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Computer Science Grade 10 — Chapter 1

Computer Systems

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Independent practice MCQs from the supplied Class 10 Computer Science notes pack. Total: 50 questions.

A. Important / Main Topics

1. What is the smallest unit of data in a computer?

(A) Bit
(B) Byte
(C) Nibble
(D) Word

Correct Answer: A

Explanation: A bit (binary digit) is the fundamental unit of information in a computer and can have a value of either 0 or 1.

2. How many bits are there in one byte?

(A) 4
(B) 8
(C) 16
(D) 32

Correct Answer: B

Explanation: 8 — this correctly answers the question.

3. Which number system has base 2?

(A) Decimal
(B) Octal
(C) Binary
(D) Hexadecimal

Correct Answer: C

Explanation: The binary number system uses only two digits, 0 and 1, so its base is 2.

4. What is the decimal value of the binary number 101?

(A) 3
(B) 4
(C) 6
(D) 5

Correct Answer: D

Explanation: 5 — this correctly answers the question.

5. What is the ASCII value of the letter 'A'?

(A) 65
(B) 48
(C) 90
(D) 97

Correct Answer: A

Explanation: The ASCII code for uppercase 'A' is 65 (binary 01000001).

6. Which of the following is an example of system software?

(A) Microsoft Word
(B) Windows
(C) Google Chrome
(D) Adobe Photoshop

Correct Answer: B

Explanation: System software manages hardware and system resources. Windows is an operating system, which is system software.

7. What is the hexadecimal equivalent of the decimal number 15?

(A) A
(B) B
(C) F
(D) E

Correct Answer: C

Explanation: F — this correctly answers the question.

8. What is the base of the octal number system?

(A) 2
(B) 10
(C) 16
(D) 8

Correct Answer: D

Explanation: The octal number system uses base 8 and has digits 0 through 7.

9. Which coding scheme supports over 100,000 characters from all major world languages?

(A) Unicode
(B) ASCII
(C) EBCDIC
(D) ANSI

Correct Answer: A

Explanation: Unicode is an international character-encoding system designed to support all written languages, with over 100,000 characters.

10. What is the primary function of an operating system?

(A) To create documents
(B) To manage hardware and software resources
(C) To browse the internet
(D) To edit images

Correct Answer: B

Explanation: To manage hardware and software resources — this correctly answers the question.

11. Which of the following is an example of application software?

(A) Windows
(B) Linux
(C) Microsoft Word
(D) macOS

Correct Answer: C

Explanation: Application software performs specific tasks for the user. Microsoft Word is a word processor, which is application software.

12. What does a bit represent in a computer?

(A) A decimal digit
(B) A hexadecimal digit
(C) An octal digit
(D) A binary digit (0 or 1)

Correct Answer: D

Explanation: A bit is short for binary digit and can be either 0 or 1.

13. Which state of a process represents that it is ready for execution but waiting for CPU time?

(A) Ready State

(B) Start State
(C) Running State
(D) Blocked State

Correct Answer: A

Explanation: A process is in the ready state when it is ready for execution but waiting to be assigned to the processor.

14. What is the purpose of an application patch?

(A) To install a new operating system
(B) To fix bugs and improve security
(C) To create a new application
(D) To delete files from the computer

Correct Answer: B

Explanation: An application patch is designed to update, fix, or improve an existing program, addressing security vulnerabilities, bugs, or performance issues.

15. Which of the following is an example of an offline application?

(A) Google Docs
(B) Spotify
(C) Microsoft Word
(D) Gmail

Correct Answer: C

Explanation: Microsoft Word is an offline application that can run without an internet connection.

16. What is the binary representation of the decimal number 5?

(A) 100
(B) 110
(C) 111
(D) 101

Correct Answer: D

Explanation: 101 — this correctly answers the question.

17. In binary addition, what is the result of 1 + 1?

(A) 10
(B) 0
(C) 1
(D) 11

Correct Answer: A

Explanation: In binary, 1 + 1 = 2, which is written as 10 (0 with a carry of 1 to the next higher bit).

18. What happens when you add 1 to 255 in an 8-bit unsigned integer?

(A) 256
(B) 0
(C) 255
(D) Error

Correct Answer: B

Explanation: An 8-bit unsigned integer can represent values from 0 to 255. Adding 1 to 255 causes overflow, and the result wraps around to 0.

