OMR Answer Sheet No.

Question Booklet Number

2038

B.C.A. (II Sem.) Examination, 2023-24

Booklet Series

D

DIGITAL ELECTRONICS

(To be filled by the Candidate / निम्न पूर्तियाँ परीक्षार्थी स्वयं भरें)

Roll No. (in figures).
अनुक्रमांक (अंकों में) —

Roll No. (in words)
अनुक्रमांक (शब्दों में) —

Time : 2 : 00 Hours
समय : 2 : 00 घण्टे

Maximum Marks : 50
अधिकतम अंक : 50

Name of Examination Centre
परीक्षा केन्द्र का नाम ———

Signature of Invigilator
कक्ष निरीक्षक के हस्ताक्षर

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. **The booklet contains 75 questions. Examinee is required to answer any 65 questions in the OMR Answer-Sheet provided and not in the question booklet. In case Examinee attempts more than 65 Questions, first 65 attempted questions will be evaluated. All questions carry equal marks.**
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be immediately replaced.

(Remaining Instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 75 प्रश्न हैं। परीक्षार्थी को किन्हीं 65 प्रश्नों को दी गई ओ0एम0आर0 आन्सर-शीट पर ही हल करना है। परीक्षार्थी द्वारा 65 से अधिक प्रश्नों को हल करने की स्थिति में, प्रथम 65 उत्तरों को ही मूल्यांकित किया जायेगा। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR उत्तर-पत्रक को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका, जिसमें कुछ भाग छपने से छूट गये हों या प्रश्न एक से अधिक बार छप गये हो या किसी भी प्रकार की कमी हो, उसे तुरन्त बदल लें।

(शेष निर्देश अन्तिम पृष्ठ पर)

