ZAHID NOTES • AJK BISE MIRPUR

9th Class Computer Science Notes AJK Board (BISE Mirpur) Full Book Notes

Complete chapter-wise study notes, key terms and original practice questions for Class 9 Computer Science.

About these notes

These notes follow the chapters of the National Book Foundation book *Model Textbook of Computer Science Grade 9*, written for the National Curriculum of Pakistan 2022-23 — the syllabus AJK BISE Mirpur posts on its curriculum page for Class 9:

1. Computer Systems • 2. Computational Thinking and Algorithms • 3. Programming Fundamentals • 4. Data and Analysis • 5. Applications of Computer Science • 6. Impacts of Computing • 7. Entrepreneurship.

Each chapter contains study notes, key terms, and original practice questions (multiple-choice, short and long questions) written for these notes, with an MCQ answer key at the end of the book.

About the AJK paper: The AJK BISE Class 9 Computer Science paper is SLO-based, with multiple-choice questions (including scenario-based questions), short questions and long questions. AJK BISE SSC-I result cards show Computer Science-I out of 60 marks. No breakdown of the marks is printed in these notes, because the board's internal split was not verified — please check the current model paper on the official AJK BISE website, **ajkbise.net**, before your examination.

For students of the Board of Intermediate and Secondary Education, Mirpur, Azad Jammu and Kashmir.

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End MCQ Answer Key (all chapters)

How to use these notes

- Read the study notes of one chapter first, and learn the key terms at the end of the chapter.
- Then try the practice questions without looking at the notes. Check your MCQs against the answer key at the end.
- For short and long questions, write full answers in your own words — that is how you will answer in the examination.
- For Chapter 3, type the small HTML, CSS and JavaScript example on a computer and see what it does.

Note: All practice questions in this book are original questions written for these notes. They are practice material, not past papers, and no question in this book is presented as an official AJK BISE question.

Chapter 1: Computer Systems

A computer system is hardware, software, data and people working together to take in data, process it, store it and give useful output. This chapter explains the parts of a computer, how data is stored inside it as binary digits, the job of the operating system, and how computers talk to each other in a network.

1.1 What is a system?

- A system is a set of parts that work together for a purpose. A bicycle, a school and a computer are all systems.
- Systems can be natural, such as the water cycle, or artificial, such as a traffic-light system made by people.
- A computer is a system because its hardware, software, data and users depend on each other; if one part fails, the whole job suffers.
- Every computer system follows the same cycle: input (data goes in), processing (the computer works on it), storage (results are kept) and output (results are shown).

1.2 Hardware: the physical parts

- The Central Processing Unit (CPU) is the processor. Its Control Unit (CU) directs the work, and its Arithmetic Logic Unit (ALU) does calculations and comparisons.
- Memory holds data while the computer is working. RAM is temporary working memory and loses its contents when the power is off; ROM keeps the start-up instructions permanently.
- Cache is very fast, small memory inside or near the CPU that holds data the CPU needs again and again.
- Storage keeps data for a long time: hard disk drive (HDD), solid state drive (SSD) and USB flash drive. Input devices include the keyboard, mouse, scanner and microphone; output devices include the monitor, printer and speakers.

1.3 How data is stored: binary

- Inside a computer, everything is stored as binary digits — 0 and 1, called bits. Eight bits make one byte, and one byte can stand for a single character such as a letter.
- Numbers, text, pictures and sound are all changed into binary patterns before the computer can work with them.
- Text is stored with a code: ASCII gives each character a number, and Unicode covers the characters of many languages of the world.
- Larger units are kilobyte (KB), megabyte (MB), gigabyte (GB) and terabyte (TB). In everyday use each step is about a thousand times the one before it.

1.4 Software: the programs

- System software manages the computer itself. The operating system is the main example: it runs the processor, memory, files and devices, and gives the user a way to control the computer.
- A user works through a graphical user interface (GUI) of windows and icons, or a command-line interface (CLI) of typed commands.
- Application software is made for a particular task, such as writing, drawing, playing media or browsing the web.
- Utility software looks after the computer, for example by checking the disk for errors or protecting it against harmful programs.

1.5 Computers in a network

- Data communication means sending data from one device to another. It needs a sender, a receiver, a message, a medium (cable or wireless) and agreed rules called a protocol.
- A network is a group of connected computers that share data and devices. A LAN covers a small area such as a school; a WAN covers a large area such as a country.
- Networking devices include the router, which joins networks together, the switch, which connects devices inside a network, and the modem, which connects a home to the internet.
- Common layouts are the star (all devices connect to one central device), the bus (one shared cable) and the ring (devices connected in a circle).

