LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FOURTH SEMESTER – APRIL 2017

PH 4506- ELECTRONICS - I

Date: 21-04-2017 Dept. No. Max. : 100 Marks
09:00-12:00

PART – A

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

1. What is meant by constant current source?
2. State Superposition theorem.
3. What is class A power amplifier?
4. Calculate the time period of the output wave of Astablemultivibrator if R=10 kilo Ohm and C=0.01 micro Farad.
5. Define CMRR and express it in decibels.
6. Define pinch-off voltage of a FET.
7. Prove the Boolean Law: $A + BC = (A+B)(A+C)$
8. What is a multiplexer?
9. Write a note on scale of integration of IC's.
10. What are non-linear integrated circuits?

PART – B

Answer any FOUR questions: (4 x 7.5 =30 Marks)

11. State Thevenin's theorem. Discuss its application to circuit analysis with a suitable example.
12. Explain the working of Phase shift oscillator with a neat circuit diagram.
13. Discuss the working and characteristics of UJT.
14. Explain preset and clear inputs of a JK flip flop. Explain how it is converted to (a) D flip flop and (b) T flip flop.
15. Describe the basic production processes of monolithic integrated circuits.
16. Explain the operation of D-MOSFET in both depletion and enhancement modes.

PART – C

Answer any FOUR questions: (4 x 12.5 =50 Marks)

17. What are hybrid parameters? Derive the expressions for current gain, voltage gain and output impedance of a transistor amplifier in common emitter configuration with h parameter equivalent circuit.
18. With neat circuit diagram, explain the working of two stage RC coupled amplifier and discuss its frequency response curve at low, mid and high frequency regions.
19. (a) Discuss the operation of a summing amplifier and how it is used as a difference amplifier **(7.5)**
    (b) Explain the V-I characteristics of SCR. **(5.0)**
20. Explain the working of 4 bit (a) parallel binary adder and (b) shift counter circuits. **(6+6.5)**
21. Discuss the fabrication of transistors and capacitors on monolithic integrated circuits with necessary diagrams.
22. Design a 4 bit binary ripple counter and explain how it is modified to work as decade counter with function table.

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