UNIT III

Number System and Logic Gates

1. A binary digit is called a _____
a. Bit
b. Byte
c. Number
d. Character

Ans: a

2. A byte corresponds to.
a. 4 bits
b. 8 bits
c. 16 bits
d. 32 bits

Ans: b

3. The 5 V level of a digital signal is called a logical 1 or HIGH
a. True
b. False

Ans: a

4. The +12V level of a digital signal is also called a logical----------
a. 0 or LOW
b. 0 or HIGH
c. 1 or LOW
d. 1 or HIGH

Ans: d

5. Positive logic in logic circuit is one in which
a. Logic 0 and 1 are represented by 0 and positive voltages respectively.
b. Logic 0 and 1 are represented by negative and positive voltages respectively.
c. Logic 0 voltage level is higher than logic 1 voltage level.
d. Logic 0 voltage level is lower than logic 1 voltage level.

Ans: d

6. The Boolean expression Y=(AB. ' is logically equivalent to what single gate?
a. NAND
b. NOR
c. AND
d. OR

Ans: a

7. The NAND gate output will be low if the two inputs are
a. 00
b. 01
c. 10
d. 11

Ans: d

8. The output of a logic gate is 1 when all its inputs are at logic 0. The gate is either
a. a NAND or an EX-OR
b. an OR or an EX-NOR
c. an AND or an EX-OR
d. a NOR or an EX-NOR

Ans: d

9. The NOR gate output will be high if the two inputs are
a. 00
b. 01
c. 10
d. 11

Ans: a

10. When an input signal A=11001 is applied to a NOT gate serially, its output signal is
a. 00111
b. 00110
c. 10101
d. 11001

Ans: b

11. How many NAND circuits are contained in a 7400 NAND IC?
a. 1
b. 2
c. 4
d. 8

Ans: c

12. The AND gates give high output when both inputs are .... ?
a. high, high
b. high, low
c. low, high
d. low,low

Ans: a

13. The OR gates give low output when both inputs are .... ?
a. high, high
b. high, low
c. low, low
d. low,high
Ans: c

14. The logic gate that will have HIGH or "1" at its output when any one of its inputs is HIGH is an:
a. OR gate
b. AND gate
c. NOR gate
d. NOT gate

Ans: a

15. Exclusive-OR (XOR. logic gate can be constructed from what logic gates?
a. OR gates only
b. AND gates and NOT gates
c. AND gates, OR gates, and NOT gates
d. OR gates and NOT gates

Ans: c

16. A NAND gate has:
a. LOW inputs and a LOW output
b. HIGH inputs and a HIGH output
c. LOW inputs and a HIGH output
d. None of the these

Ans: c

17. The basic logic gate whose output is the complement of the input is the:
a. OR gate
b. AND gate
c. INVERTER gate
d. Comparator

Ans: c

18. What input values will cause an AND logic gate to produce a HIGH output?
a. At least one input is HIGH.
b. At least one input is LOW.
c. All inputs are HIGH.
d. All inputs are LOW.

Ans: c

19. The NAND gates give low output when both inputs are .... ?

a. low, high
b. high, low
c. high, high
d. low,low

Ans: c

20. A XOR gate has inputs A and B and output Y. Then the output equation is
a. Y = A + B
b. Y = AB + A'B
c. AB + AB'
d. AB' + A'B

Ans: d

21. In a 3 input NAND gate, the number of states in which output is 1 equals
a. 1
b. 2
c. 3
d. 4

Ans: a

22. In a 3 input NOR gate, the number of states in which output is 1 equals
a. 1
b. 2
c. 3
d. 4

Ans: a

23. An AND gate has three inputs A,B,C out of total 8 input states,output is 1 in
a. 1 states
b. 2 states
c. 3 states
d. 4 states

Ans: a

24. An NOR gate has two inputs A and B, output is 1 if
a. A = 0, B = 0
b. A = 1, B = 0
c. A = 0, B = 0
d. A = 1, B = 1

Ans: a

25. The total number of input states for 4 input OR gate is
a. 20
b. 16
c. 12
d. 8

Ans: b

26. The gate whose output is LOW if and only if all inputs are HIGH, is
a. NAND
b. NOR
c. OR
d. AND

Ans: a

27. A waveform that has just two distinct voltages, such as 0 V and 12 V, is called as -------- signal.
a. AM
b. Analog
c. FM
d. Digital