Key terms

- CPU — Central Processing Unit, the processor. CU — Control Unit. ALU — Arithmetic Logic Unit.
- RAM — Random Access Memory (temporary). ROM — Read Only Memory (start-up instructions).
- Bit — one 0 or 1. Byte — 8 bits. GUI — Graphical User Interface. CLI — Command-Line Interface.
- LAN — Local Area Network. WAN — Wide Area Network. Protocol — agreed rules for communication.

Chapter 1: Computer Systems — Practice Questions

Multiple-Choice Questions

Q1. Which part is called the brain of the computer?

(A) Keyboard (B) Printer (C) Monitor (D) CPU

Q2. How many bits are there in one byte?

(A) 2 (B) 4 (C) 8 (D) 16

Q3. Which memory loses its contents when the power is off?

(A) ROM (B) Hard disk (C) RAM (D) SSD

Q4. Which of these is system software?

(A) Operating system (B) Web browser (C) Word processor (D) Spreadsheet

Q5. All data inside a computer is stored as:

(A) letters only (B) sound waves (C) decimal numbers (D) binary digits

Q6. Which device is used for long-term storage?

(A) Register (B) RAM (C) Cache (D) Hard disk

Q7. Which of these is an output device?

(A) Scanner (B) Mouse (C) Printer (D) Microphone

Q8. A LAN is a network that covers:

(A) a small area such as a school (B) the whole world (C) only two computers (D) a whole country

Q9. ASCII is used to:

(A) speed up the CPU (B) connect to the internet (C) store pictures (D) give each text character a number

Q10. The part of the CPU that directs operations is the:

(A) SSD (B) ALU (C) CU (D) ROM

Short Questions

Q1. Define a computer system and give one example of a natural system and one of an artificial system.

Q2. State the functions of the Control Unit and the Arithmetic Logic Unit.

Q3. Why is RAM called temporary memory while ROM is called permanent memory?

Q4. Give two examples each of input devices, output devices and storage devices.

Q5. What is a protocol in data communication, and why is it needed?

Long Questions

Q1. Explain the input–processing–storage–output cycle of a computer with an example from your own school life.

Q2. Describe the main hardware parts of a computer system and explain how data is represented inside it as binary digits.

> Write each answer in your own words, in full sentences. For long questions, give an introduction, the main points with examples, and a short conclusion.

Chapter 2: Computational Thinking and Algorithms

Computational thinking is a way of tackling problems by breaking them into clear, ordered steps that a computer — or a person — can follow. An algorithm is a finite list of such steps that solves a problem. This chapter builds the habit of thinking clearly before writing any code.

2.1 The four pillars of computational thinking

- Decomposition: split a large problem into smaller parts that are easier to solve, such as planning a school event task by task.
- Pattern recognition: look for similarities with problems you have solved before, so you can reuse a known idea.
- Abstraction: keep only the details that matter for the solution and hide the rest.
- Algorithm design: put the steps in order so that anyone following them reaches the correct answer.

2.2 What makes a good algorithm?

- An algorithm has a clear starting point, a finite number of steps, and a clear stopping point — it must finish.
- Each step must be clear and exact, so that two people following it get the same result.
- An algorithm takes some input, works on it, and produces an output, for example taking marks as input and giving the average as output.
- Everyday algorithms are everywhere: a recipe, directions to a friend's house, and the steps for long division are all algorithms.

2.3 Flowcharts: drawing the steps

- A flowchart draws an algorithm with shapes joined by arrows: an oval for Start and End, a parallelogram for input and output, a rectangle for a process, and a diamond for a decision.
- Arrows show the order in which steps happen, and a diamond has two exits — one for Yes and one for No.
- Drawing the flowchart first makes mistakes easy to see before any code is written.
- To find the larger of two numbers: Start, read the two numbers, ask 'is the first number larger?', print the larger one, then End.

2.4 Pseudocode: writing the steps in words

- Pseudocode writes an algorithm in plain, structured English, using words such as IF, ELSE, WHILE and FOR.
- Sequence means steps in order; selection means choosing with IF … ELSE; repetition means repeating with a loop such as WHILE or FOR.
- Example: IF marks are 80 or more, THEN print 'Excellent', ELSE print 'Keep practising'.
- Pseudocode is not a real programming language, so it can be turned into code in any language later.

2.5 Dry run and debugging

- A dry run means tracing an algorithm by hand with sample values, step by step, to check that it gives the right answer.
- A trace table records the value of each variable after every step, which makes a wrong step easy to spot.
- A syntax error breaks the rules of the language; a logical error gives a wrong answer without stopping; a runtime error stops the program while it is running.
- Debugging is finding and fixing errors: test with simple values first, check one part at a time, and read the error message carefully.

