(Pages : 4) **L – 3939**

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Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Science /Computer Applications

Complementary Course

CS 1131/CP1131 – DIGITAL ELECTRONICS

(2020-Admission Regular)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. What is meant by peak inverse voltage?
2. Draw the V-I characteristics of Zener diode.
3. What is an emitter follower?
4. What do you mean by operating point?
5. Convert $(101011.101)_2$ to decimal number.
6. Draw the truth table and logic symbol of NAND gate.
7. According to De-morgan's theorem, $\overline{AB + CD}$ is equivalent to _____.
8. What do you meant by toggle condition?

P.T.O.

9. What are min terms?

10. How many flip flops are required to construct a decade counter?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Each question carries **2** marks.

11. Explain the V-I characteristics of PN junction diode.

12. What are the advantages of a bridge rectifier over a full wave centre tapped rectifier?

13. What are the three currents in a transistor and how they are related?

14. Why common collector circuit is called emitter follower?

15. Convert $(255)_{10}$ to binary number.

16. Convert hexadecimal number 5B6 into decimal number.

17. Prove that $A + \overline{A}.\ B + A\overline{B} = A + B$.

18. State De-Morgans theorems.

19. What is a quad in a Karnaugh map?

20. Draw the logic diagram of a half-adder.

21. Define multiplexer.

22. What are shift registers? List any two applications of shift register.

23. Differentiate SOP and POS.

24. Define Flip flop.

25. Draw the logic diagram of a 1-bit comparator.

26. What do you mean by decoder?

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. Each question carries **4** marks.

27. What is a rectifier? Explain the working of a half wave rectifier with neat diagram.

28. Explain the operation of a transistor as an amplifier.

29. Convert the following to binary number

    (a) $(125.625)_{10}$

    (b) $(615)_8$

    (c) $(10AF)_{16}$.

30. Determine

    (a) 10101+11001

    (b) 1110–1011.

    (c) 2's complement of 00111101.

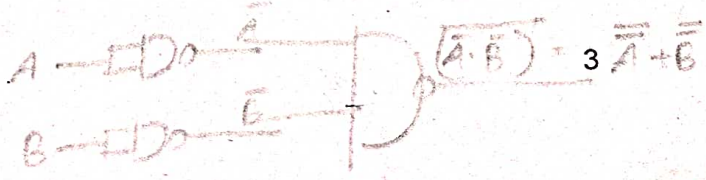
31. Explain the rules of Boolean algebra.

32. Implement an OR function using NAND gates.

33. Differentiate min term and max term.

34. Explain the operation and truth table of J-K flip flop.

35. Differentiate synchronous and asynchronous counters.



36. Explain the operation and logic circuit of full adder.

37. Explain the working of 2-bit comparator.

38. Differentiate multiplexer and decoder.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks.

39. With the help of diagram explain the working of a zener diode voltage regulator.

40. What is a multivibrator? Explain the working of astable multivibrator using 555 timer with neat circuit and waveforms.

41. What do you mean by NOR function? Explain the universal property of NOR gate.

42. Use K map to minimize $f = \Sigma(0, 2,3,4,6,8,10,11,12,14)$

43. Explain in detail the operation and truth table of different type of flip flops.

44. Explain in detail the operation and logic circuit of different type of shift registers.

(2 × 15 = 30 Marks)
