

[40 MARKS]
Answer **all** questions

Question I

[40]

For each question, there are **FOUR** responses: **A, B, C** and **D**. Choose the corresponding letter of your response and **CIRCLE** it. If you change your answer, cross out the previous response clearly and circle your new answer. **NO** score will be awarded if you circle more than **ONE** letter.

1. A calculator application receives the instruction $25 + 17$. Which CPU component retrieves and interprets the instruction before the calculation is performed?
A Input Device
B Control Unit (CU)
C Main Memory (RAM)
D Arithmetic Logic Unit (ALU)
2. Identify the correct prefix used to represent a hexadecimal number.
A 0b
B 0d
C 0o
D 0x
3. A Boolean expression is given below.
 $Y = A + (B \cdot C)$
Identify the logic gate connected directly to inputs B and C.
A OR gate
B NOT gate
C AND gate
D XOR gate
4. A researcher needs to analyse billions of possible molecular combinations to discover a new medicine.
Which computer is **more** suitable for this task?
A Supercomputer
B Quantum computer
C Classical computer
D Embedded computer

5. Complete the table by selecting the correct process state.

Situation	Process State
Waiting for processor time to become available	

- A Ready
- B Waiting
- C Running
- D Terminated

6. Which statement correctly describes supervised learning in machine learning?
- A It learns without any training data.
 - B It learns from labelled training data.
 - C It learns through rewards and penalties.
 - D It learns by grouping unlabelled data into clusters.
7. You are sending an assignment your DTI teacher. Which recipient field is **most** appropriate?
- A To
 - B CC
 - C BCC
 - D Reply All
8. Which pair is correctly matched?
- A Fake news → Sharing fact information
 - B Scam → Sending unwanted advertisements
 - C Impersonation → Using someone else's identity online
 - D Defamation → Accessing another person's account without permission
9. A student executes the following code.

line	code
1	total_marks = 350
2	no_subject = "0"
3	average = total_marks / no_subject

What will be output when the code is executed?

- A 350
 - B Infinity (∞)
 - C TypeError occurs.
 - D ZeroDivisionError occurs.
10. Which set contains only Python assignment operators?
- A +, -, *
 - B =, +=, -=
 - C ==, !=, >=
 - D and, or, not
11. A teacher demonstrates the concept of quantum computing using three coins as shown below.

Coin A	Coin B	Coin C
		
Spinning	Lying flat showing heads	Lying flat showing tail

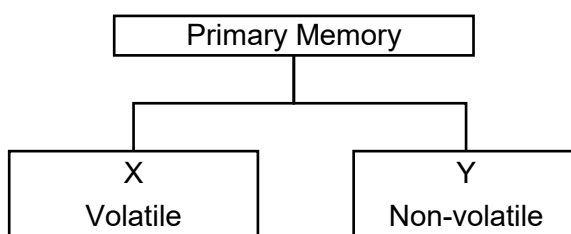
Identify the state of Coin A.

- A Superposition
 - B Classical state
 - C Quantum collapse
 - D Quantum entanglement
12. What is the purpose of a 2-variable Karnaugh Map (K-Map)?
- A Simplify Boolean expressions
 - B Draw the symbols for logic gates.
 - C Record the outputs of a logic circuit.
 - D Produce all possible input combinations.
13. A USB flash drive formatted as FAT32 is frequently used to transfer files between different operating systems. Why might someone still choose FAT32 despite its limitations?
- A It stores larger individual files without limits.
 - B It provides stronger security for stored files.
 - C It works with a wider range of devices.
 - D It organises folders more efficiently.
14. A teacher asks class X students to test different AI systems.

Student	AI task
Pema	Types a question into ChatGPT
Sonam	Speaks to a virtual assistant to set an alarm
Karma	Uploads a photograph to identify a flower
Dechen	Records a voice prompt while attaching a photo to an AI chatbot.

Which student is using multimodal interaction?

- A Pema
 - B Karma
 - C Sonam
 - D Dechen
15. Which pair correctly completes the diagram?



- A X=RAM, Y=ROM
 - B X=ROM, Y=RAM
 - C X=SSD, Y=HDD
 - D X=HDD, Y=SDD
16. Which statement about autonomous robots is correct?
- A They use only one sensor during operation.
 - B They cannot respond to changes in their environment
 - C They always require a person to control every movement.
 - D They can use sensor information to make decisions automatically.

17. Identify the characteristic of lossless compression that makes it suitable for ZIP files.
- A It increases file quality.
 - B It preserves all original data.
 - C It improves image resolution.
 - D It removes unnecessary colours.

18. A student records the following multimedia files.

File	Size
Audio Recording	1000 MB
Video	3.8 GB
Text document	450 KB
Image collection	1.2 TB

The student wants to free the greatest amount of storage space by compressing one file. Identify the **best** choice.