Key terms

- Decomposition — splitting a problem into smaller parts. Abstraction — keeping only important details.
- Algorithm — a finite, ordered set of steps that solves a problem. Pseudocode — steps written in structured plain words.
- Flowchart — a diagram of an algorithm using standard shapes. Dry run — tracing steps by hand with sample values.
- Debugging — finding and fixing errors. Syntax error — breaking the language rules. Logical error — a wrong result.

Chapter 2: Computational Thinking and Algorithms — Practice Questions

Multiple-Choice Questions

Q1. What is the first step of computational thinking when facing a large problem?

(A) Draw a picture (B) Write the code (C) Decomposition (D) Buy a new computer

Q2. An algorithm must always:

(A) run forever (B) have a finite number of steps (C) use the internet (D) be written in Python

Q3. In a flowchart, a diamond shape stands for:

(A) a process (B) a decision (C) the end (D) input

Q4. Which word is used for choosing between two paths in pseudocode?

(A) IF (B) LOOP (C) WHILE (D) PRINT

Q5. Keeping only the details that matter and hiding the rest is called:

(A) repetition (B) decomposition (C) abstraction (D) debugging

Q6. A dry run is:

(A) running a program fast (B) tracing steps by hand with sample values (C) deleting a program (D) drawing a flowchart

Q7. An error that gives a wrong answer without stopping the program is a:

(A) runtime error (B) logical error (C) power error (D) syntax error

Q8. Which of these is a repetition structure?

(A) PRINT (B) START (C) IF … ELSE (D) WHILE loop

Q9. Pattern recognition means:

(A) writing long code (B) drawing patterns (C) finding similarities with problems solved before (D) colouring a diagram

Q10. Debugging is the process of:

(A) writing a flowchart (B) finding and fixing errors (C) buying software (D) printing output

Short Questions

Q1. Define an algorithm and state two qualities of a good algorithm.

Q2. What is decomposition? Give one everyday example.

Q3. Name the four flowchart symbols and state what each one is used for.

Q4. What is the difference between a syntax error and a logical error?

Q5. What is a dry run, and why is it useful before writing code?

Long Questions

Q1. Explain the four pillars of computational thinking with an example of planning a school function.

Q2. Write an algorithm in pseudocode, and draw its flowchart in words, to find the average of three numbers entered by the user.

> Write each answer in your own words, in full sentences. For long questions, give an introduction, the main points with examples, and a short conclusion.

Chapter 3: Programming Fundamentals

Programming means writing instructions that a computer can follow. In this chapter you build a static website with HTML and CSS, then make it respond with JavaScript. You will use sequence, selection and repetition, and learn how to find and fix mistakes in your code.

3.1 Websites and web applications

- A website is a set of linked pages, such as a school information site. A web application is a site you can interact with, such as an online quiz or a shop.
- A static website shows the same content to every visitor. A dynamic website changes its content, for example by showing your name after you log in.
- The front end is what the visitor sees in the browser; the back end is the server work that the visitor does not see.
- HTML gives a page its structure, CSS gives it its style, and JavaScript gives it behaviour.

3.2 HTML: the structure of a page

- An HTML document starts with <html>, has a <head> for the title, and a <body> for the content the visitor sees.
- Tags mark up content: <h1> to <h6> for headings, for paragraphs, <a> for links, <img> for images, <ul> and <ol> for lists, and <table> for tables.
- Most tags come in pairs: an opening tag and a closing tag with a forward slash, such as … .
- Attributes give extra information, for example <a href="page.html"> tells the link where to go, and <img src="photo.jpg"> tells the image where to come from.

3.3 CSS: the style of a page

- CSS describes how the page should look: colours, fonts, sizes, spacing and layout.
- A CSS rule has a selector (which part to style) and declarations (property and value), for example h1 { color: blue; }.
- CSS can be written inside a tag (inline), inside the <style> part of the head (internal), or in a separate file linked to the page (external).
- Common properties are color, background-color, font-size, text-align, margin (space outside) and padding (space inside).

3.4 JavaScript: making the page respond

- JavaScript is a scripting language that runs in the browser and makes a page interactive, for example by responding to a button click.
- A variable stores a value, such as let marks = 85; — the value can change while the program runs.
- Operators do the work: + adds, - subtracts, * multiplies, / divides, % gives the remainder, and == and > compare values.
- Selection chooses with IF … ELSE, and repetition repeats with a FOR loop (a known number of times) or a WHILE loop (while a condition is true).

3.5 Testing and debugging code

- Test a page in the browser as you build it, one small change at a time, so a new mistake is easy to find.
- The browser console shows error messages and the line where the problem is — read the message before guessing.
- Common mistakes are a missing closing tag or bracket, a misspelt tag name, and using the wrong case, because HTML tags and JavaScript names are case-sensitive in practice.
- A good habit is to check the code with simple inputs first, such as 0, 1 and 10, and then with the real values.

