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SUBJECT CODE NO: - CB-2348
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. F.Y. (Sem-I)
Examination December/January-2022-23
Electronics Paper-II ELE-021 Digital Electronics-I

[Time: 1:30 Hours]

[Max. Marks: 40]

Please check whether you have got the right question paper.

N. B

- 1) All questions are compulsory.
- 2) All question carry equal marks.
- 3) Draw neat diagram and give labels wherever necessary.

Q1 Perform the following operation. 10

1. $(10100011)_2 = (?)_{10}$
2. $(13)_{10} = (?)_2$
3. $(0100110)_2 = (?)_{16}$
4. $(712)_{10} = (?)_2$
5. $(A7E)_{16} = (?)_2$

Or

Explain in brief.

- a) Explain the two inputs and gate with logical symbol and truth table?
- b) Explain the two inputs NAND gate with logical symbol and truth table?

Q2 What is k-map explain the 3-variable k-map with suitable example? 10

Or

Explain in brief.

- a) Full adder.
- b) 1 to 8 DE multiplexer.

Q3 Write short notes on any two. 10

1. Explain the 2's complement. Method.
2. Explain Ex-OR (X-OR) gate.
3. De-Morgan's first theorems.
4. 8 to 1 multiplexer.

Q4 Multiple choice question. 10

1. The binary addition $(1001)_2 + (0101)_2 = \underline{\hspace{2cm}}$.
a) $(1110)_2$ b) $(1011)_2$ c) $(1101)_2$ d) $(1111)_2$

2. An exclusive OR (X-OR) logic gate will have output is one.
a) When both inputs are one. b) When both inputs are not equal
c) When both inputs are zero d) none of the above.
3. The Association law is_____.
a) $A+(B+C)=(A.B).C$ b) $(A+B)+C= A+(B+C)+D$
c) $(A+B)+C= A+(B+C)$ d) $(A+B)^1 = A.B$
4. There are _____ cells in a 4-variable k-map.
a) 8 b) 10 c) 12 d) 16
5. The $(1010)_2$ number 1's complement is _____.
a) 0101 b) 1110 c) 1100 d) 1010
6. The logical and gate will have output is one.
a) When all inputs are zero b) When both inputs are one.
c) When both inputs are not equal d) none of the above
7. The De-morgens first theorems is_____.
a) $(A+B)^1= A.B$ b) $A+A^1=1$ c) $(A+B)^1= A^1.B^1$ d) $(A+B)= A^1.B^1$
8. A half adder is a logic circuit with _____.
a) Three I/p and one O/p. b) three I/p and three O/p
c) two I/p and one O/p d) two I/p and two O/p
9. The binary code 1110 converted into Gray code is_____.
a) 1001 b) 1000 c) 1110 d) 1010
10. Full adder adds_____ number of binary bits.
a) two b) three c) four d) five