Reg. No. : ....

Name : ....

III Semester B.Sc. Degree (CBCSS – Sup./Imp.) Examination, November 2021
(2015 – '18 Admissions)
GENERAL COURSE IN COMPUTER SCIENCE
3A12CSC : Digital Electronics

Time : 3 Hours   Max. Marks : 40

SECTION – A

1. **One** word answer.   (8×0.5=4)

   a) 2's complement of the binary number 10110100_2 is _____

   b) The base of hexadecimal number system is _____

   c) For a two input XOR gate we get a high output if _____

   d) A _____ has single input and many outputs.

   e) In a seven segment display, LEDs b and c lit up. Then the decimal number displayed is _____

   f) Condition for JK flip flop to toggle is _____

   g) If a counter is connected using 6 flip flop then the maximum number of states that the counter count is _____

   h) In sequential circuits the output states depend upon _____.

SECTION – B

Write short notes on **any seven** of the following questions.   (7×2=14)

2. Find the binary and BCD equivalent of the decimal number 2469.

3. State de-Morgan's first law.

4. State associative law for Boolean addition.

5. Define cell adjacency in k-map.

6. Why are multiplexers called data selectors ?

7. What is the function of a decoder ?

8. Define flip flop.

9. What is a master slave flip flop ?

10. Define a sequential circuit.

11. Give an account of shift register counter.

SECTION – C

Answer **any four** of the following questions.   **(4×3=12)**

12. Convert Y = A + BC′ + AB + A′BC into canonical form.

13. Explain the advantages and disadvantages of k-map method.

14. List the difference between combinational and sequential circuits.

15. Give the comparison between synchronous and asynchronous counters.

16. Minimize the function f = x (y + w′z) + wxz using Boolean algebra.

17. Define the two types of shift register counters.

SECTION – D

Write an essay on **any two** of the following questions.   **(2×5=10)**

18. With suitable examples explain the methods for implementing signed arithmetic.

19. Simplify the expression F(A, B, C, D) = Σ(5, 7, 8, 9, 13, 15) using Karnaugh map. Draw the logic diagram of the expression both before and after simplifying.

20. With relevant figure and waveform explain SR, D and JK flip flops.

21. Design a four bit magnitude comparator which checks for equality, less than and greater than conditions.

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