Key terms

- HTML — HyperText Markup Language, the structure of a web page. CSS — Cascading Style Sheets, the style of a page.
- JavaScript — the scripting language that makes pages interactive. Tag — a markup instruction such as <p>.
- Variable — a named place that stores a value. Loop — a repeated set of instructions. Front end — what the visitor sees.
- Debugging — finding and fixing errors in code. Console — the browser tool that shows errors and messages.

```
<!DOCTYPE html>
<html><head><title>My School</title>
<style> h1 { color: navy; text-align: center; } </style>
</head><body>
<h1>Welcome to My School</h1>
<p id="msg">Press the button to see a message.</p>
<button onclick="show()">Click me</button>
<script>
function show() {
  let name = "Ali";
  document.getElementById("msg").textContent = "Hello, " + name + "!";
}
</script>
</body></html>
```

Chapter 3: Programming Fundamentals — Practice Questions

Multiple-Choice Questions

Q1. HTML is mainly used to:

(A) style a page (B) give a page its structure (C) make a page interactive (D) store data

Q2. Which tag makes the largest heading?

(A) <p> (B) <h1> (C) <head> (D) <h6>

Q3. CSS is used for:

(A) storing files (B) connecting to the internet (C) the structure of a page (D) the style of a page

Q4. In CSS, the rule h1 { color: blue; } makes:

(A) all links blue (B) all text blue (C) all headings of level 1 blue (D) the background blue

Q5. JavaScript runs in the:

(A) printer (B) browser (C) keyboard (D) monitor

Q6. Which of these stores a value that can change?

(A) variable (B) heading (C) selector (D) tag

Q7. What does the % operator give?

(A) the remainder (B) the average (C) the sum (D) the product

Q8. A FOR loop is best when:

(A) the page has no CSS (B) the number of repeats is known (C) the program must stop at once (D) no repetition is needed

Q9. The correct way to close a paragraph tag is:

(A) <p> (B) </p> (C) <p/> (D) <end p>

Q10. If a page does not work, the first place to look for the error message is the:

(A) browser console (B) keyboard (C) mouse (D) printer

Short Questions

Q1. What is the difference between a website and a web application?

Q2. Write the basic structure of an HTML document and name the purpose of the head and the body.

Q3. Give the CSS rule that makes all level-2 headings red, and explain its parts.

Q4. What is a variable in JavaScript? Give one example.

Q5. Name two common mistakes that cause a web page to fail, and say how you would find each one.

Long Questions

Q1. Write HTML and CSS for a small page about your school, with a heading, a paragraph, a list of three subjects and a link.

Q2. Explain sequence, selection and repetition in JavaScript, giving a small example of each.

> Write each answer in your own words, in full sentences. For long questions, give an introduction, the main points with examples, and a short conclusion.

Chapter 4: Data and Analysis

Data is the raw material of computing: facts and figures that become useful information only when they are organised and analysed. This chapter explains types of data, how data is collected and stored, how simple analysis turns it into decisions, and what big data and machine learning mean.

4.1 Data and information

- Data is raw facts and figures, such as a list of marks: 78, 65, 90. Information is data that has been organised and given meaning, such as 'the class average is 77.7'.
- Good decisions need data that is accurate, complete and up to date; a wrong entry or a missing record can change the result and mislead the user.
- Data can be numeric (numbers used for calculation), text (words and names), Boolean (true or false) or date and time.
- Quantitative data can be counted or measured, such as height or marks. Qualitative data describes qualities, such as a favourite colour.

4.2 Collecting and storing data

- Data is collected by surveys and forms, by sensors, and from records that already exist, such as school registers.
- A table organises data in rows and columns. Each row is one record, for example one student; each column is one field, for example the student's name; a file is a collection of related records.
- A primary key is a field that identifies each record uniquely, such as a roll number — no two students share one.
- Sorting arranges records in order, for example by marks; searching finds the records that match a condition, for example all students with more than 80 marks.

4.3 Simple data analysis

- Analysis means looking at data to find totals, averages and patterns that answer a question.
- Common measures are the total, the average (mean), and the maximum and minimum values.
- A chart makes patterns easy to see: a bar chart compares values, a pie chart shows parts of a whole, and a line chart shows change over time.
- A table is better than a chart when exact values matter; a chart is better when the pattern matters more than the exact numbers.

4.4 Big data, AI and machine learning

- Big data means data that is very large, arrives very fast, and comes in many forms — the three Vs are volume, velocity and variety.
- Big data is used by shops to suggest products, by banks to spot unusual transactions, and by weather services to forecast rain.
- Artificial intelligence (AI) means computer systems that do tasks which need human-like thinking, such as recognising speech or pictures.
- Machine learning is a part of AI: the computer learns from examples in data instead of being given every rule, for example learning to tell a cat from a dog by looking at many pictures.

