Additional Multiple Choice Questions (MCQs)

1: What is the base of the decimal number system?
a) 2   b) 8   c) 10   d) 16

2: Which digits are used in the binary number system?
a) 0 and 1   b) 0 to 9   c) 0 to 7   d) 0 to F

3: Why is the binary system used in computers?
a) It is faster to process.
b) It aligns with the ON and OFF states of digital circuits.
c) It uses more digits.   d) It is easier to read.

4: What is the decimal equivalent of the binary number 1011?
a) 9   b) 10   c) 11   d) 12

5: What does the binary digit 1 represent in digital circuits?
a) OFF state   b) ON state
c) Both ON and OFF states   d) None of the above

6: Which numbering system uses digits from 0 to 9?
a) Binary   b) Octal   c) Decimal   d) Hexadecimal

7. Which number system is used by computers?
a) Decimal   b) Binary   c) Hexadecimal   d) Octal

8. What do the binary digits 1 and 0 represent?
a) ON and OFF states   b) True and False statements
c) Positive and Negative numbers   d) Whole and Fractional numbers

9. What happens to data when it is processed by a computer?
a) It is converted to decimal code   b) It is converted to binary code
c) It is converted to hexadecimal code   d) It remains in its original form

10. Which of the following is NOT broken down into binary code?
a) Numbers   b) Text   c) Images   d) None of the above

11. What is the base of the octal number system?
a) 2   b) 8   c) 10   d) 16

12. Which of the following is a characteristic of the octal number system?
a) Uses digits 0-9   b) Uses digits 0-7
c) Is a base-2 system   d) Is a base-10 system

13. How many binary digits (bits) does each octal digit represent?
a) 1   b) 2   c) 3   d) 4

14. Why is conversion between binary and octal straightforward?
a) Because 8 is a power of 10   b) Because 8 is a power of 2
c) Because 2 is a power of 8   d) Because 10 is a power of 2
Answer: b) Because 8 is a power of 2

15. What is the octal equivalent of the binary number 110101011?
a) 655   b) 653   c) 651   d) 652

16: What is the range of digits in the octal number system?

a) 0 to 9　　　　b) 0 to 7　　　　c) 0 to 15　　　d) 1 to 8

17: How many binary digits (bits) are needed to represent one octal digit?

a) 2　　　　b) 3　　　　c) 4　　　　d) 8

18: Convert the binary number 101101 to octal.

a) 45　　　　b) 55　　　　c) 65　　　　d) 75

19: What is the decimal equivalent of the octal number 157?

a) 101　　　　b) 111　　　　c) 121　　　d) 131

20: Which of the following octal digits corresponds to the binary numbe 011?

a) 1　　　　b) 2　　　　c) 3　　　　d) 4

21: If a binary number is 10101, how would you prepare it for conversion to octal?

a) Add zeros to the right　　　　b) Add zeros to the left

c) Divide it by 8　　　　d) Multiply it by 2

22: Which of the following statements is correct about the octal system?

a) It is widely used in modern computers.

b) It is unrelated to the binary system.

c) It simplifies conversion between binary and octal.

d) Each octal digit reuires two binary digits.

23: What is the range of values in the hexadecimal system?

a) 0 to 9　　　　b) 0 to F　　　　c) 0 to 7　　　　d) 0 to 15

24: How many binary bits correspond to one hexadecimal digit?

a) 2　　　　b) 3　　　　c) 4　　　　d) 8

25: Convert the hexadecimal number B4 to decimal.

a) 180　　　　b) 290　　　　c) 228　　　　d) 245

26: What is the hexadecimal equivalent of the binary number 10101110?

a) AE　　　　b) A7　　　　c) B6　　　　d) 9E

27: Which of the following is NOT a valid hexadecimal digit?

a) G　　　　b) C　　　　c) 8　　　　d) F

28: Convert the binary number 11110010 to hexadecimal.

a) F1　　　　b) F2　　　　c) E2　　　　d) D2

29: What does the hexadecimal letter "C" represent in decimal?

a) 10　　　　b) 11　　　　c) 12　　　　d) 15

30: Why is hexadecimal preferred for representing binary numbers?

a) It is easier to convert to decimal.

b) It is more compact and readable than binary.

c) It is faster for computers to process.   d) It uses fewer symbols.