Ans: d

28. The positive logic circuit is one in which
a. Logic 0 and 1 are represented by 0 and positive voltages respectively

b. Logic 0 and 1 are represented by negative and positive voltages respectively
c. Logic 0 voltage level is higher than logic 1 voltage level
d. Logic 0 voltage level is lower than logic 1 voltage level

Ans: d

29. IC s are
a. analog
b. digital
c. both analog and digital
d. mostly analog

Ans: c

30. A NOT gate has...
a. Two inputs and one output
b. One input and one output
c. One input and two outputs
d. none of above

Ans: b

31. In a 4 input OR gate, the total number of High outputs for the 16 input states are
a. 16
b. 15
c. 13
d. none of above

Ans: b

32. The 74LS08 chip contains ---------- gates.
a. 4
b. 5
c. 6
d. 8

Ans: a

33. A 14 pin AND gate IC has --------- AND gates
a. 8
b. 6
c. 4
d. 2

Ans: c

34. A 14 pin NOT gate IC has---------- NOT gates
a. 8
b. 6
c. 4
d. 2

Ans: b

35. Logically, the output of a NOR gate would have the same Boolean expression as an:
a. NAND gate immediately followed by an INVERTER
b. OR gate immediately followed by an INVERTER
c. AND gate immediately followed by an INVERTER
d. NOR gate immediately followed by an INVERTER

Ans: b

36. Which of following are known as universal gates?
a. NAND & NOR
b. AND & OR
c. XOR & OR
d. none

Ans: a

37. The number of bits in a nibble is.
a. 16
b. 5
c. 4

d. 8

Ans: c

38. Which of the following binary numbers is equivalent to decimal 10.
a. 1000
b. 1100
c. 1010
d. 1001

Ans: c

39. Numbers are stored and transmitted inside a computer in.
a. binary form
b. ASCII code form
c. decimal form
d. alphanumeric form

Ans: a

40. Logic gates are the examples of___.
a. LSI
b. MSI
c. SSI
d. any other

Ans: c

41. MUX is an example of____.
a. LSI
b. MSI
c. SSI
d. any other

Ans: b

42. The term VLSI generally refers to a digital IC having
a. more than 1000 gates
b. more than 100 gates
c. more than 1000 but less than 9999 gates
d. more than 100 but less than 999 gates

Ans: a

43. The observation that a bubbled input OR gate is interchangeable with a bubbled output AND gate is referred to as:
a. a Karnaugh map
b. DeMorgan's second theorem
c. the commutative law of addition
d. the associative law of multiplication

Ans: b

44. What value of A, B, C, and D satisfy the following simultaneous Boolean equations?
A+AB = 0,
AB = AC,
AB +AC +CD =CD.

a. A = 0, B = 0, C = 0, D = 1
b. A = 1, B = 1, C = 0, D = 0
c. A = 1, B = 0 C = 1, D = 1
d. A = 1, B = 0, C = 0, D = 0

Ans: a

45. AB+AB'=
a. B
b. A
c. 1
d. 0

Ans: b

46. Boolean Algebra obeys
a. commutative law
b. associative law
c. distributive law
d. all of the above

Ans: d

47. The first contribution to logic was made by
a. George Boole
b. Copernicus
c. Aristotle
d. Shannon

Ans: a

48. One of DeMorgan's theorems states that A'+B'=(A.B. '. Simply stated, this means that logically there is no difference between:
a. a NAND gate and an AND gate with a bubbled output
b. a NOR gate and an AND gate with a bubbled output
c. a NOR gate and a NAND gate with a bubbled output
d. a NAND gate and an OR gate with a bubbled input

Ans: d

49. According to commutative law of addition:
a. AB = BA
b. A = A + B
c. A + B = B + A
d. A + (B + C. = (A + B. + C

Ans: c

50. Which of the examples below expresses the commutative law of multiplication?
a. A + B = B • A
b. A • B = B + A
c. A • (B • C. = (A • B. • C
d. A • B = B • A