Key terms

- Data — raw facts and figures. Information — organised data with meaning.
- Field — one piece of data. Record — a full set of fields about one item. File — a collection of related records.
- Primary key — a field that identifies each record uniquely. Mean — the average of a set of numbers.
- Big data — very large, fast-arriving data in many forms. AI — Artificial Intelligence. Machine learning — learning from examples in data.

Chapter 4: Data and Analysis — Practice Questions

Multiple-Choice Questions

Q1. Data that has been organised and given meaning is called:

(A) information (B) a byte (C) a program (D) a file

Q2. The marks 78, 65 and 90 are an example of:

(A) a chart (B) a password (C) raw data (D) a decision

Q3. In a table, one row about one student is a:

(A) key (B) field (C) file (D) record

Q4. A roll number used to identify each student uniquely is a:

(A) field only (B) primary key (C) chart (D) backup

Q5. Which of these is quantitative data?

(A) A favourite colour (B) A price (C) A comment (D) A name

Q6. The average of 10, 20 and 30 is:

(A) 10 (B) 20 (C) 30 (D) 60

Q7. Sorting data means:

(A) printing it (B) deleting it (C) arranging it in order (D) hiding it

Q8. A pie chart is most useful for:

(A) exact values (B) showing parts of a whole (C) storing data (D) typing text

Q9. The three Vs of big data are volume, velocity and:

(A) victory (B) vision (C) value (D) variety

Q10. Machine learning means a computer:

(A) cannot make mistakes (B) works without data (C) is given every rule by hand (D) learns from examples in data

Short Questions

Q1. What is the difference between data and information? Give one example.

Q2. Define field, record and file, and give one example of each from a school register.

Q3. What is a primary key? Why must it be unique?

Q4. Name three common measures used in simple data analysis.

Q5. What are the three Vs of big data?

Long Questions

Q1. Explain, with an example, how a school could collect the marks of a class, store them in a table, and analyse them to find the average and the highest mark.

Q2. Describe what artificial intelligence and machine learning are, and give two examples of how they are used in everyday life.

> Write each answer in your own words, in full sentences. For long questions, give an introduction, the main points with examples, and a short conclusion.

Chapter 5: Applications of Computer Science

Computer science is not only about computers themselves — it is about what computers make possible. This chapter looks at artificial intelligence, cloud computing, the Internet of Things and blockchain, how these technologies are used in Pakistan, and what they mean for people and society.

5.1 Artificial intelligence and machine learning

- Artificial intelligence (AI) means computer systems that carry out tasks which need human-like thinking, such as understanding speech, recognising faces or translating languages.
- Machine learning is a part of AI. The system is trained on many examples and learns the pattern, instead of being told every rule in advance.
- Everyday examples are voice assistants, film and shopping recommendations, and spam filters that learn which mail is unwanted.
- AI systems are only as good as their training data: if the data is unfair or incomplete, the system's decisions can be unfair too.

5.2 Cloud computing

- Cloud computing means using software and storage over the internet instead of on your own computer.
- Common examples are email, online document storage and photo backup: the files live on the provider's computers and can be reached from any device.
- Its benefits are that you do not need powerful hardware, your files are backed up, and you can work from anywhere with an internet connection.
- Its risks are that you need the internet to reach your files, and you must trust the provider to keep your data safe.

5.3 Internet of Things and blockchain

- The Internet of Things (IoT) means everyday devices connected to the internet: a smart electricity meter, a fitness band, or a farm sensor that reports soil moisture.
- IoT devices collect data and act on it, for example a sensor that switches on irrigation only when the soil is dry.
- A blockchain is a shared record of transactions that is very hard to change afterwards, because every new entry is linked to the ones before it.
- Blockchain is used to keep trustworthy records, for example of land, goods in a supply chain, or digital payments.

5.4 Computing in Pakistan

- In farming, weather forecasts, market prices and crop advice now reach farmers on mobile phones.
- In health, hospitals keep patient records on computers, and telemedicine lets a doctor in a city advise a patient in a distant village.
- In education, online classes and digital books let students learn even when they cannot reach a classroom.
- In business, online shops and digital payments let small sellers reach customers across the country.

5.5 Social implications of AI

- AI helps take decisions that affect people, such as which job applications are shortlisted or who gets a loan.
- If the data used to train an AI is biased, the AI can treat some groups unfairly — so humans must check its decisions.
- New technology changes jobs: some tasks disappear, while new jobs appear for people who can build, check and repair these systems.
- The aim is to use AI as a helper, with people keeping the final responsibility for important decisions.