1. The expression Y=AB+BC+AC shows the ___ operation.

(A) EX-OR

(B) SOP

(C) POS

(D) NOR

2. In Boolean algebra , the OR operation is performed by which properties?

(A) Associative properties

(B) Commutative properties

(C) Distributive properties

(D) All of the above

3. DeMorgan's theorem states that ____

(A) $(AB)'=A'+B'$

(B) $(A+B)'=A'*B$

(C) $A'+B'=A'B'$

(D) $(AB)'=A'+B$

4. 2's complement of 11001011 is ____

(A) 01010111

(B) 11010100

(C) 00110101

(D) 11100010

5. Perform binary addition: 101101+011011=?

(A) 011010

(B) 1010100

(C) 101110

(D) 1001000

6. The given hexadecimal number $(1E)_{16}$ is equivalent to _____

(A) $(35.684)_8$

(B) $(36)_8$

(C) $(34)_8$

(D) $(37)_8$

7. The logic expression F=(A+B+C)(A+C)(B+C)(A+C) is in

(A) POS form

(B) SOP form

(C) Standard SOP form

(D) None of above

8. The number of cells in a 6-variable K-map is :

(A) 6

(B) 64

(C) 12

(D) 32

9. Following flip flop is used to eliminate race around problem :

(A) Master slave J-K flip flop

(B) R-S flip flop

(C) J-K flip flop

(D) None of the above

10. The output of an AND gate is LOW _____

(A) all the time

(B) when any input is low

(C) when all inputs are high

(D) when any inputs are high

11. Boolean algebra can be used _____

(A) Analyze and simplify digital circuits

(B) In building logics

(C) Binary Theory

(D) None of above

12. The code used for labelling cells of the K-map is :

(A) Gray

(B) Octal

(C) Natural BCD

(D) Hexadecimal

13. The full form of SIPO is

(A) Serial-in Parallel-out

(B) Serial-in Parity-out

(C) Serial-In Peripheral-Out

(D) None of above

14. In D register, 'D' stands for _____

(A) Delay

(B) Decrement

(C) Data

(D) Decay

15. Ripple counters are also called _____

(A) SSI counters

(B) Asynchronous counters

(C) Synchronous counters

(D) VLSI counters

16. How is a J-K flip-flop made to toggle?

(A) J=0, K=0

(B) J=1, K=0

(C) J=0, K=1

(D) J=1, K=1

17. Which error detection method consists of just one redundant bit per data unit?

(A) Simple parity check

(B) Two-dimensional parity check

(C) CRC

(D) Checksum

18. If we record any music in any recorder, such types of process is called _____

(A) Multiplexing

(B) Encoding

(C) Plexing

(D) Demultiplexing

19 The decimal equivalent of the binary number $(1011)_2$ is

(A) $(10.123)_{10}$

(B) $(14.175)_{10}$

(C) $(9.23)_{10}$

(D) $(11)_{10}$

20. The representation of octal $(5)_8$ in decimal is equal to?

(A) 15

(B) 55

(C) 5

(D) None of above

21. The representation of octal number $(532)_8$ in decimal is _____

(A) $(346)_{10}$

(B) $(532)_{10}$

(C) $(340)_{10}$

(D) $(531)_{10}$

22. A demultiplexer has :

(A) One data input and a number of selection inputs and they have several outputs

(B) One input and one output

(C) Several inputs and several outputs

(D) Several inputs and one output

23. In boolean algebra, the OR operation is performed by which properties?

(A) Associative properties

(B) Commutative properties

(C) Distributive properties

(D) All of the above

24. In the decimal numbering system. What is the MSD?

(A) The middle digit of a stream of numbers

(B) The digit to the right of the decimal point

(C) The last digit on the right

(D) The most significant digit

25. The full form of SR is :

(A) System Rated

(B) Set Reset

(C) Set Ready

(D) Set Rated

26. The complement of a variable is always :

(A) 0

(B) 1

(C) Equal to the variable

(D) The inverse of the variable

27. Which of the following is not a combinational circuit :

(A) Adder

(B) Code Converter

(C) Multiplexer

(D) Counter

28. Which of the following flip-flop is used by the ring counter?

(A) d flip-flop

(B) SR flip-flop

(C) JK flip-flop

(D) T flip-flop

29. 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) None of these

30. The group of flip-flops is also known as :

(A) Registers

(B) Counters

(C) Encoders

(D) None of the above

31. Storage of 1 KB means the following number of bytes :

(A) 1000

(B) 964

(C) 1024

(D) 1064

32. When numbers, letters or words are represented by a special group of symbols, this process is called :

(A) Decoding

(B) Encoding

(C) Digitizing

(D) Investing

33. The storage element for a static RAM is the :

(A) Diode

(B) Resister

(C) Capacitor

(D) Flip-flop

34. A full adder is characterized by :

(A) Two inputs and two outputs

(B) Three inputs and two outputs

(C) Two inputs and three outputs

(D) Two inputs and one outputs

35. What are the symbols used to represent digits in the binary number system?

(A) 0, 1

(B) 0, 1 2

(C) 0 through 8

(D) 1, 2

36. According to De Morgan's theorems, the following equality(s) are correct:

(A) $\overline{AB} = \overline{A} + \overline{B}$

(B) $\overline{XYZ} = \overline{X} + \overline{Y} + \overline{Z}$

(C) $\overline{A + B + C} = \overline{A}\,\overline{B}\,\overline{C}$

(D) All of these

37. What is the Octal equivalent of the binary number 10111101

(A) 675

(B) 275

(C) 572

(D) 573

38. A flip-flop has

(A) One stable state

(B) No stable state

(C) Two stable state

(D) None of the above

39. BCD counter is also known as :

(A) Parallel Counter

(B) Decade Counter

(C) Synchronous Counter

(D) VLSI Counter

40. How many types of flip-flops are :

(A) 2

(B) 3

(C) 4

(D) 6

41. Comparators are used in :

(A) Cache devices

(B) CPU

(C) Motherboard

(D) Hard Drive

42. In Boolean algebra, the bar sign (-) indicates.

(A) OR operation

(B) AND operation

(C) NOT operation

(D) None of the above

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. A D flip-flop can be constructed from an _____ flip-flop.

(A) S-R

(B) J-K

(C) T

(D) S-K

45. A Karnaugh map (K-map) is an abstract form of _____ diagram organized as a matrix of squares.

(A) Venn Diagram

(B) Cycle Diagram

(C) Block Diagram

(D) Triangular Diagram

46. What is a Circuit?

(A) Open-loop through which electrons can pass

(B) Closed-loop through which electrons can pass

(C) Both (A) and (B)

(D) None of the mentioned

47. The decimal equivalent of the excess-3 number 110010100011 is

(A) 970

(B) 1253

(C) 861

(D) 1132

48. Which of the following is a weighted code?

(A) Gray-code

(B) Excess-3

(C) Decimal Notation

(D) None of these

49. The involution of A is equal to _____

(A) A'

