LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PHYSICS**

THIRD SEMESTER – **NOVEMBER 2022**

17/18UPH3MC02 – ELECTRONICS - I

Date: 03-12-2022   Dept. No.   Max. : 100 Marks
Time: 09:00 AM - 12:00 NOON

PART – A

Answer ALL questions   **(10x 2 = 20 Marks)**

1   State Norton's Theorem.

2   What is a DC load line?

3   State superposition theorem.

4   Mention any four characteristics of an ideal op-amp.

5   Define CMRR.

6   Draw the logic diagram and write the truth table of a D - flip-flop.

7   Using K- map, find the logic expression for $F(A,B,)=\sum(0,2)$.

8   What is a monolithic IC?

9   Write any two advantages of integrated circuits.

10 Draw the circuit diagram of an astable multivibrator.

PART – B

Answer any four questions   **(4 x 7.5 = 30 Marks)**

11   State and explain Thevenin's theorem.

12   Explain the operation of an OP-AMP as an inverting amplifier. Obtain its voltage gain.

13   Explain the construction and working of Colpitt's oscillator with a neat circuit diagram.

14   With the circuit diagram and truth table, describe the working of a decade counter.

15   Explain the various types of integrated circuits.

16   With a neat circuit diagram and truth table, describe the working of a full adder.

PART – C

Answer any four questions   **(4 x 12.5 = 50 Marks)**

17   State the maximum power theorem and derive the condition for transfer of maximum power from the source to a load.

18   Describe the operation of an Op-Amp as a summing and a difference amplifier.

19   Explain how a diode, transistor, resistor and capacitor can be fabricated on a monolithic IC.

20   Describe the construction and working of a FET& a MOSFET.

21   With a neat circuit diagram and truth table describe the operation of a J-K Master Slave flip flop.

22   (a)Describe in detail the steps used in the fabrication of Integrated Circuits.   (5marks)
      (b)Discuss the working of a shift left register with the relevant circuit diagram and give its truth table.
                                                                                                         (7.5 marks)

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