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(To be filled in the
OMR Sheet)

प्रश्नपुस्तिका क्रमांक
Question Booklet No.

O.M.R. Serial No.

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प्रश्नपुस्तिका सीरीज
Question Booklet Series

C

BCA (Second Semester) Examination, July-2022

BCA-202(N)

Digital Electronics & Computer Organization (B.P.)

Time : 1:30 Hours

Maximum Marks-100

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

- निर्देश : —
1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही- सही भरे, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
 2. इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमें से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने हैं। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET) में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वाइंट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा किसी प्रश्न का एक से अधिक उत्तर दिया जाता है, तो उसे गलत उत्तर माना जायेगा।
 3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
 4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
 5. ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
 6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी ओ०एम०आर० शीट उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
 7. निगेटिव मार्किंग नहीं है।

महत्वपूर्ण : — प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।

K-364

Rough Work / रफ कार्य

1. Which of the following circuit can be used as parallel to serial converter?
(A) Multiplexer
(B) Demultiplexer
(C) Decoder
(D) Digital counter
2. 4 to 1 MUX would have:
(A) 2 output
(B) 3 output
(C) 1 output
(D) 6 output
3. BCD counter is also known as _____.
(A) Parallel counter
(B) Decade counter
(C) Synchronous counter
(D) VLSI counter
4. What are the basic gates?
(A) AND
(B) OR
(C) NOT
(D) All of the above
5. In which of the following base system is 123 not a valid number?
(A) Base 10
(B) Base 16
(C) Base 8
(D) Base 3
6. The Boolean expression of AND gate:
(A) $A+B$
(B) $A-B$
(C) $A.B$
(D) None of the above
7. The Boolean expression of OR gate:
(A) $A+B$
(B) $A-B$
(C) $A.B$
(D) None of the above

8. The cache memory of 1K words uses direct mapping with a block size of 4 words. How many blocks can the cache accommodate?
- (A) 512 words
 - (B) 256 words
 - (C) 1024 words
 - (D) 128 words
9. In _____ mapping, the data can be mapped anywhere in the Cache Memory.
- (A) Associative
 - (B) Direct
 - (C) Set Associative
 - (D) Indirect
10. What memory is called separation of user logical memory and physical memory?
- (A) Memory sharing
 - (B) Memory management
 - (C) Memory control
 - (D) Virtual memory
11. Because of virtual memory, the memory can be shared among _____.
- (A) Processes
 - (B) Threads
 - (C) Instructions
 - (D) None of the above
12. What will be the number of cylinders in a hard disk in which each recording surface contains 8 tracks and each track is divided into 16 sectors?
- (A) 8
 - (B) 128
 - (C) 24
 - (D) 16
13. How many address inputs are required to access 256 Bytes memory?
- (A) 256
 - (B) 2
 - (C) 8
 - (D) 16

14. USB-type storage device is:
 - (A) Secondary
 - (B) Tertiary
 - (C) Primary
 - (D) None of the above
15. Which of the following memories must be refreshed many times per second?
 - (A) EPROM
 - (B) ROM
 - (C) Static ROM
 - (D) Dynamic ROM
16. The binary numbers are:
 - (A) 3,4
 - (B) 7,8
 - (C) 0,1
 - (D) 9, 5
17. The full form of ALU:
 - (A) Another Logic Unit
 - (B) Amongst Large Unit
 - (C) All Large Unit
 - (D) Arithmetic Logical Unit
18. The full form of CPU:
 - (A) Central Processing Unit
 - (B) Central Public Unit
 - (C) Central Population Unit
 - (D) None of the above
19. How many of states are there in a 3 bit counter?
 - (A) One
 - (B) Four
 - (C) Eight
 - (D) Sixteen
20. In which manner does down counter count?
 - (A) Upward
 - (B) Downward
 - (C) Both (A) & (B)
 - (D) None of the above

21. How many outputs does D-flip flop have?
(A) One
(B) Two
(C) Three
(D) Four
22. The no-change conditions occur when _____ in JK flip flop.
(A) $J=1, K=1$
(B) $J=0, K=0$
(C) $J=1, K=0$
(D) $J=0, K=1$
23. The universal gate is:
(A) NAND gate
(B) OR gate
(C) AND gate
(D) None of the above
24. A flip flop is an _____.
(A) Edge sensitive device
(B) Synchronous device
(C) Both (A) and (B)
(D) None of the above
25. The preset input is used to make output _____.
(A) $Q=1$
(B) $Q=0$
(C) Invalid
(D) No change
26. When both set and reset are disabled in S-R flip flop then the output will be _____.
(A) Set
(B) Reset
(C) No change
(D) Intermediate
27. When the set is enabled in S-R flip flop then the output will be _____.
(A) Set
(B) Reset
(C) No change
(D) Intermediate