(B) A

(C) 0

(D) 1

50. Most demultiplexers facilitate which type of cinversion?

(A) Decimal-to-hexadecimal

(B) AC to DC

(C) Single input, multiple outputs

(D) Odd parity to even parity

51. What is a multiplexer?

(A) It is a type of decoder which decodes several inputs and gives one output

(B) It 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

52. The difference between half adder and full adder is _____

(A) Half adder has two inputs while full adder has four inputs

(B) Half adder has one output while full adder has two outputs

(C) Half adder has two inputs while full adder has three inputs

(D) All of the Mentioned

53. A full adder logic circuit will have

(A) Two inputs and one output

(B) Three inputs and three outputs

(C) Two inputs and two outputs

(D) Three inputs and two outputs

54. Don't care conditions can be used for simplifying Boolean expressions in _____

(A) Registers

(B) Terms

(C) K-maps

(D) Latches

55. Canonical form is a unique way of representing _____

(A) SOP

(B) Minterm

(C) Boolean Expressions

(D) POS

56. How many AND gates are required to realize Y= CD+EF+G?

(A) 1

(B) 2

(C) 4

(D) 3

57. The gate which is called an inverter is called :

(A) NOR

(B) NAND

(C) EXOR

(D) NOT

58. D flip-flop is used as :

(A) Differentiator

(B) Delay switch

(C) Divider circuit

(D) All of these

59. How many select lines would be required for an 8-line-to-1-line multiplexer?

(A) 3

(B) 2

(C) 4

(D) 8

60. In a full adder, the XOR gate is used to calculate the:

(A) Carry output

(B) Sum output

(C) Both Sum and Carry

(D) None of the above

61. Hamming code is used for _____

(A) Error detection

(B) Error correction

(C) None

(D) Both (A) and (B)

62. A+B=B+A; AB=BA represent which laws?

(A) Associative

(B) Commutative

(C) Idempotence

(D) Distributive

63. A(A+B)=?

(A) AB

(B) A

(C) (1+AB)

(D) 1

64. EBCDIC is abbreviated as ____

(A) Extended Binary Coded Decimal Interchange Code

(B) Extended Binary Colour Dictation Interchange Code

(C) Extended Bit Coded Dictation Interchange Code

(D) Extended Bit Coded Decimal Interchange Code

65. The decimal equivalent of the octal number $(645)_8$ is :

(A) $(420)_{10}$

(B) $(451)_{10}$

(C) $(421)_{10}$

(D) $(405)_{10}$

66. Sequential code is a :

(A) Excess-3

(B) 8421

(C) None of these

(D) Both (A) and (B)

67. The inverter is :

(A) NOT gate

(B) OR gate

(C) AND gate

(D) None of these

68. The full form of PLD is :

(A) Programmable Load Devices

(B) Programmable Logic Data

(C) Programmable Logic Devices

(D) Programmable Loaded Devices

69. Which one of the following is volatile in nature?

(A) ROM

(B) EROM

(C) PROM

(D) RAM

70. Excess-3 code is known as :

(A) Weighted code

(B) Cyclic redundancy code

(C) Self-complementing code

(D) Algebraic code

71. Karnaugh diagram is used to :

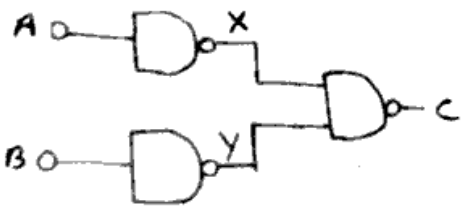
(A) Prepare layout of a complicated circuit

(B) Facilitate addition and multiplication in a computer circuit

(C) Construct truth table

(D) Reduce a digital logic circuit

72. The circuit shown in figure is functionally equivalent to :



(A) AND gate

(B) NOR gate

(C) OR gate

(D) EX-OR gate

73. The universal gate is :

(A) NAND gate

(B) OR gate

(C) AND gate

(D) None of the above

74. The binary number 10101 is equivalent to decimal number _____

(A) 19

(B) 12

(C) 27

(D) 21

75. Which of the following gate is a two-level logic gate :

(A) OR gate

(B) NAND gate

(C) EXCLUSIVE OR gate

(D) None of above