

Date:

Registration number:

ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27

SEMESTER EXAMINATION: JULY 2022

**EL OE 416 - Number System and Logic Circuits**

Time- 90 MIN. Max Marks-35

This question paper contains two printed pages and three parts

**Part A**

**Choose the Correct Answer from the Options Given** 10 X 1 =10

1. The next number after the octal number 107 is
2. 1O8 b)200 c)210 d)110
3. Name the logic gate to give an output 1 if and only if all inputs are logic 1
4. AND b) OR c) XOR d)NAND
5. Which of the following is INVALID for a RS flip-flop?

a) R= 0, S= 0

b) R = 1, S = 0

c) R = 1, S = 1

d) R = 0, S = 1

1. XS-3 code for 2110
2. 01010100 b) 54 c) 24 d) 11000
3. The BCD code for decimal number 26 is
4. 00100110 b) 00011010 c) 1A d) 59
5. Sum of 9H and AH  =
6. 19H b) 13H c) 17H d) 1FH
7. The output of the following logic circuit is Q =
8. A’+ BC b) ( A + BC)’ c) (A + B )’ + BC d) ( AB)’ + BC



1. What type of register would have a complete binary number shifted in one bit at a time and have all the stored bits shifted out one at a time?
2. Serial-in Serial-out
3. Parallel-in Parallel-out

c) Parallel-in Serial-out

d) Serial-in Parallel-out

1. In a D flip flop, clock input and D input is HIGH, then

a) Q is LOW and Q’ is HIGH

b) Q is HIGH and Q’ is LOW

c) Q and Q’ toggles

d) the output is invalid

1. 2’S complement of 1010100 is

a) 0101011 b) 0101010 c) 0101111 d) 0101100

**PART-B**

1. **Match the following** 5 marks

a) 2 AH i) 87

b) gray code of 0011010 ii) 57

c) 1110012 iii) 00101010

d) Not an octal number iv) 0010111

e) Nibble v) 4

**PART-C**

**Answer any 10 of the following** 10 x 2 = 20

1. Convert C8H into decimal.
2. Using 2’s complement method, subtract 27 from 54.
3. Convert gray code 100100 into binary.
4. a) State De Morgan’s theorems.
5. Draw the symbol of NOR gate and its truth table.
6. Show that (AC’ + ABC’)’ = A’ + C
7. Construct OR gate using NAND gates.
8. Draw a SR latch.
9. Draw the symbol of EXOR gate and its truth table.
10. Draw the truth table of a J-K flip flop.
11. Expand RAM and ROM.
12. Name 4 types of shift registers.

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