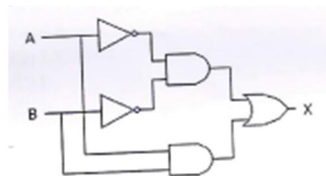
28. What is the standard form of S-R flip flop?
- (A) Simple-Reset
 - (B) Set-Reset
 - (C) Single-Reset
 - (D) None of the above
29. DRAM stands for:
- (A) Drum Read Access Memory
 - (B) Disable AND Accurate Memory
 - (C) Dynamic Random Access Memory
 - (D) All of the above
30. RAM and ROM are the examples of:
- (A) Sequential
 - (B) Secondary
 - (C) Primary
 - (D) First
31. Which of the following is the largest unit of storage?
- (A) Gigabyte
 - (B) Terabyte
 - (C) Kilobyte
 - (D) None of the above
32. Which part of a computer helps to store information?
- (A) Disk drive
 - (B) Monitor
 - (C) Keyboard
 - (D) Printer
33. In which of the following magnetic storage devices is the data stored on a cylindrical drum and subdivided into tracks?
- (A) Punched card
 - (B) Magnetic disk
 - (C) Magnetic Tape
 - (D) Magnetic drum

34. When a system suddenly shuts down, where can the data be stored so that it can remain intact?
- (A) Primary Storage Device
 - (B) Read Only Memory
 - (C) Secondary Storage Device
 - (D) None of the above
35. A name or number used to identify a storage location is called a/an:
- (A) Byte
 - (B) Data
 - (C) Constant
 - (D) Address
36. The number of bits needed to address 4k memory is:
- (A) 6
 - (B) 8
 - (C) 12
 - (D) 16
37. Which of the following is not an example of a storage device?
- (A) Hard disk
 - (B) CD
 - (C) Mouse
 - (D) None of the above
38. What is the storage capacity of a compact disk?
- (A) 800 MB
 - (B) 900 MB
 - (C) 700 MB
 - (D) 100 MB
39. Which of the following has the highest data density?
- (A) Hard disk
 - (B) Floppy disk
 - (C) Tape drive
 - (D) None of the above

40. Ripple counters are also called _____.
(A) SSI counters
(B) Asynchronous counters
(C) Synchronous counters
(D) VLSI counters
41. The parallel outputs of a counter circuit represent the _____.
(A) Parallel data word
(B) Clock frequency
(C) Counter modulus
(D) Clock count
42. In digital logic, a counter is a device which _____.
(A) Counts the number of outputs
(B) Stores the number of times a particular event or process has occurred
(C) Stores the number of times a clock pulse rises and falls
(D) Counts the number of inputs
43. A shift register is defined as _____.
(A) The register capable of shifting information to another register
(B) The register capable of shifting information either to the right or to the left
(C) The register capable of shifting information to the right only
(D) The register capable of shifting information to the left only
44. The main difference between a register and a counter is _____.
(A) A register has no specific sequence of states
(B) A counter has no specific sequence of states
(C) A register has capability to store one bit of information but counter has n-bit
(D) A register counts data
45. The register is a type of _____.
(A) Sequential circuit
(B) Combinational circuit
(C) CPU
(D) Latches

46. The full form of PIPO is _____.
(A) Parallel in Parallel out
(B) Partial in Partial out
(C) Past in Past Out
(D) None of the above
47. The full form of SIPO is _____.
(A) Serial-in Parallel-out
(B) Parallel-in Serial-out
(C) Serial- in Serial-out
(D) Serial-in Peripheral-Out
48. How much input and output needed for demultiplexer?
(A) Many outputs to one input
(B) One input many outputs
(C) One input one output
(D) None of these
49. The S-R flip flop consist of _____.
(A) 4 AND gates
(B) Two additional AND gates
(C) An additional clock input
(D) None of the above
50. Which is not following flip flop?
(A) S-R
(B) J-K
(C) D
(D) B

