks also make communication fast through email, messaging and video calls, and they allow people to work together from different places. Protocols are needed because computers and devices are made by different companies and use different systems. Protocols give them a common set of rules for addressing, sending, checking and receiving data, so that a message sent from one computer can be correctly understood by another, even across the world.

MCQs

1. LAN stands for:

(a) Large Area Network (b) Local Area Network (c) Long Area Network (d) Linked Area Network -

Answer: (b)

2. The internet is an example of a:

(a) LAN (b) PAN (c) WAN (d) star - Answer: (c)

3. A protocol is a set of:

(a) wires (b) rules for communication (c) computers (d) programs only - Answer: (b)

4. In star topology, computers connect to a:

(a) single cable (b) central device (c) ring (d) printer - Answer: (b)

5. A router is used to:

(a) print documents (b) connect different networks (c) store data (d) cool the CPU - Answer: (b)

Chapter 6: Wireless Communications

Explanation

Wireless communication means sending and receiving data without wires, using radio waves, microwaves or infrared signals. It has become very common because it gives freedom of movement: a user does not need to stay connected to a cable.

Common wireless technologies include Wi-Fi, Bluetooth, mobile networks and satellite communication. Wi-Fi is used to connect computers, phones and other devices to a local network and to the internet without cables, usually within a home, school or office. Bluetooth is used for short-range connections, such as connecting a phone to wireless headphones, a speaker or a keyboard. Mobile networks (such as 3G, 4G and 5G) allow phones to make calls and use the internet over a wide area through base stations. Satellite communication uses satellites in space to send signals over very long distances, for example for television, weather information and communication in remote areas.

Wireless communication has many advantages: it is convenient, it reduces cables and clutter, and it allows connection in places where laying cables is difficult. It also has disadvantages: signals can be weaker through walls, speed can fall when many users share the same network, and wireless networks need security, such as passwords and encryption, because signals can be picked up by others nearby.

Infrared communication, used in remote controls, works only over a very short distance and needs a clear line of sight. Radio waves, by contrast, can travel through walls and over longer distances, which is why they are used for Wi-Fi, radio and mobile phones.

Important Points

- Wireless communication uses radio waves, microwaves or infrared, not cables.
- Wi-Fi: wireless local network and internet access.
- Bluetooth: short-range device-to-device connection.
- Mobile networks: wide-area calls and internet via base stations.
- Satellite: long-distance communication via satellites in space.
- Wireless needs security, because signals can be received by others.

Short Question-Answers

- Q1. What is wireless communication?**

Wireless communication is the transfer of data between devices without physical wires, using signals such as radio waves or infrared.

- Q2. What is the difference between Wi-Fi and Bluetooth?**

Wi-Fi connects devices to a local network and the internet over a moderate range, while Bluetooth connects nearby devices directly to each other over a short range.

- Q3. How does a mobile network work in simple terms?**

A mobile phone connects by radio signals to a nearby base station, which connects it to the wider telephone and internet networks, allowing calls and data even while moving.

- Q4. Give one advantage and one disadvantage of wireless communication.**

Advantage: users can move freely without cables. Disadvantage: signals can be weak, slow when

shared, or less secure if not protected.

- Q5. Why does wireless communication need security?*

Because wireless signals travel through the air and can be received by nearby devices, passwords and encryption are needed to stop unauthorised access.

Long Question-Answer

- Q1. Compare Wi-Fi, Bluetooth, mobile networks and satellite communication.**

Wi-Fi is best for connecting many devices in a home, school or office to a local network and the internet without cables. Bluetooth is best for short-range, direct connections between two nearby devices, such as a phone and headphones. Mobile networks cover a wide area through base stations, so they are best for phones on the move, for calls and mobile internet. Satellite communication covers the longest distances, including remote areas, and is used for television, weather and global communication, but it is more expensive and can have delay. Each technology suits a different range and purpose, and modern devices often use more than one of them.

