STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086
(For Candidates admitted during the academic year 2019-2020 & thereafter)
SUBJECT CODE: 19CS/MC/DL13

B.C.A. DEGREE EXAMINATION – NOVEMBER 2022
FIRST SEMESTER

COURSE : MAJOR CORE
PAPER : DIGITAL LOGIC FUNDAMENTALS
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION - A

ANSWER ALL THE QUESTIONS: **(20x1=20)**
Choose the correct answer:

1. The binary number 10101 is equivalent to decimal number _____
   a) 19 b) 12 c) 27 d) 21

2. 2's complement of binary number 0101 is _____
   a) 1011 b) 1111 c) 1101 d) 1110

3. The number of digits in octal system is _____
   a) 8 b) 7 c) 9 d) 10

4. The NOR gate is OR gate followed by _____-
   a) AND gate b) NAND gate c) NOT gate d) None of the mentioned

5. The only function of NOT gate is to _____
   a) Stop b) Invert input signal
   c) Act as a universal gate d) None of the mentioned

6. In the toggle mode, a JK flip-flop has _____.
   a) J = 0, K = 1 b) J = 1, K = 1
   c) J = 0, K = 0 d) J = 1, K = 0

7. To convert BCD to seven segments, _____ device is used.
   a) Encoder b) Decoder
   c) Multiplexer d) Both Encoder and Decoder

8. The next state is determined in a sequential circuit is determined by _____ and _____
   a) Current state and external input b) Current state, flip-flop output
   c) State variable, current state d) Input and clock signal applied

9. The ME input in RAM is called as _____.
   a) memory enabled b) memory erase
   c) memory extend d) mode erase

10. ROM simulator changes binary codes into _____
   a) gray code b) octal
   c) Hex d) Hex

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Fill in the blanks:

11. One nibble is equal to _____ bits.
12. The excess-3 code for 584 is given by _____.
13. The Minterms for four variables is _____.
14. A full adder can be made out of two _____.
15. DeMorgan's Law states that _____.
16. The 3×8 decoder will have_____ inputs.
17. A digital circuit that can store only one bit is a _____.
18. _____ is a decade counter.
19. The 16×4 RAM indicates that each memory location is of _____ bits.
20. _____ converts the programs written in assembly language into machine instructions.

SECTION – B

ANSWER ALL THE QUESTIONS: (5 x 2 = 10)

21. Expand ASCII and EBCDIC.
22. Draw the truth table of XOR gate.
23. What is Decimal Adder?
24. Define Sequential Circuit.
25. List any four types of ROM.

SECTION - C

ANSWER ANY EIGHT OF THE FOLLOWING : (8 x 5 = 40)

26. Do the following as directed:
    a. Convert decimal number 153 to Octal.
    b. Convert Binary number 10110001101011.11110010 to Hexadecimal.
27. Given the two binary numbers X = 1010100 and Y = 1000011, Perform the subtraction (a) X -Y and (b) Y - X using 2's complements.
28. Discuss in brief about DeMorgan's theorem with example.
29. Write short notes on Don't-Care conditions.
30. Explain briefly about Full adder with neat diagram.
31. What is Multiplexer? Explain with neat diagram and truth table.
32. Explain about D Flip-Flop with neat circuit diagram and truth table.
33. Write about synchronous counters.
34. Write a brief note on Error detection and correction.
35. Summarize the Subunits of CPU.

SECTION - D

ANSWER ANY THREE OF THE FOLLOWING : (3 x 10 = 30)

36. Briefly discuss about Various Binary codes with example.
37. Explain about various digital logic gates with neat diagram and truth table.
38. Explain Encoder and Decoder with logic diagram and truth table.
39. Draw and explain the operation of a JK flip-flop.
40. Discuss in brief about Programmable Logic Array.

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