51. Which among following is considered as fastest memory?
 (A) External Hard Disk
 (B) Cache
 (C) RAM
 (D) ROM
52. Which of the following is correct for a gated D-type flip-flop?
 (A) The Q output is either SET or RESET as soon as the D input goes HIGH or LOW
 (B) The output complement follows the input when enabled
 (C) Only one of the inputs can be HIGH at a time
 (D) The output toggles if one of the inputs is held HIGH
53. In S-R flip-flop, if $Q = 0$ the output is said to be _____.
 (A) Set
 (B) Reset
 (C) Previous state
 (D) Current state
54. The sequential circuit is also called _____.
 (A) Flip-flop
 (B) Latch
 (C) Strobe
 (D) Adder
55. How many types of sequential circuits are?
 (A) 2
 (B) 3
 (C) 4
 (D) 5
56. Which of the following logic expressions represents the logic diagram shown?



- (A) $X = AB' + A'B$
 (B) $X = (AB)' + AB$
 (C) $X = (AB)' + A'B'$
 (D) $X = A'B' + AB$

57. Which of the following represents a number of output lines for a decoder with 4 input lines?
- (A) 15
 - (B) 16
 - (C) 17
 - (D) 18
58. Which of the following can be represented for decoder?
- (A) Sequential circuit
 - (B) Combinational circuit
 - (C) Logical circuit
 - (D) None of the mentioned above
59. A decoder converts n inputs to _____ outputs.
- (A) n
 - (B) n^2
 - (C) 2^n
 - (D) n^n
60. How many outputs will a decimal-to-BCD encoder have?
- (A) 4
 - (B) 8
 - (C) 12
 - (D) 16
61. How many inputs will a decimal-to-BCD encoder have?
- (A) 4
 - (B) 8
 - (C) 10
 - (D) 16
62. In a multiplexer, if there are 4 input lines and 1 output line, then number of selection lines will be:
- (A) 3
 - (B) 0
 - (C) 2
 - (D) 1
63. The full form of UVEPROM:
- (A) Uniform Essential Programmable Read Only Memory
 - (B) Ultraviolet Erasable Programmable Read Only Memory
 - (C) Universal Edit Program Research Only Memory
 - (D) None of the above

64. If the number of n selected input lines is equal to 2^m then it requires _____ select lines.
- (A) 2
 - (B) m
 - (C) N
 - (D) 2^n
65. Which is the major functioning responsibility of the multiplexing combinational circuit?
- (A) Decoding the binary information
 - (B) Generation of all minterms in an output function with OR-gate
 - (C) Generation of selected path between multiple sources and a single destination
 - (D) Encoding of binary information
66. Which combinational circuit is renowned for selecting a single input from multiple inputs & directing the binary information to output line?
- (A) Data Selector
 - (B) Data distributor
 - (C) Both data selector and data distributor
 - (D) DeMultiplexer
67. What is a multiplexer?
- (A) It is a type of decoder which decodes several inputs and gives one output
 - (B) A multiplexer is a device which converts many signals into one
 - (C) It takes one input and results into many output
 - (D) It is a type of encoder which decodes several inputs and gives one output
68. How many outputs are required for the implementation of a subtractor?
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4

69. Half subtractor is used to perform subtraction of _____.
(A) 2 bits
(B) 3 bits
(C) 4 bits
(D) 5 bits
70. If A and B are the inputs of a half adder, the sum is given by:
(A) A AND B
(B) A OR B
(C) A XOR B
(D) A EX-NOR B
71. In which operation carry is obtained?
(A) Subtraction
(B) Addition
(C) Multiplication
(D) None of the above
72. Total number of inputs in a half adder is _____.
(A) 2
(B) 3
(C) 4
(D) 1
73. Which memory acts as a buffer between CPU and main memory?
(A) RAM
(B) ROM
(C) Cache
(D) Storage
74. The Boot sector files of the system are stored in which computer memory?
(A) RAM
(B) ROM
(C) Cache
(D) Register