Ans: d

51. From following which Boolean Expression is not valid:
a. A . 0 = A
b. A . 1 = A
c. A . 0 = 0
d. A . A = A

Ans: a

52. Which of the following Boolean algebra rules is correct?
a. A.A' = 1
b. A + AB = A + B
c. A + A'B = A + B
d. A.(A + B. = B

Ans: c

53. Which of the examples below expresses the distributive law of Boolean algebra?
a. A • (B • C) = (A • B) + C
b. A + (B + C) = (A • B. + (A • C.
c. A • (B + C) = (A • B) + (A • C)
d. (A + B) + C = A + (B + C)

Ans: c

54. When simplified with Boolean Algebra (x + y. (x + z) simplifies to
a. x
b. x + xy + z
c. x + yz
d. x + yz

Ans: d

55. A + A.B =
a. B
b. A.B
c. A
d. A or B

Ans: c

56. A.0 =
a. 1
b. A
c. 0
d. A or 1

Ans: c

57. (A + B.C. =
a. A.B + C
b. A .B + A.C
c. A
d. (A+B. (A+C.

Ans: d

58. Which is correct?
a. A.A = 0
b. A + 1 = A
c. A + A' = 1
d. A'.A' = 0

Ans: c

59. The logical expression Y = C + C'B is equivalent to
a. Y = C + B
b. Y = CB
c. Y = C' + B
d. Y = C + B'

Ans: a

60. The logical expression Y = A + AB is equivalent to
a. Y = A + B
b. Y = A
c. Y = A' + B
d. Y = A + B'

Ans: b

61. Boolean expressions for the output of Ex-NOR logic gate with inputs A and B
a. AB' + A'B
b. (AB. ' + AB
c. (A' + B. (A + B'.
d. (A' + B'. (A + B.

Ans: c

62. The minimum number of OR gates required to implement Y = A + AB' + AB'C is equal to
a. 2
b. 1
c. 4
d. 7

Ans: a

63. Given logical function of four variables F(A, B, C, D. = (A + BC. (B + CD. . The function as sum of product will be
a. AB + BC + ACD + BCD
b. AB + AB + AC'D + BCD
c. (AB + AB. ' + ACD + BC'D
d. AB' + A'B +A'CD + BCD

Ans: a

64. How many AND gates are required to realize Y = CD+EF+G?
a. 4
b. 5
c. 3
d. 2

Ans: d

65. The expression Y = AC + BD + EF is
a. POS
b. SOP

c. hybrid
d. none of above
Ans: b

66. The expression Y = ? m(0,1,3,4. is
a. POS
b. none of these
c. hybrid
d. SOP

Ans: d

67. In which function, is each term known as min term?
a. POS
b. SOP
c. hybrid
d. none of above

Ans: b

68. In the expression A + BC, the total number of min terms will be
a. 2
b. 3
c. 4
d. 5

Ans: a

69. The expression Y = pM(0,1,3,4. is
a. POS
b. SOP
c. hybrid
d. none of above

Ans: a

70. Which of the following is true?
a. SOP is a two level logic
b. POS is a two level logic
c. both SOP and POS are two level logic
d. Hybrid function is two level logic

Ans: c

71. In which function, is each term known as max term?
a. POS
b. SOP
c. hybrid
d. none of above

Ans: a

72. What are the two types of basic adder circuits?
a. half adder and full adder
b. half adder and parallel adder
c. asynchronous and synchronous
d. one's complement and two's complement

Ans: a

73. The result of binary addition 1+1 is
a. 1
b. 0
c. 10
d. 4

Ans: c

74. How many inputs does a Half-adder have?
a. 1
b. 2
c. 3
d. 4

Ans: b

75. How many outputs does a half adder have?
a. 1
b. 2
c. 3
d. 4

Ans: b

76. 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

Ans: d

77. A combinational circuit that performs the addition of two input bits and a carry from the previous lower significant position is called
a. Full-adder
b. Half-adder
c. Full-subtractor
d. Half-subtractor