- A Video
 - B Audio Recording
 - C Image collection
 - D Text documents
19. Identify the protocol that is mainly responsible for transferring web pages between a web server and a web browser.
- A IP
 - B TCP
 - C HTTP
 - D Ethernet
20. A student draws four possible communication paths for accessing a website. Identify the path that correctly shows how data travels from a computer to the Internet.
- A Computer → Router → Switch → Modem → Internet
 - B Computer → Switch → Router → Modem → Internet
 - C Computer → Modem → Switch → Router → Internet
 - D Computer → Switch → Modem → Router → Internet
21. An online clothing store allows customers to create accounts, search products and place orders. Evaluate the most appropriate type of website.
- A Static website
 - B Blog website
 - C Portfolio website
 - D Dynamic website
22. A driver opens a navigation app before starting a journey. The phone immediately shows the driver's current location on the map. Analyze how the phone determines its position.
- A It calculates its position by measuring signals from multiple satellites.
 - B It estimates its position using the nearest mobile network transmitter.
 - C It displays a location that was previously stored in the offline map.
 - D It estimates its position using nearby wireless access points.

23. Which pair of technologies is mainly responsible for the appearance and behavior of a web page?
- A CSS and HTTP
 - B HTML and CSS
 - C CSS and JavaScript
 - D JavaScript and HTML
24. A recorder uses a sample rate of 44,100 Hz. This means it records:
- A 44,100 bytes every second.
 - B 44,100 binary digits every sample.
 - C 44,100 sound waves every minute.
 - D 44,100 sound samples every second.
25. A company's website receives far more visitors than usual during a promotional sale. The cloud provider adds several additional servers to distribute the traffic. Which cloud computing feature is being used?
- A Vertical scaling
 - B Load balancing
 - C Horizontal scaling
 - D Resource pooling
26. A cybercriminal attempts to modify a confirmed digital currency transaction recorded on a blockchain but is unsuccessful. Which blockchain characteristic explains why the transaction cannot be easily changed?
- A Immutability
 - B Scalability
 - C Portability
 - D Volatility
27. An ethical hacker is also known as a
- A White-hat hacker
 - B Black-hat hacker
 - C Cybercriminal
 - D Script kiddie
28. Which feature indicates that data exchanged between a user and a website is encrypted?
- A DNS
 - B Metadata
 - C SSL certificate
 - D Publication date
29. Which threat attempts to trick users into revealing personal information?
- A Phishing.
 - B Spyware.
 - C Trojan horse.
 - D Ransomware.

30. A user installs free software from an unknown website. After installation, the computer begins sending confidential information without the user's knowledge. Which cybersecurity threat best describes this situation?

A Firewall
B Malware
C Encryption
D Data backup

31. The following pseudocode is given:

```
INPUT Count
WHILE Count <= 5
    OUTPUT Count
    Count ← Count + 1
ENDWHILE
```

When this pseudocode is converted into a flowchart, which statement is represented by a **process** symbol?

A INPUT Count
B WHILE Count <= 5
C Count ← Count + 1
D ENDWHILE

32. Study the Python code given below and what output will be displayed?

line	Code
1	student = {
2	"Name": "Sonam",
3	"Age": 16
4	}
5	for key in students:
6	print(key)

A Sonam
16
B Name
Age
C Name Sonam
Age 16
D Error

33. Which statement best explains why "Yes" is displayed when the following code is executed?

line	Code
1	x = 4
2	if x > 2:
3	if x < 6:
4	print("Yes")
5	else:
6	print("No")

A Both conditions evaluate to True.
B Neither condition evaluates to True.
C Only the outer condition evaluates to True.
D Only the inner condition evaluates to True.

34. A user shares their digital identity only after approving a request from a government agency. Which NDI feature is demonstrated?
- A Data sharing
 - B Consent-based sharing
 - C Biometric authentication
 - D Automatic synchronisation
35. Which statement correctly distinguishes an array from a list and a tuple?
- A Array cannot be accessed using an index.
 - B Array automatically remove duplicate values.
 - C Array usually store elements of the same data type.
 - D Array always store their elements in alphabetical order.
36. Examine the following descriptions of a local variable. Which description is **NOT** correct?
- A It remains available until the program ends.
 - B It is created when the function begins execution.
 - C It has a scope limited to the function where it is declared.
 - D It is normally used only within the function in which it is declared.
37. Which statement **best** explains a similarity between built-in and user-defined modules?
- A Both can only contain functions.
 - B Both are created by Python developers.
 - C Both are included with every Python installation.
 - D Both can be imported into another Python program.
38. A programmer creates the following structure:
- ```
school/
| - __init__.py
| - student.py
| - teacher.py
```
- What is `school`?
- A A package
  - B A module
  - C A function
  - D A class
39. A function has one required parameter and one default parameter. How many arguments must be supplied when calling the function?
- A three arguments
  - B exactly one argument
  - C exactly two arguments
  - D one or two arguments
40. Complete the statement.  
The main advantage of using a `with` statement in file handling is to
- A Automatically close the file after use.
  - B Prevent all file exceptions from occurring.
  - C Remove the need to use the `close()` method.
  - D Automatically open the file in the correct mode.