19. What is the 2's complement of the binary number 01010001?

(A) 10101110
(B) 01010010
(C) 10101111
(D) 10110001

Correct Answer: C

Explanation: 1's complement of 01010001 is 10101110. Adding 1 to the LSB gives 10101111.

20. Which Unicode encoding is most popular on the internet?

(A) UTF-7
(B) UTF-16
(C) UTF-32
(D) UTF-8

Correct Answer: D

Explanation: UTF-8 is the most popular encoding on the internet because it is backward compatible with ASCII and uses variable-length encoding.

21. What is the state of a process when it is being executed by the processor?

(A) Running State
(B) Ready State
(C) Waiting State
(D) Start State

Correct Answer: A

Explanation: A process is in the running state when it is being executed by the processor.

22. Which type of operating system is used in medical equipment and traffic control systems?

(A) Batch Processing OS
(B) Real-time OS
(C) Multiprogramming OS
(D) Time-sharing OS

Correct Answer: B

Explanation: Real-time OS — this correctly answers the question.

23. What is the primary purpose of device management in an OS?

(A) To manage files and folders
(B) To manage network resources
(C) To control input and output devices
(D) To allocate CPU time

Correct Answer: C

Explanation: Device management is the part of the operating system that controls input and output devices such as keyboards, mouse, printers, and network interfaces.

24. What is the difference between a bit and a byte?

(A) A bit is larger than a byte
(B) A bit is 16 bits
(C) A byte is 4 bits
(D) A byte is 8 bits

Correct Answer: D

Explanation: A bit is the smallest unit of data (0 or 1), and a byte consists of 8 bits.

25. Which of the following is a characteristic of offline applications?

(A) They rely on local resources
(B) They require internet
(C) They store data on remote servers
(D) They allow real-time collaboration

Correct Answer: A

Explanation: Offline applications rely entirely on the device's local resources, such as storage and processing power, to function.

B. Less Important / Secondary Topics

26. What is the octal equivalent of the decimal number 8?

(A) 10
(B) 8
(C) 12
(D) 7

Correct Answer: A

Explanation: 10 — this correctly answers the question.

27. What is the hexadecimal equivalent of the binary number 1111?

(A) A
(B) F
(C) B
(D) 15

Correct Answer: B

Explanation: F — this correctly answers the question.

28. Which of the following is an example of a driver software?

(A) Microsoft Word
(B) Google Chrome
(C) Printer driver
(D) Windows

Correct Answer: C

Explanation: Driver software acts as a bridge between the operating system and hardware devices. A printer driver is an example.

29. What is the purpose of file management in an OS?

(A) To manage network resources
(B) To control input/output devices
(C) To allocate CPU time
(D) To manage files and folders on storage devices

Correct Answer: D

Explanation: File management is the part of the operating system that manages files and folders on storage devices such as hard disk, USB flash drive, and DVD.

30. What is the decimal equivalent of the octal number 25.6?

(A) 21.75
(B) 20.75
(C) 21.5
(D) 22.75

Correct Answer: A

Explanation: 21.75 — this correctly answers the question.

31. What is the primary function of a compiler?

(A) To manage hardware resources
(B) To translate high-level code into machine code
(C) To provide a platform for applications
(D) To connect hardware to the OS

Correct Answer: B

Explanation: Compilers translate code written in a high-level programming language into machine code that the computer can execute.

32. Which of the following is a hardware method to protect devices?

(A) Antivirus software
(B) Password management
(C) Biometric authentication
(D) Data backup

Correct Answer: C

Explanation: Biometric authentication (e.g., fingerprint or facial recognition) is a hardware method that uses physical characteristics to verify identity.

33. What is the purpose of an IDE?

(A) To manage databases
(B) To browse the internet
(C) To edit images
(D) To provide a complete environment for software development

Correct Answer: D

Explanation: An IDE (Integrated Development Environment) combines a text editor, debugger, and compiler in one interface for software development.

34. What is the binary equivalent of the decimal number 10?

(A) 1010
(B) 1100
(C) 1001
(D) 1110

Correct Answer: A

Explanation: 1010 — this correctly answers the question.

