

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.Sc.DEGREE EXAMINATION –PHYSICS

FOURTH SEMESTER – APRIL 2018

PH 4506– ELECTRONICS - I

Date: 09-05-2018
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART – A

Answer All Questions.

(10 X 2 = 20 MARKS)

1. State Superposition Theorem.
2. What is a linear network?
3. Write the Barkhausen criterion for oscillation in oscillators.
4. Draw the circuit of a transistor biased using a voltage divider network.
5. Define open loop gain of an op-amp.
6. Define CMRR. Give its value for an ideal and practical op-amp.
7. Write the three basic laws of Boolean algebra.
8. Draw the block diagram of a 4-input multiplexer and give its function table.
9. Write the classification of ICs based on the techniques used in manufacturing them.
10. What are hybrid integrated circuits? State its significant features.

PART – B

Answer ANY FOUR Questions.

(4 x 7.5 = 30 marks)

11. State and explain Thevenin's theorem.
12. Explain the working of a phase shift oscillator and obtain its frequency of oscillation.
13. Explain with the necessary circuit the working of an op-amp subtractor.
14. Explain the working of a JK flip-flop and give the truth table.
15. Describe the construction of a 1-line to 4-line demultiplexer using logic gates and explain its function table.
16. Explain the fabrication of monolithic Integrated Circuits.

PART C

Answer ANY FOUR questions

(4 x 12.5 = 50 marks)

17. Obtain expressions for A_i , A_v and Z_i in terms of 'h' parameters for a transistor amplifier connected in common emitter configuration with necessary equivalent circuit.
18. (a) Explain with a neat circuit the functioning of a direct coupled amplifier.
(b) Discuss the working of a transistor Monostable multivibrator. **(6.5+6)**
19. Discuss the construction and operation of a depletion type MOSFET and explain its drain and transfer characteristics.
20. (a) Explain the working of a four bit shift register.
(b) Explain the two types of Random Access Memory. **(6.5+6)**
21. Differentiate between asynchronous and synchronous counters. Draw the circuit of a 3-bit ripple counter and explain its working. **(2.5+10)**
22. Explain with necessary diagrams the fabrication of transistors and diodes on monolithic Integrated Circuits. **(6.5+6)**