MCQs

1. Wi-Fi uses:

(a) wires only (b) radio signals (c) paper (d) sound cables - Answer: (b)

2. Bluetooth is used for:

(a) long-distance TV (b) short-range device connection (c) satellite launch (d) printing - Answer: (b)

3. Which covers the widest area?

(a) Bluetooth (b) Wi-Fi (c) Mobile network (d) Infrared remote - Answer: (c)

4. Satellite communication is useful for:

(a) remote areas (b) only one room (c) only headphones (d) only keyboards - Answer: (a)

5. A disadvantage of wireless networks is:

(a) no cables (b) freedom to move (c) signals can be weak or insecure (d) easy setup - Answer: (c)

Chapter 7: Database Fundamentals

Explanation

A database is an organised collection of related data stored in a computer so that it can be easily searched, updated and managed. For example, a school database holds student records, a bank database holds account records, and a hospital database holds patient records.

The basic building blocks of a database are simple. A field is a single piece of information, such as a name or a roll number. A record is a complete set of fields about one item, such as all the details of one student. A table is a collection of records about the same kind of item, organised in rows and columns. A file is a collection of related records.

A Database Management System (DBMS) is software that helps users create, store, search, update and protect a database. It allows many users to use the same data safely, reduces repetition of data, and keeps data consistent. Popular examples of DBMS software include MS Access, MySQL and Oracle, in general terms.

A key is a field, or a combination of fields, used to identify records. A primary key is a field that uniquely identifies each record in a table, such as a student ID, and it cannot be repeated or left blank. A foreign key is a field in one table that refers to the primary key of another table, and it links tables together.

Data in a database must be accurate, complete and up to date. If the same data is repeated in many places, it can become inconsistent when only one copy is updated. A good database design reduces such repetition and makes searching and reporting easier.

Important Points

- Database: organised collection of related data.
- Field: one item of data; Record: one complete set of fields; Table: collection of records.
- DBMS: software to create and manage a database.
- Primary key: uniquely identifies each record, no repeats, no blanks.
- Foreign key: links one table to the primary key of another table.

Short Question-Answers

- Q1. What is a database?**

A database is an organised collection of related data stored so that it can be easily searched, added to, changed and used.

- Q2. What is the difference between a field and a record?**

A field is a single piece of information, such as a name. A record is a complete collection of fields about one person or item, such as one student's full details.

- Q3. What is a DBMS?**

A DBMS is software that allows users to create, store, search, update and protect a database, and to manage data safely for many users.

- Q4. What is a primary key? Give an example.**

A primary key is a field that uniquely identifies each record in a table. For example, in a student table, Student ID can be the primary key because no two students share the same ID.

- Q5. Why is repetition of data a problem in a database?**

Because if the same data is stored in many places, updating it in one place but not in others creates inconsistency and errors.

Long Question-Answer

- Q1. Explain the advantages of using a database instead of keeping data in separate files.**

A database keeps data in one organised place, so it is easier to search and update. It reduces repetition, because common data is stored once and linked where needed, which keeps data consistent. A DBMS controls access, so different users can be given different permissions, and data is better protected with backup and security features. It also allows many users to work with the same data at the same time, and it makes reports easier, because data can be sorted, filtered and combined from different tables. Separate files, by contrast, are harder to search, easier to duplicate, and more likely to become inconsistent.

MCQs

1. A database is:

(a) a single file only (b) an organised collection of related data (c) a printer (d) a program only - Answer: (b)

2. A record is:

(a) one field (b) a complete set of fields about one item (c) a table (d) a key - Answer: (b)

3. A DBMS is:

(a) hardware (b) software to manage a database (c) a network cable (d) a virus - Answer: (b)

4. A primary key must be:

(a) repeated (b) blank (c) unique (d) optional - Answer: (c)

5. A foreign key is used to:

(a) delete a table (b) link tables together (c) print data (d) hide data - Answer: (b)

Chapter 8: Database Development

Explanation

Database development is the process of planning, designing and creating a database that meets the needs of its users. A good database is not made by accident; it is built step by step, starting from understanding what data is needed and how it will be used.