Ans: a

78. How many inputs will require for a 2:1 multiplexer?
a. 5
b. 8
c. 2
d. 1

Ans: c

79. The number of control lines for 2 to 1 multiplexer is
a. 2
b. 1
c. 3
d. 5

Ans: b

81. The number of control lines for a 8 – to – 1 multiplexer is
a. 2
b. 3
c. 4
d. 5

Ans: b

82. How many select lines will a 16 to 1 multiplexer will have?
a. 4
b. 3
c. 5
d. 1

Ans: a

83. How many outputs will require for a 1:4 demultiplexer?
a. 4
b. 8
c. 2
d. 1

Ans: a

84. The number of control lines i.e. select lines for 1 to 4 demultiplexer is
a. 2
b. 4
c. 3
d. 5

Ans: a

85. The number of control lines for 16 to 1 demultiplexer is
a. 2
b. 4
c. 3
d. 5

Ans: b

86. The number of control lines for 32 to 1 multiplexer is
a. 4
b. 5
c. 16
d. 6

Ans: b

87. One application of a digital multiplexer is to facilitate:
a. code conversion
b. parity checking
c. parallel-to-serial data conversion
d. data generation

Ans: c

88. What is applicable for demultiplexers ?
a. decimal to hexadecimal
b. single input, multiple outputs
c. ac to dc
d. odd parity to even parity

Ans: b

89. Output of combinational circuit depends upon
a. Future input
b. Present input
c. Past and present
d. None of these

Ans: b

90. Multiplexer is
a. Combinational circuits
b. sequential circuits
c. either sequential or combinational circuits
d. none of above

Ans: a

91. Which of the following circuits come under the class of combinational logic
circuits? 1. Full adder 2. Full subtractor 3. Half adder 4. J-K flip-flop 5. Counter
Select the correct answer from the codes given below:
a. 1 only
b. 3 and 4
c. 4 and 5
d. 1, 2 and 3

Ans: d

92. Which of the following circuits come under the class of sequential logic
circuits? 1. Full adder 2. Full subtractor 3. Half adder 4. J-K flip-flop 5. Counter
Select the correct answer from the codes given below:
a. 1 and 2
b. 2 and 3
c. 3 and 4
d. 4 and 5

Ans: d

93. Clock is a---- signal.
a. rectangular
b. triangular
c. pulse
d. Any other

Ans: a

94. A flip flop is a
a. combinational circuit
b. memory element
c. arithmetic element
d. memory or arithmetic

Ans: b

95. The basic storage element in a digital system is
a. flip flop
b. counter
c. multiplexer
d. encoder

Ans: a

96. ____FF is used to provide delay in ciruit.
a. SR
b. D
c. JK
d. any other

Ans: b

97. In a D latch
a. a high D sets the latch and low D resets it
b. a low D sets the latch and high D resets it
c. race can occur
d. none of above

Ans: a

98. _____is basically group of FFs
a. counter
b. register
c. latch
d. Any other

Ans: b

99. The simplest register is
a. buffer register
b. shift register
c. controlled buffer register
d. bidirectional register

Ans: a

100. The basic shift register operations are
a. serial in serial out
b. serial in parallel out
c. parallel in serial out
d. all of above

Ans: d

101. SIPO stands for-----
a. serial in parallal out
b. serial in serial out
c. serial
d. Any other

Ans: a

102. A universal shift register can shift
a. from right to left
b. from left to right
c. both from right to left and left to right
d. none of above

Ans: c

103. An 8 bit binary number is to be entered into an 8 bit serial shift register. The number of clock pulses required is
a. 1
b. 2
c. 4
d. 8

Ans: d

104. An 8 bit binary number is to be entered into an 8 bit parallel-in shift register. The number of clock pulses required is
a. 1
b. 2
c. 4
d. 8

Ans: a

105. The digital circuit used for counting pulse is known as_____.
a. counter
b. FF
c. register
d. any other

Ans: a

106. A counter is a
a. Sequential ckt
b. Combinational ckt
c. both combinational and sequential ckt
d. none of above

Ans: a

107. IC counters are
a. synchronous only
b. asynchronous only
c. both synchronous and asynchronous
d. none of above

Ans: c

108. A counter has 4 flip flops. The total number of states are
a. 8
b. 10
c. 16
d. 15

Ans: c

109. A counter has N flip flops. The total number of states is
a. N
b. 2N
c. N2
d. 4N

Ans: b

110. A 3 bit up-down counter can count from
a. 000 to 111
b. 111 to 000
c. 000 to 111 and also from 111 to 000
d. none of above