Key terms

- AI — Artificial Intelligence, systems that do tasks needing human-like thinking.
- Machine learning — learning patterns from examples in data. Cloud computing — software and storage used over the internet.
- IoT — Internet of Things, everyday devices connected to the internet. Blockchain — a shared record that is hard to change.
- Telemedicine — medical advice given over the internet or phone. Bias — unfairness in data or decisions.

Chapter 5: Applications of Computer Science — Practice Questions

Multiple-Choice Questions

Q1. AI stands for:

(A) Advanced Information (B) Applied Industry (C) Automatic Internet (D) Artificial Intelligence

Q2. Machine learning works by:

(A) copying a textbook (B) being told every rule in advance (C) learning patterns from examples in data (D) working without any data

Q3. A voice assistant is an example of:

(A) cloud storage (B) artificial intelligence (C) a spreadsheet (D) a printer

Q4. Cloud computing means:

(A) buying a bigger computer (B) printing in the cloud (C) storing files only on a USB (D) using software and storage over the internet

Q5. Which of these is an IoT device?

(A) A pencil (B) A printed book (C) A smart electricity meter (D) A paper notebook

Q6. Blockchain is best described as:

(A) a social media app (B) a chain of computers (C) a shared record that is hard to change (D) a type of printer

Q7. Telemedicine lets:

(A) a doctor advise a patient at a distance (B) a computer replace all doctors (C) patients avoid all medicine (D) hospitals close down

Q8. One benefit of cloud computing is:

(A) files can be reached from any device (B) files can never be lost (C) no password is needed (D) you need no internet at all

Q9. If training data is biased, an AI system can:

(A) stop working at once (B) need no checking (C) become perfectly fair (D) treat some groups unfairly

Q10. Online classes and digital books are an example of computing in:

(A) fishing (B) farming only (C) education (D) mining only

Short Questions

Q1. Define artificial intelligence and give two everyday examples.

Q2. What is cloud computing? State one benefit and one risk.

Q3. What is the Internet of Things? Give two examples of IoT devices.

Q4. How is computing used in farming and in health in Pakistan?

Q5. Why must humans check the decisions made by an AI system?

Long Questions

Q1. Explain artificial intelligence and machine learning, and describe how a spam filter learns from examples.

Q2. Describe cloud computing, the Internet of Things and blockchain, giving one practical use of each in Pakistan.

> Write each answer in your own words, in full sentences. For long questions, give an introduction, the main points with examples, and a short conclusion.

Chapter 6: Impacts of Computing

Computers change how we live, learn and talk to each other. This chapter is about using them safely and responsibly: protecting your privacy, recognising online dangers, treating others with respect, and understanding the wider effects of computing on people, culture and the environment.

6.1 Safe and responsible use

- Use strong passwords that are long and hard to guess, and do not share them with anyone, not even a friend.
- Keep your software and apps updated, because updates often fix security problems.
- Think before you share: a photo or a comment posted online can be copied and may stay there for years.
- Respect other people online exactly as you would face to face, and respect their work by not copying it as your own.

6.2 Privacy and security

- Personal data is information about you: your name, address, phone number, photos and location.
- Phishing is a trick in which a fake message or website tries to get your password or bank details — never click a suspicious link or share a code sent to your phone.
- Malware is harmful software, such as a virus, that can damage your computer or steal your data; it often arrives through unknown downloads.
- Protect yourself with two-factor authentication, regular backups of important files, and by logging out on shared computers.

6.3 Cyberbullying and fake news

- Cyberbullying is using the internet to hurt, threaten or embarrass someone. It is wrong, and it can cause real harm.
- If you are bullied online, tell a trusted adult, save the evidence, block the person, and report the account.
- Fake news is false information spread as if it were true. Before forwarding a message, check the source, look for the same news elsewhere, and ask whether it sounds too strange to be true.
- Never forward a message just because many people have forwarded it — that is how false news spreads.

6.4 The digital divide

- The digital divide is the gap between people who have good access to computers and the internet and people who do not.
- It affects learning: a student without internet at home cannot join online classes or download notes as easily as others can.
- It also affects work and services, because many jobs and government services are now online.
- The gap can be reduced by shared computer labs, low-cost devices, and internet access in schools and libraries.

6.5 Law, ethics and the environment

- Intellectual property means the rights of the person who created a work — a book, a song, a program or a photo. Copying it without permission is against the law.
- Plagiarism is presenting someone else's work as your own, including copying text from the internet into homework.
- Pakistan has laws against the misuse of computers and online harassment; breaking them can lead to punishment, so use technology within the law.
- Computing also affects the environment: making devices uses energy and materials, and old devices must be recycled properly instead of being thrown away.