31. What is the base of the hexadecimal number system?

a) 2   b) 8   c) 10   d) 16

32. Which of the following is a characteristic of the hexadecimal number system?

a) Uses digits 0-7   b) Uses digits 0-9 and letters A-F

c) Is a base-2 system   d) Is a base-10 system

33. What is the maximum value that can be stored in a 1-byte unsigned integer?

a) 127   b) 128   c) 255   d) 256

34. Which of the following is a characteristic of two's complement representation?

a) It is used to store positive integers

b) It is used to store negative integers

c) It is used to store real numbers

d) It is used to store characters

35. What is the minimum value that can be stored in a 2-byte signed integer?

a) -128   b) -256   c) -32,768   d) -65,536

36. How are real numbers represented in computers?

a) Using binary-coded decimal (BCD)

b) Using floating-point representation

c) Using two's complement   d) Using hexadecimal

37. What is the purpose of the exponent in floating-point representation?

a) To indicate the sign of the number

b) To indicate the magnitude of the number

c) To indicate the precision of the number

d) To indicate the base of the number

38: What is the range of an unsigned 1-byte integer?

a) 0 to 127   b) -128 to 127   c) 0 to 255   d) -255 to 255

39: How many bits are in a 4-byte integer?

a) 16   b) 32   c) 64   d) 8

40: What is the binary representation of -5 in 8-bit two's complement?

a) 11111010   b) 11111011   c) 00000101   d) 10000001

41: Which of the following is NOT a floating-point standard?

a) Single-precision

b) Double-precision

c) Half-precision

d) Integer-precision

42: What does the sign bit indicate in a signed integer?

a) The magnitude of the number

b) The parity of the number

c) Whether the number is positive or negative

d) The number of bytes used

43: Convert the decimal number 2297 to hexadecimal.

a) 8E9　　　　　　b) 8F9　　　　　　c) 8D7　　　　　　d) 7F9

44: How is the fractional part of a real number converted to binary?

a) Divide by 2 repeatedly.

b) Multiply by 2 and record the integer parts.

c) Add 2 repeatedly until the fraction is zero.

d) Subtract 2 until the fraction is negative.

45: What is the result of converting 0.625 to binary?

a) 0.1_2　　　　　　b) 0.011_2　　　　　　c) 0.101_2　　　　d) 0.001_2

46. How many bits are allocated to the mantissa in single-precision?

a) 8　　　　　　b) 23　　　　　　c) 1　　　　　　d) 32

47. What is the range of exponents in single-precision?

a) -127 to +128　　　b) -126 to +127　　　c) -1022 to +1023　d) 0 to 255

48. What is the bias in the exponent for 64-bit double-precision floating point numbers?

a) 127　　　　　　b) 1023　　　　　　c) 255　　　　　　d) 2047

49. What is the purpose of the mantissa in floating point representation?

a) To indicate the sign of the number

b) To store the biased exponent

c) To store the significant digits of the number　d) To calculate the bias

50. Which of the following values is closest to the maximum value in single-precision?

a) 1.4×10^{-45}　　　　b) 3.4×10^{38}　　　　c) 1.4×10^{-38}　d) 3.4×10^{45}

51. How many bits are used for the exponent in double-precision?

a) 8　　　　　　b) 23　　　　　　c) 11　　　　　　d) 52

52. In single-precision, what is the value of the exponent for 0.15625?

a) 129　　　　　　b) 124　　　　　　c) 255　　　　　　d) 127

53. What is the minimum actual exponent value in double-precision?

a) -127　　　　　　b) -126　　　　　　c) -1022　　　　d) -1023

54. Which of the following represents the ASCII code for the letter 'a'?

a) 80　　　　　　b) 115　　　　　　c) 97　　　　　　d) 100

55. Why is ASCII important in computer systems?
a) It encodes multimedia files.
b) It provides a numerical representation of characters.
c) It encrypts text data for security.
d) It translates programming languages.

56. What kind of encoding does ASCII provide?
a) Binary encoding
b) Character encoding
c) Multimedia encoding
d) Image encoding

57. How many bits are needed to represent an ASCII character?
a) 8 bits
b) 7 bits
c) 6 bits
d) 16 bits

58. How many characters can Extended ASCII represent?
a) 128
b) 256
c) 512
d) 1024

59. What is the main encoding scheme that is backward compatible with ASCII?
a) UTF-8
b) UTF-16
c) UTF-32
d) Extended ASCII

60. How many bytes are required for a character in UTF-32?
a) 1 byte
b) 2 bytes
c) 3 bytes
d) 4 bytes

61. Which of the following is a variable-length encoding scheme?
a) ASCII
b) UTF-8
c) UTF-32
d) Extended ASCII

62. What is the binary representation of the Urdu letter 'ب' in UTF-8?
a) 01000001
b) 11011000 10101000
c) 00000000 01000001
d) 00000110 00101000