Ans: c

111. A 4 bit down counter can count from
a. 0000 to 1111
b. 1111 to 0000
c. 000 to 111
d. 111 to 000

Ans: b

112. A mod 4 counter will count
a. from 0 to 4
b. from 0 to 3
c. from any number n to n+4
d. none of above

Ans: b

113. A counter has modulus of 10. The number of flip flops is
a. 10
b. 5
c. 4
d. 3

Ans: c

114. The number of flip flops needed for Mod 7 counter are
a. 7
b. 5
c. 3
d. 1

Ans: c

115. A three-bit up-down binary counter is in the down mode and in the 000 state.
After 3 clock pulses, to what state does the counter go?
a. 101
b. 011
c. 111
d. 110

Ans: a

116. A three-bit up-down binary counter is in the up mode and in the 110 state.
After 3 clock pulses, to what state does the counter go?
a. 010
b. 011
c. 001
d. 110

Ans: c

117. A decade counter skips
a. binary states 1000 to 1111
b. binary states 0000 to 0011
c. binary states 1010 to 1111
d. binary states 1111 and higher

Ans: c

118. Which parts of the computer perform arithmetic calculations?
a. ALU
b. Registers
c. Logic bus
d. none of above

Ans: a

119. _____ is used to identify particular location in main memory where
data is store.
a. Data Bus
b. Control Bus
c. Address Bus
d. Any other

Ans: c

120. Each box in memory has _____ address.
a. unique
b. alterable
c. two
d. double

Ans: a

121. Accumulator's main purpose is_____.
a. temporary data storage
b. keeping track of the next instruction to be executed
c. selecting which peripheral should be addressed
d. storing instructions

Ans: a

122. Microprocessor communicates with the outside world through the_____.
a. memory
b. I/O devices
c. ALU
d. NONE OF THE ABOVE

Ans: b

123. _____ register gives the address of the memory location from where the next instruction is to be fetched.
a. Accumulator

b. SP
c. PC
d. any of the above
Ans: c

124. Stack memory is used to_____.
a. provide additional memory to the base memory
b. save return addresses of a subroutine
c. save the status of the microprocessor
d. none of these

Ans: b

125. _____ includes microprocessor, memory and I/O on a single chip.
a. microprocessor
b. microcomputer
c. microcontroller
d. none of the above

Ans: c

126. _____ holds the opcode of the instruction.
a. IR
b. SP
c. PC

d. all of the above

Ans: a

127._____holds the address of the top of stack.
a. IR
b. SP
c. PC
d. all of the above

Ans: b

((MARKS)) (1/2/3...)	2
((QUESTION))	The decimal number equivalent of (4057.06)8 is
((OPTION_A))	2095.75
((OPTION_B))	2095.075
((OPTION_C))	2095.937
((OPTION_D))	2095.0937
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	What is the binary equivalent of the decimal number
((OPTION_A))	101110000
((OPTION_B))	110110000
((OPTION_C))	111010000
((OPTION_D))	111100000
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Determine the values of A, B, C, and D that make the sum term equal to zero.
((OPTION_A))	A = 1, B = 0, C = 0, D = 0
((OPTION_B))	A = 1, B = 0, C = 1, D = 0
((OPTION_C))	A = 0, B = 1, C = 0, D = 0
((OPTION_D))	A = 1, B = 0, C = 1, D = 1
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert 59.7210 to BCD
((OPTION_A))	111011
((OPTION_B))	01011001.01110010
((OPTION_C))	1110.11
((OPTION_D))	0101100101110010
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	Convert $(8B3F)_{16}$ to binary.
((OPTION_A))	35647
((OPTION_B))	011010
((OPTION_C))	1011001111100011
((OPTION_D))	1000101100111111
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Which is typically the longest: bit, byte, nibble, word?
((OPTION_A))	Bit
((OPTION_B))	Byte
((OPTION_C))	Nibble
((OPTION_D))	Word
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert decimal 64 to binary.
((OPTION_A))	01010010
((OPTION_B))	01000000
((OPTION_C))	00110110
((OPTION_D))	01001000
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert the following octal number to decimal. $(17)_8$
((OPTION_A))	51
((OPTION_B))	82
((OPTION_C))	57
((OPTION_D))	15
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The sum of 11101 + 10111 equals _____.