The first step is to find out the requirements: what data must be stored, who will use it, and what reports or searches are needed. For a school, this might include student details, classes, subjects and results. Next, the designer plans the tables, fields and relationships. Each table should hold data about one kind of item, and tables are linked with keys so that related data can be combined without unnecessary repetition.

After design, the database is created using DBMS software. Tables are made, fields are given suitable data types, such as text, number or date, and primary keys are set. Then sample data is entered and tested: can the required searches be done, are the reports correct, and is any data missing or repeated? If problems are found, the design is corrected before the database is used for real work.

Once a database is in use, it must be maintained. New records are added, old records are updated or removed when no longer needed, and backups are taken regularly so that data is not lost if a computer fails. Security is also important: only authorised users should be able to see or change sensitive data, such as personal or financial records.

Good database development saves time, reduces errors, and makes information reliable. Poor design, on the other hand, leads to repeated data, wrong reports, and difficulty in finding information later.

Important Points

- Database development: planning, designing, creating and maintaining a database.
- Steps: requirements, design tables and relationships, create, test, maintain.
- Each table: one kind of item; linked by keys to avoid repetition.
- Fields need suitable data types: text, number, date, etc.
- Maintenance: add, update, delete records; backup; control access.

Short Question-Answers

- Q1. What is database development?**

Database development is the planned process of designing, creating, testing and maintaining a database to meet users' needs.

- Q2. What is the first step in database development?**

The first step is to find out the requirements - what data is needed, who will use it, and what searches and reports are required.

- Q3. Why should each table hold one kind of item?**

So that data is organised clearly, repetition is reduced, and related data can be linked cleanly with keys instead of being copied again and again.

- Q4. Why is testing important before using a database?**

Testing checks whether searches and reports work correctly and whether any data is missing,

repeated or wrong, so problems can be fixed before real use.

- Q5. Why are backups important?*

Backups are copies of data kept safely so that information can be recovered if the original database is damaged, deleted or lost.

Long Question-Answer

- Q1. Describe the main steps of developing a database, with a school example.**

First, requirements are collected: a school needs student names, IDs, classes, subjects and marks, and reports such as class results. Second, tables are designed: one table for students, one for classes, one for subjects, and one for results, linked by keys such as Student ID. Third, the database is created in DBMS software, fields are given correct data types, and primary keys are set. Fourth, sample data is entered and tested to check that searches and reports give correct answers. Finally, the database is used and maintained: new students are added, marks are updated, old records are removed when needed, backups are taken, and access is controlled so only authorised staff can change sensitive data.

MCQs

1. The first step in database development is:

(a) printing reports (b) finding requirements (c) deleting data (d) buying hardware - Answer: (b)

2. Tables in a database should be linked by:

(a) colours (b) keys (c) fonts (d) pictures - Answer: (b)

3. A suitable data type for a date of birth is:

(a) text only (b) date (c) picture (d) sound - Answer: (b)

4. Testing a database helps to:

(a) hide data (b) find and fix errors before real use (c) delete all records (d) slow down work - Answer: (b)

5. Backups are taken to:

(a) waste space (b) recover data after loss or damage (c) print reports (d) change passwords - Answer: (b)

Revision Checklist

- [] I can explain hardware, software, data and information, and the IPO cycle.
- [] I can compare RAM and ROM, and primary and secondary memory.
- [] I can name the parts of the CPU and explain fetch, decode, execute.
- [] I can describe the motherboard, ports, power supply and cooling in a system unit.
- [] I can compare LAN, MAN and WAN, and explain protocols, switches and routers.
- [] I can compare Wi-Fi, Bluetooth, mobile networks and satellite communication.
- [] I can explain field, record, table, DBMS, primary key and foreign key.
- [] I can describe the steps of database development and why backups and testing matter.
- [] I have practised all chapter MCQs and can explain why each answer is correct.
- [] I have revised from my prescribed textbook as well - these notes do not replace it.
- nd of notes. Original study and revision material only - not an official textbook, not board papers, not guaranteed questions.*