Key terms

- Privacy — control over your personal information. Phishing — a fake message that tries to steal your details.
- Malware — harmful software such as a virus. Two-factor authentication — a second check, such as a code, after the password.
- Cyberbullying — hurting someone online. Fake news — false information spread as if true.
- Digital divide — unequal access to computers and the internet. Plagiarism — presenting someone else's work as your own.
- Intellectual property — the rights of a creator over their work. Backup — an extra copy of important files.

Chapter 6: Impacts of Computing — Practice Questions

Multiple-Choice Questions

Q1. A strong password should be:

(A) shared with friends (B) your name (C) long and hard to guess (D) 12345

Q2. Phishing is:

(A) fishing on a computer (B) a fake message that tries to steal your details (C) a type of computer game (D) a fast internet connection

Q3. Malware is:

(A) harmful software such as a virus (B) a type of keyboard (C) a safe website (D) a useful program

Q4. Two-factor authentication means:

(A) two computers (B) two users (C) two passwords only (D) a second check, such as a code, after the password

Q5. If you are bullied online, you should:

(A) keep it secret (B) reply with insults (C) tell a trusted adult and save the evidence (D) share your password

Q6. Before forwarding a news message, you should:

(A) forward it at once (B) check the source and look for the same news elsewhere (C) delete it always (D) change its words

Q7. The digital divide is the gap between people who:

(A) own a car and people who do not (B) live in cities and villages (C) like computers and people who do not (D) have internet access and people who do not

Q8. Plagiarism means:

(A) quoting with credit (B) reading a book (C) writing your own essay (D) presenting someone else's work as your own

Q9. Intellectual property is:

(A) a type of licence for cars (B) a computer part (C) the rights of a creator over their work (D) a free download

Q10. Old computers should be:

(A) thrown in a river (B) burnt (C) recycled properly (D) buried in a garden

Short Questions

Q1. What is personal data? Give three examples.

Q2. Explain phishing and name two things you should never do when you receive a suspicious message.

Q3. What should you do if you are bullied online?

Q4. What is the digital divide, and how does it affect learning?

Q5. What is plagiarism, and why is it wrong?

Long Questions

Q1. Describe the main steps you would take to keep yourself safe online, covering passwords, updates, phishing and backups.

Q2. Explain the digital divide and the environmental effects of computing, and suggest two ways each problem can be reduced.

> Write each answer in your own words, in full sentences. For long questions, give an introduction, the main points with examples, and a short conclusion.

Chapter 7: Entrepreneurship

An entrepreneur is a person who spots a need and starts a business to meet it, taking a risk in the hope of success. Digital tools have made it easier than ever for a young person to start small — this chapter explains how to find an idea, plan it, and present it honestly.

7.1 What is an entrepreneur?

- An entrepreneur sees a problem or a need and creates a product or a service to solve it.
- Entrepreneurs take risks: they spend time and money before knowing whether the business will succeed.
- Entrepreneurship creates jobs, not only for the entrepreneur but for the people they hire as the business grows.
- Famous examples began very small — a stall, a home kitchen, or a single web page — and grew by serving customers well.

7.2 Design thinking: from idea to plan

- Design thinking starts by understanding the customer: who has the problem, and what do they really need?
- Next, define the problem clearly in one sentence, for example: 'Students in my area need affordable, healthy lunch.'
- Then think of many ideas, choose the best one, and build a simple version to test — a minimum viable product.
- Test it with real customers, listen to what they say, and improve it before spending more money.

7.3 The business plan

- A business plan describes the market need, the product or service, the customers, the price, and how the business will run.
- Costing means adding up all costs — materials, transport, packaging — so the price covers the costs and leaves a profit.
- Profit is the money left after costs are paid: selling price minus cost. If costs are higher than the price, the business makes a loss.
- Operations are the daily work: buying, making, delivering and keeping records. Marketing is telling customers about the business.

7.4 Digital tools for a small business

- Social media lets a small business show its products, take orders and answer customers without a shop.
- An online shop or a simple order form can take orders day and night, and digital payments let customers pay without cash.
- A spreadsheet keeps track of sales, costs and stock, so the owner always knows whether the business is making a profit.
- A business should also keep its customers' data safe and never share it without permission.

7.5 Pitching and honest business

- A pitch is a short, clear presentation of a business idea: the problem, the solution, the customers, and why it will work.
- A good pitch is honest about costs and risks, and it is practised until it can be given in a few minutes.
- Honest advertising means saying only what is true about a product; false claims may bring quick sales but destroy trust.
- An ethical business treats workers fairly, charges fair prices, and respects the law and the environment.