((OPTION_A))	110011
((OPTION_B))	100001
((OPTION_C))	110100
((OPTION_D))	100100
((CORRECT_CHOICE)) (A/B/C/D)	C
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Hexadecimal letters A through F are used for decimal equivalent values from:
((OPTION_A))	1 through 6
((OPTION_B))	9 through 14
((OPTION_C))	10 through 15
((OPTION_D))	11 through 17
((CORRECT_CHOICE)) (A/B/C/D)	C
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert the following decimal number to hexadecimal. (125)
((OPTION_A))	7D16
((OPTION_B))	D716

((OPTION_C))	7C16
((OPTION_D))	C716
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The binary number 11101011000111010 can be written -_____.
((OPTION_A))	DD63A16
((OPTION_B))	1D63A16
((OPTION_C))	1D33A16
((OPTION_D))	1D63116
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The decimal number equivalent of (4057.06)8 is
((OPTION_A))	2095.75
((OPTION_B))	2095.075
((OPTION_C))	2095.937
((OPTION_D))	2095.0937

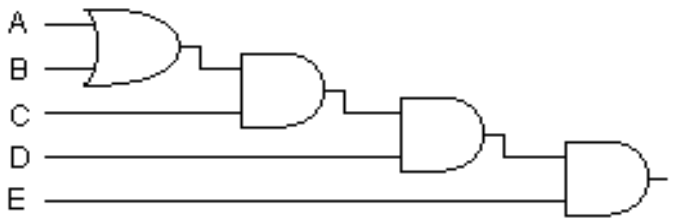
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	What is the binary equivalent of the decimal number
((OPTION_A))	101110000
((OPTION_B))	110110000
((OPTION_C))	111010000
((OPTION_D))	111100000
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Determine the values of A, B, C, and D that make the
((OPTION_A))	A = 1, B = 0, C = 0, D = 0
((OPTION_B))	A = 1, B = 0, C = 1, D = 0
((OPTION_C))	A = 0, B = 1, C = 0, D = 0
((OPTION_D))	A = 1, B = 0, C = 1, D = 1
((CORRECT_CHOICE))	B

(A/B/C/D)	
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The output of a logic gate is 1 when all its inputs are at logic 0. The gate is either
((OPTION_A))	a NOR or an EX-NOR
((OPTION_B))	an AND or an EX-OR
((OPTION_C))	an OR or an EX-NOR
((OPTION_D))	an NOR or an Ex-OR
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	
((QUESTION))	Derive the Boolean expression for the logic circuit 
((OPTION_A))	C(A+B)DE
((OPTION_B))	C(A+B)D+(-E)
((OPTION_C))	((C(A+B)D))(-E)

((OPTION_D))	ABCDE
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	
((QUESTION))	From the truth table below, determine the standard SOP

Inputs			Output
A	B	C	X
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

((OPTION_A))	$X=\bar{A}\bar{B}\bar{C}+ABC+A\bar{B}C$
((OPTION_B))	$X=ABC+ABC+ABC$
((OPTION_C))	$X=A\bar{B}C+\bar{A}BC+AB\bar{C}$
((OPTION_D))	$X=\bar{A}\bar{B}C+\bar{A}BC+AB\bar{C}$
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	For the SOP expression $A\bar{B}C+\bar{A}BC+AB\bar{C}$, how many 1s are

	in the truth table's output column?
((OPTION_A))	1
((OPTION_B))	2
((OPTION_C))	3
((OPTION_D))	5
((CORRECT_CHOICE)) (A/B/C/D)	C
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The 2’s complement of the number 1101101 is
((OPTION_A))	0010011
((OPTION_B))	0101110
((OPTION_C))	1101110
((OPTION_D))	1101110
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	A SOP expression is equal to _____
((OPTION_A))	All the variables in domain of expression are present
((OPTION_B))	At least one variable in domain of expression is present.