35. Which of the following is true about a process?

(A) A process is a static file
(B) A process is a program in execution
(C) A process cannot contain multiple threads
(D) A process does not use any resources

Correct Answer: B

Explanation: A process is a program in execution. When a program is loaded in memory for execution, it becomes a process.

36. What is the result of the binary subtraction 10110 - 101?

(A) 10010
(B) 11000
(C) 10001
(D) 10101

Correct Answer: C

Explanation: 10001 — this correctly answers the question.

37. What is the hexadecimal equivalent of the binary number 11010111001110100001?

(A) D73A2
(B) D73B1
(C) D74A1
(D) D73A1

Correct Answer: D

Explanation: Grouping the binary number into 4 bits from the right: 1101=D, 0111=7, 0011=3, 1010=A, 0001=1. So, D73A1.

38. In an 8-bit signed integer (two's complement), what is the range of values?

(A) -128 to 127
(B) -127 to 128
(C) 0 to 255
(D) -256 to 255

Correct Answer: A

Explanation: For an n-bit signed integer using two's complement, the range is -2n□¹ to 2n□¹ - 1. For 8 bits: -128 to 127.

39. How many different values can be represented with a 10-bit binary number?

(A) 512
(B) 1024
(C) 2048
(D) 256

Correct Answer: B

Explanation: The number of different values with n bits is 2^n. For 10 bits, $2^{10} = 1024$.

40. What is the result of (1011.101)□ in decimal?

(A) 11.125
(B) 13.625
(C) 11.625
(D) 10.625

Correct Answer: C

Explanation: 11.625 — this correctly answers the question.

41. What is the 2's complement of 10101110?

(A) 01010001
(B) 10101111
(C) 01010000
(D) 01010010

Correct Answer: D

Explanation: 1's complement of 10101110 is 01010001. Adding 1 to LSB gives 01010010.

42. Which state transition occurs when a process's time slice expires?

(A) Running → Ready
(B) Running → Waiting
(C) Ready → Running
(D) Waiting → Ready

Correct Answer: A

Explanation: When a process's time slice expires in a time-sharing system, it transitions from running to ready state.

43. Which type of OS allows multiple users to interact simultaneously using time slices?

(A) Batch Processing OS
(B) Time-sharing OS
(C) Multiprogramming OS
(D) Real-time OS

Correct Answer: B

Explanation: Time-sharing OS — this correctly answers the question.

44. What is the primary function of a process scheduler?

(A) Manage file operations
(B) Manage memory allocation
(C) Manage CPU utilization
(D) Manage network resources

Correct Answer: C

Explanation: The process scheduler decides which process runs next, managing CPU utilization to ensure fairness and efficiency.

45. Which of the following is NOT a step in binary subtraction using 2's complement?

(A) Make the number of bits equal
(B) Convert the subtrahend to 2's complement
(C) Add the 2's complement to the minuend
(D) Always add the carry to the LSB

Correct Answer: D

Explanation: In 2's complement subtraction, if a carry is generated, it is ignored. In 1's complement subtraction, the carry is added to the LSB.

46. What is the result of 11101010 + 10011011 in binary?

(A) 110000101
(B) 110001101
(C) 101000101
(D) 110000011

Correct Answer: A

Explanation: 110000101 — this correctly answers the question.

47. What is the purpose of the Most Significant Bit (MSB) in signed binary numbers?

(A) To indicate the magnitude
(B) To indicate the sign (positive or negative)
(C) To indicate the base
(D) To indicate the decimal point

Correct Answer: B

Explanation: To indicate the sign (positive or negative) — this correctly answers the question.

48. Which of the following is a correct representation of -13 in 8-bit 2's complement?

(A) 11110010
(B) 11110001
(C) 11110011
(D) 11110100

Correct Answer: C

Explanation: 11110011 — this correctly answers the question.

49. What is the decimal value of the hexadecimal number 2E3?

(A) 740
(B) 738
(C) 741
(D) 739

Correct Answer: D

Explanation: 739 — this correctly answers the question.

50. What is the binary equivalent of the decimal number 45?

(A) 101101
(B) 101100
(C) 100101
(D) 110101

Correct Answer: A

Explanation: 101101 — this correctly answers the question.