63. Which Unicode encoding uses 2 or 4 bytes for each character?
a) UTF-8
b) UTF-16
c) UTF-32
d) Extended ASCII

64. What is the binary representation of 'A' in UTF-32?
a) 01000001
b) 00000000 00000000 00000000 01000001
c) 11011000 10101000
d) 00000110 00101000

65. Which of the following encoding schemes is fixed-length?
a) UTF-8
b) UTF-16
c) UTF-32
d) Extended ASCII

66. Which Unicode encoding cannot translate ASCII code directly?
a) UTF-8
b) UTF-16
c) UTF-32
d) Extended ASCII

67. Why is UTF-8 widely used?
a) It is fixed-length.
b) It is backward compatible with ASCII and space-efficient.
c) It is the simplest encoding method.
d) It only supports English text.

68. What is the total number of characters that can be represented in Extended ASCII?
a) 128 characters
b) 256 characters
c) 512 characters
d) 1024 characters

69. What is the main limitation of ASCII?
a) It is limited to 8 bits and can represent only 256 characters
b) It is limited to 7 bits and can represent only 128 characters
c) It is limited to 6 bits and can represent only 64 characters
d) It is limited to 5 bits and can represent only 32 characters

70. What is Unicode?
a) A character encoding standard
b) A mapping of all graphic characters used in any writing systems
c) A programming language
d) An operating system

71. What does UTF stand for?
a) Unicode Transformation Format   b) Universal Text Format
c) Unicode Transfer Format   d) Universal Transformation Format

72. What is the main advantage of UTF-8?
a) It is not compatible with ASCII   b) It is backward compatible with ASCII
c) It uses a fixed length of 4 bytes per character
d) It uses a variable length of 1-2 bytes per character

73. Which Unicode encoding scheme is backward compatible with ASCII?
a) UTF-8   b) UTF-16   c) UTF-32   d) Extended
ASCII

74. How many bytes does UTF-16 use per character at most?
a) 1   b) 2   c) 4   d) 8

75. Which encoding scheme uses a fixed length of 4 bytes per character?
a) UTF-8   b) UTF-16   c) UTF-32   d) ASCII

76. What is the main limitation of UTF-32?
a) It is incompatible with ASCII.   b) It is not widely supported.
c) It uses more memory than other encoding schemes.
d) It can only encode English characters.

77. What is the binary representation of the letter 'A' in UTF-16?
a) 01000001
b) 00000000 01000001
c) 11011000 10101000
d) 00000110 00101000

78. Which of the following encoding schemes is variable-length?
a) ASCII   b) UTF-8   c) UTF-32   d) Extended ASCII

79. How many bytes does UTF-8 use for the Unicode letter 'A'?
a) 1 byte   b) 2 bytes   c) 3 bytes   d) 4 bytes

80. What is the primary purpose of Unicode?
a) To represent only English characters.   b) To encode multimedia files.
c) To represent text from all writing systems
d) To provide fixed-length encoding for all characters.

81. How many bits are in 1 byte?

a) 4 bits   b) 6 bits   c) 8 bits   d) 10 bits

82. How many bytes are in 1 kilobyte?

a) 1000 bytes   b) 1024 bytes   c) 2048 bytes   d) 4096 bytes

83. What is the next unit of data size larger than 1 megabyte?

a) Kilobyte   b) Gigabyte   c) Terabyte   d) Gigabyte

84. What is the sequence of data size units from smallest to largest?

a) Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, Petabyte
b) Byte, Megabyte, Kilobyte, Gigabyte, Terabyte, Petabyte
c) Byte, Kilobyte, Gigabyte, Megabyte, Terabyte, Petabyte
d) Byte, Kilobyte, Megabyte, Terabyte, Gigabyte, Petabyte

Answers:

1	2	3	4	5	6	7	8	9	10	11	12
C	A	B	C	B	C	B	A	B	D	B	B
13	14	15	16	17	18	19	20	21	22	23	24
C	B	B	B	B	B	B	C	B	C	B	C
25	26	27	28	29	30	31	32	33	34	35	36
C	A	A	B	C	B	D	B	C	B	C	B
37	38	39	40	41	42	43	44	45	46	47	48
B	C	B	B	D	C	B	B	C	B	B	B
49	50	51	52	53	54	55	56	57	58	59	60
C	B	C	B	C	C	B	B	B	B	A	D
61	62	63	64	65	66	67	68	69	70	71	72
B	B	B	B	C	B	B	B	B	B	A	B
73	74	75	76	77	78	79	80	81	82	83	84
A	C	C	C	B	B	A	C	C	B	D	A