((OPTION_C))	When one or more product terms in the expression are equal to 0.
((OPTION_D))	When one or more product terms in the expression are equal to 1.
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The expression _____ is an example of tion.
((OPTION_A))	AB+C = A+BC
((OPTION_B))	A(B+C) = B(A+C)
((OPTION_C))	AB=BA
((OPTION_D))	A+B=B+A
((CORRECT_CHOICE)) (A/B/C/D)	C
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The maximum number that can be represented using unsigned octal system is _____
((OPTION_A))	1
((OPTION_B))	7

((OPTION_C))	9
((OPTION_D))	16
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	2's complement of any binary number can be calculated
((OPTION_A))	adding 1 to 1's complement
((OPTION_B))	adding 1's complement twice
((OPTION_C))	Subtracting 1 from 1's complement.
((OPTION_D))	calculating 1's complement and inverting Most significant bit
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The binary value “1010110” is equivalent to decimal
((OPTION_A))	86
((OPTION_B))	87

((OPTION_C))	88
((OPTION_D))	89
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	
((QUESTION))	A standard POS form has _____ terms that have all the variables in the domain of the expression.
((OPTION_A))	Sum
((OPTION_B))	Product
((OPTION_C))	Min
((OPTION_D))	Composite
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The AND Gate performs a logical _____function
((OPTION_A))	Addition
((OPTION_B))	Subtraction
((OPTION_C))	Multiplication
((OPTION_D))	Division

((CORRECT_CHOICE)) (A/B/C/D)	C
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	NOR gate is formed by connecting _____
((OPTION_A))	OR Gate and then NOT Gate
((OPTION_B))	NOT Gate and then OR Gate
((OPTION_C))	AND Gate and then OR Gate
((OPTION_D))	OR Gate and then AND Gate
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Which of the number is not a representative of
((OPTION_A))	1234
((OPTION_B))	ABCD
((OPTION_C))	1001
((OPTION_D))	DEFH
((CORRECT_CHOICE)) (A/B/C/D)	D

((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The decimal equivalent of the binary number “10011” is
((OPTION_A))	39
((OPTION_B))	99
((OPTION_C))	29
((OPTION_D))	None of given options
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The output of an AND gate is one when _____
((OPTION_A))	All of the inputs are one
((OPTION_B))	Any of the input is one
((OPTION_C))	Any of the input is zero
((OPTION_D))	All the inputs are zero
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The 2s compliment form (Use 6 bit word) of the number 1010 is
((OPTION_A))	111100
((OPTION_B))	110110
((OPTION_C))	110111
((OPTION_D))	1011
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Which of the following expressions is in the sum-of-products (SOP) form?
((OPTION_A))	(A + B)(C + D)
((OPTION_B))	(A)B(CD)
((OPTION_C))	AB(CD)
((OPTION_D))	AB + CD
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2

((QUESTION))	One of De Morgan's theorems states that. Simply stated, this means that logically there is no difference between:
((OPTION_A))	a NOR and an AND gate with inverted inputs
((OPTION_B))	a NAND and an OR gate with inverted inputs
((OPTION_C))	an AND and a NOR gate with inverted inputs
((OPTION_D))	a NOR and a NAND gate with inverted inputs
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The systematic reduction of logic circuits is
((OPTION_A))	using Boolean algebra
((OPTION_B))	symbolic reduction
((OPTION_C))	TTL logic
((OPTION_D))	using a truth table
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The NAND gate output will be low if the two inputs are

((OPTION_A))	00
((OPTION_B))	01
((OPTION_C))	10
((OPTION_D))	11
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The decimal equivalent of hex number 1A53 is
((OPTION_A))	6793
((OPTION_B))	6739
((OPTION_C))	6973
((OPTION_D))	6379
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	$(734)_8 = (?)_{16}$
((OPTION_A))	1DC
((OPTION_B))	1CD

((OPTION_C))	DC1
((OPTION_D))	DCC
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The decimal equivalent of octal number 314 is
((OPTION_A))	210
((OPTION_B))	212
((OPTION_C))	209
((OPTION_D))	204
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	Find out value of X from $(211)x=(152)_8$
((OPTION_A))	10
((OPTION_B))	7
((OPTION_C))	7.5
((OPTION_D))	16

