

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc. DEGREE EXAMINATION – PHYSICS

FOURTH SEMESTER – APRIL 2023

UPH 4501 – 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 Define Q-point in a transistor amplifier circuit.
- 2 What is feedback in amplifier?
- 3 State the Barkhausen's conditions for an oscillator.
- 4 What is the role of coupling capacitor in a single stage amplifier?
- 5 How can the gain be expressed in decibel?
- 6 Expand and define CMRR.
- 7 What are the types of flip flops?
- 8 Draw the circuit diagram of a 4-bit shift right register.
- 9 What are the three modes in which a BJT can be used?
- 10 Differentiate between linear and non-linear ICs.

PART – B

(4 x 7.5 = 30 Marks)

Answer any FOUR questions

- 11 State and prove Norton's theorem.
- 12 Discuss the essential components of a transistor oscillator.
- 13 Derive the condition for transfer of maximum power from a source to a load.
- 14 Discuss the output characteristics of JFET.
- 15 Discuss the working of MOD-4 and MOD-8 counters.
- 16 Describe the various methods in IC's integration.

PART – C

(4 x 12.5 = 50 Marks)

Answer any FOUR questions

- 17 Explain the procedure for finding Thevenin's equivalent circuit.
- 18 What is multivibrator? With a neat diagram, explain the working of astable multivibrator.
- 19 Construct Colpitts's oscillator using an NPN transistor and explain its working.

- 20 Discuss the operation of an OP-amp as (i) inverting (ii) non-inverting amplifiers. (6.5+6)
- 21 Illustrate and explain the 4-bit ripple up counter along with clock pulse diagram.
- 22 Describe in detail the fabrication of a monolithic transistor IC's.

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