75. Simplify the expression using K-maps: $F(A,B,C) = \Sigma(1,3,5,6,7)$
- (A) $AC' + B'$
 - (B) $AB + C$
 - (C) $AB' + B'C'$
 - (D) $A'BC + B'C + AC$
76. 1 Byte = _____ bits.
- (A) 2
 - (B) 3
 - (C) 4
 - (D) 8
77. Simplify the expression using K-maps: $F(A,B,C,D) = \Sigma(1,3,5,6,7,11,13,14)$:
- (A) $AB + BC'D + A'B'C$
 - (B) $BCD' + A'C'D + BD$
 - (C) $AC'D' + BC + A'BD + C'D'$
 - (D) $A'D + BCD + A'BC + AB'C'$
78. Don't care conditions can be used for simplifying Boolean expressions in _____.
- (A) Registers
 - (B) Terms
 - (C) Latches
 - (D) K-map
79. Each product term of a group, $w'.x.y'$ and $w.y$, represents the _____ in that group.
- (A) Input
 - (B) POS
 - (C) Sum-of-Minterms
 - (D) Sum-of -Maxterms
80. Convert $(235)_8$ to decimal number:
- (A) 157
 - (B) 1007
 - (C) 25
 - (D) 56

81. There are _____ cells in a 4-variable K-map.
- (A) 12
 - (B) 16
 - (C) 18
 - (D) 8
82. The full form of SRAM is:
- (A) Sequential Random Access Memory
 - (B) Starting Random Access Memory
 - (C) Static Random Access Memory
 - (D) None of the above
83. In which type of ROM, data can be erased by ultraviolet light and then reprogrammed by the user or manufacturer?
- (A) PROM
 - (B) EPROM
 - (C) Cache Memory
 - (D) Both (A) & (B)
84. The full form of PROM is?
- (A) Page Read Only Memory
 - (B) Past Read Only Memory
 - (C) Persist Read Only Memory
 - (D) Programmable Read Only Memory
85. Which is volatile memory?
- (A) RAM
 - (B) ROM
 - (C) Register Only Memory
 - (D) None of the above

86. What is the full form of ROM?
- (A) Random Only Memory
 - (B) Read-Only Memory
 - (C) Register Only Memory
 - (D) Readable Only Memory
87. What is the full form of RAM?
- (A) Random Access Memory
 - (B) Read Access Memory
 - (C) Readable Access Memory
 - (D) Random Accumulator Memory
88. The primary memory (also called main memory) of a personal computer consists of:
- (A) RAM
 - (B) ROM
 - (C) Both (A) & (B)
 - (D) None of the above
89. In Boolean algebra, the bar sign (-) indicates _____.
- (A) OR gate
 - (B) AND gate
 - (C) NOT gate
 - (D) None of the above
90. The inverter is:
- (A) NOT gate
 - (B) OR gate
 - (C) AND gate
 - (D) None of the above

91. _____ is an example of associativity law.
- (A) $a+0=0+a=a$
 - (B) $1+a=a+1=1$
 - (C) $a+bc=(a+b)(a+c)$
 - (D) $a+(b+c)=(a+b)+c$
92. 1's complement of 1011001 is:
- (A) 0100111
 - (B) 0101100
 - (C) 0100110
 - (D) 0110110
93. What is the binary multiplication of $10100 \times 01011 = ?$
- (A) 011011000
 - (B) 011001100
 - (C) 011011100
 - (D) 011100011
94. What is the addition of the binary number $101001 + 010011 = ?$
- (A) 010100
 - (B) 111100
 - (C) 000111
 - (D) 101110
95. Which of these sets of logic gates are known as universal gates?
- (A) XOR, NAND, OR
 - (B) OR, NOT, XOR
 - (C) NOR, NAND, XNOR
 - (D) NOR, NAND

96. Convert $(312)_8$ into decimal:
- (A) $(210)_{10}$
 - (B) $(202)_{10}$
 - (C) $(203)_{10}$
 - (D) $(204)_{10}$
97. The following hexadecimal number $(1E.43)_{16}$ is equivalent to:
- (A) $(36.206)_8$
 - (B) $(36.506)_8$
 - (C) $(35.506)_8$
 - (D) $(35.206)_8$
98. Which number system has a base 16?
- (A) Hexadecimal
 - (B) Octal
 - (C) Binary
 - (D) Decimal
99. Which of the following is an example of a digital Electronic?
- (A) Computers
 - (B) Information appliances
 - (C) Digital cameras
 - (D) All of the mentioned
100. What is Digital Electronics?
- (A) Field of electronics involving the study of digital signal
 - (B) Engineering of devices that digital signal
 - (C) Engineering of devices that produce digital signal
 - (D) All of the above

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