((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Perform octal subtraction $(161)_8$-$(243)_8$
((OPTION_A))	-$(61)_8$
((OPTION_B))	+$(61)_8$
((OPTION_C))	+$(62)_8$
((OPTION_D))	-$(62)_8$
((CORRECT_CHOICE)) (A/B/C/D)	C
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Perform Binary Division (1110101)/(1001)
((OPTION_A))	$(1101)_2$
((OPTION_B))	$(1011)_2$
((OPTION_C))	$(1110)_2$
((OPTION_D))	$(0101)_2$
((CORRECT_CHOICE)) (A/B/C/D)	C

((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Perform octal multiplication $(14)_8*(7)_8$
((OPTION_A))	$(124)_8$
((OPTION_B))	$(123)_8$
((OPTION_C))	$(134)_8$
((OPTION_D))	$(213)_8$
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Solve $(105.65825)_{10}= (?)_2$
((OPTION_A))	1101001.10101
((OPTION_B))	1101101.10101
((OPTION_C))	1101100.1101
((OPTION_D))	1011000.0011
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert $(247)_{10}=(?)_8$
((OPTION_A))	366.56
((OPTION_B))	367.54
((OPTION_C))	366.50
((OPTION_D))	366.512
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert $(32F)_{16}=(?)_{10}$
((OPTION_A))	57.1836
((OPTION_B))	58.1836
((OPTION_C))	57.19
((OPTION_D))	58.177
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2

((QUESTION))	Convert $(5826)_{16}=(?)_{10}$
((OPTION_A))	22566
((OPTION_B))	21566
((OPTION_C))	22654
((OPTION_D))	21577
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert $(A72E)_{16}=(?)_{8}$
((OPTION_A))	123356
((OPTION_B))	123456
((OPTION_C))	213456
((OPTION_D))	123465
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Convert $(4C12E)_{16}=(?)_{8}$
((OPTION_A))	2312.0456

((OPTION_B))	2313.456
((OPTION_C))	2112.4456
((OPTION_D))	2212.0456
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The output of a logic gate is 1 when all its inputs are at
((OPTION_A))	an NOR or an EX-NOR
((OPTION_B))	an AND or an EX-OR
((OPTION_C))	an OR or an EX-NOR
((OPTION_D))	an NOR or an Ex-OR
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The 2’s complement of the number 1101101 is
((OPTION_A))	0010011
((OPTION_B))	0101110
((OPTION_C))	1101110

((OPTION_D))	1101110
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	A SOP expression is equal to _____
((OPTION_A))	All the variables in domain of expression are present
((OPTION_B))	At least one variable in domain of expression is present.
((OPTION_C))	When one or more product terms in the expression are equal to 0.
((OPTION_D))	When one or more product terms in the expression are equal to 1.
((CORRECT_CHOICE)) (A/B/C/D)	D
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	The expression _____ is an example of Commutative Law for Multiplication.
((OPTION_A))	AB+C = A+BC
((OPTION_B))	A(B+C) = B(A+C)
((OPTION_C))	AB=BA
((OPTION_D))	A+B=B+A

((CORRECT_CHOICE)) (A/B/C/D)	C
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	A group of symbols is known as_____
((OPTION_A))	Boolean expression
((OPTION_B))	Code
((OPTION_C))	Logic expression
((OPTION_D))	Number system
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	In BCD each decimal digit is represented by _____bit
((OPTION_A))	2
((OPTION_B))	4
((OPTION_C))	6
((OPTION_D))	8
((CORRECT_CHOICE)) (A/B/C/D)	B

((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	(1000)Bin is for BCD_____
((OPTION_A))	7
((OPTION_B))	8
((OPTION_C))	9
((OPTION_D))	10
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	From the following which number are valid BCD
((OPTION_A))	1111
((OPTION_B))	1000
((OPTION_C))	1101
((OPTION_D))	All of these
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	1
((QUESTION))	The largest single digit BCD number is_____
((OPTION_A))	1001
((OPTION_B))	1010
((OPTION_C))	1111
((OPTION_D))	0011
((CORRECT_CHOICE)) (A/B/C/D)	A
((EXPLANATION)) (OPTIONAL)	

((MARKS)) (1/2/3...)	2
((QUESTION))	Addition and subtraction of BCD have ____ rules than
((OPTION_A))	Same
((OPTION_B))	Different
((OPTION_C))	--
((OPTION_D))	--
((CORRECT_CHOICE)) (A/B/C/D)	B
((EXPLANATION)) (OPTIONAL)	