Key terms

- Entrepreneur — a person who starts a business to meet a need. Profit — selling price minus cost.
- Design thinking — solving problems by understanding the customer first. Minimum viable product — the simplest version to test.
- Business plan — a written plan of the need, product, customers, costs and marketing. Marketing — telling customers about a business.
- Pitch — a short presentation of a business idea. Costing — adding up all the costs of a product or service.

Chapter 7: Entrepreneurship — Practice Questions

Multiple-Choice Questions

Q1. An entrepreneur is a person who:

(A) works for the government only (B) spots a need and starts a business to meet it (C) never takes a risk (D) avoids all customers

Q2. Design thinking starts by:

(A) understanding the customer and their need (B) printing posters (C) hiring staff (D) spending money

Q3. A minimum viable product is:

(A) a finished shop (B) a business loan (C) the most expensive version (D) the simplest version to test with customers

Q4. Profit is:

(A) the price of materials (B) selling price minus cost (C) cost plus tax only (D) all money received

Q5. If costs are higher than the selling price, the business makes a:

(A) profit (B) loss (C) sale (D) loan

Q6. Marketing means:

(A) telling customers about the business (B) counting the money (C) hiring workers (D) making the product

Q7. A spreadsheet helps a small business to:

(A) take photographs (B) send parcels (C) design logos only (D) keep track of sales, costs and stock

Q8. A pitch is:

(A) a loan application (B) a long report (C) a short, clear presentation of a business idea (D) a price list

Q9. Honest advertising means:

(A) saying only what is true about a product (B) promising anything to get sales (C) hiding the price (D) copying a rival's claims

Q10. An ethical business:

(A) treats workers fairly and respects the law (B) hides its costs (C) ignores customers (D) charges any price it likes

Short Questions

Q1. Define an entrepreneur and give one example of a small business in your area.

Q2. What is design thinking? List its steps in order.

Q3. What is a business plan, and what four things should it include?

Q4. What is profit? Work out the profit if a bookmark costs Rs. 20 to make and sells for Rs. 50.

Q5. Why is honest advertising important for a small business?

Long Questions

Q1. Explain design thinking with an example: a student wants to start a small business selling handmade bookmarks at school.

Q2. Describe the main parts of a business plan, and explain how digital tools and honest dealing help a small business grow.

> Write each answer in your own words, in full sentences. For long questions, give an introduction, the main points with examples, and a short conclusion.

MCQ Answer Key

Answers to all multiple-choice questions, chapter by chapter.

Chapter 1	Ch 1 Q1: D · Ch 1 Q2: C · Ch 1 Q3: C · Ch 1 Q4: A · Ch 1 Q5: D · Ch 1 Q6: D · Ch 1 Q7: C · Ch 1 Q8: A · Ch 1 Q9: D · Ch 1 Q10: C
Chapter 2	Ch 2 Q1: C · Ch 2 Q2: B · Ch 2 Q3: B · Ch 2 Q4: A · Ch 2 Q5: C · Ch 2 Q6: B · Ch 2 Q7: B · Ch 2 Q8: D · Ch 2 Q9: C · Ch 2 Q10: B
Chapter 3	Ch 3 Q1: B · Ch 3 Q2: B · Ch 3 Q3: D · Ch 3 Q4: C · Ch 3 Q5: B · Ch 3 Q6: A · Ch 3 Q7: A · Ch 3 Q8: B · Ch 3 Q9: B · Ch 3 Q10: A
Chapter 4	Ch 4 Q1: A · Ch 4 Q2: C · Ch 4 Q3: D · Ch 4 Q4: B · Ch 4 Q5: B · Ch 4 Q6: B · Ch 4 Q7: C · Ch 4 Q8: B · Ch 4 Q9: B · Ch 4 Q10: D
Chapter 5	Ch 5 Q1: D · Ch 5 Q2: C · Ch 5 Q3: B · Ch 5 Q4: D · Ch 5 Q5: C · Ch 5 Q6: C · Ch 5 Q7: A · Ch 5 Q8: A · Ch 5 Q9: D · Ch 5 Q10: C
Chapter 6	Ch 6 Q1: C · Ch 6 Q2: B · Ch 6 Q3: A · Ch 6 Q4: D · Ch 6 Q5: C · Ch 6 Q6: B · Ch 6 Q7: D · Ch 6 Q8: D · Ch 6 Q9: C · Ch 6 Q10: C
Chapter 7	Ch 7 Q1: B · Ch 7 Q2: A · Ch 7 Q3: D · Ch 7 Q4: B · Ch 7 Q5: B · Ch 7 Q6: A · Ch 7 Q7: D · Ch 7 Q8: C · Ch 7 Q9: A · Ch 7 Q10: A

End of book. Good luck with your studies — revise the key terms, practise the questions again, and check the current AJK BISE model paper on ajkbise.net before your examination.