



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – PHYSICS

FOURTH SEMESTER – APRIL 2023

PH 4506 – ELECTRONICS - I

Date: 02-05-2023

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

(10 x 2 = 20 Marks)

Q. No.

Answer ALL questions

- 1 State maximum power transfer theorem.
- 2 What is a constant voltage source?
- 3 Draw the circuit of a voltage divider biasing network.
- 4 Draw the circuit diagram of a mono stable multivibrator.
- 5 Define Common Mode Rejection Ratio.
- 6 List the characteristics of an ideal Op-amp.
- 7 Draw the logic diagram and write the truth table of a D - flip-flop.
- 8 What is meant by a ripple counter?
- 9 List the various scales of integration in integrated circuit design.
- 10 Differentiate between thick and thin films.

PART – B

(4 x 7.5 = 30 Marks)

Answer any FOUR questions

- 11 State and prove Norton's theorem.
- 12 Explain the working of the colpitt's oscillator.
- 13 Describe the construction and working of a MOSFET.
- 14 Explain the working of a JK flip flop with a neat circuit diagram.
- 15 Discuss the making process of monolithic IC.
- 16 With a neat circuit diagram and truth table, describe the function of a full adder.

PART – C

(4 x 12.5 = 50 Marks)

Answer any FOUR questions

- 17 Explain the performance of a linear circuit in h-parameters.
- 18 Explain the function of a phase-shift oscillator using three RC sections with necessary diagram. Obtain the expressions for the conditions of oscillation and arrive at its frequency expression.
- 19 Explain the operation of an OP-AMP as an inverting and non-inverting amplifier.
- 20 Describe how a diode, transistor, resistor and capacitor can be fabricated on a monolithic IC.
- 21 Explain with a logic diagram, the operation of a 4-bit binary ripple counter.
- 22 Draw a 3-bit Johnson's Shift counter using JK flip flop and describe the sequence of operations.

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