LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – **NOVEMBER 2017**

16UPH3MC02 – ELECTRONICS - I

Date: 07-11-2017 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

PART – A

Answer All Questions. **(10 X 2 = 20 MARKS)**

1. Define a constant-voltage source.
2. State maximum power transfer theorem.
3. Explain quiescent point on a dc load line.
4. Draw the circuit of a voltage divider biasing network.
5. Explain the concept of virtual ground with respect to operational amplifiers.
6. For an inverting amplifier R_1 =1 kΩ and R_f =1 MΩ. Assuming an ideal op-amp determine the voltage gain, input resistance and output resistance.
7. Prove that A+BC = (A+B)(A+C)
8. Draw the circuit of MOD 4 counter using JK flip flops.
9. State any two methods employed in the fabrication of thin film ICs.
10. What are linear integrated circuits? State its applications.

PART – B

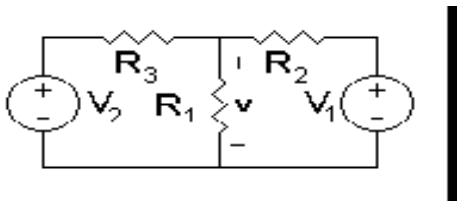
Answer ANY FOUR Questions. **(4 x 7.5 = 30 marks)**

11. State Thevenin's theorem and explain the procedure for arriving at Thevenin voltage and resistance using an example.
12. Explain with a neat circuit the functioning of a Wein Bridge oscillator.
13. Describe the construction and working of a MOSFET.
14. Describe the working of a JK flip flop with neat circuit diagram.
15. Explain the fabrication of monolithic Integrated Circuits.
16. With a neat circuit explain the working of a transistor Monostable Multivibrator.

PART C

Answer ANY FOUR questions **(4 x 12.5 = 50 marks)**

17. State superposition theorem and use it to find the current through R_1 in the following circuit where V_2=12 V; V_1=6 V; R_1=4 Ω; R_2= 4 Ω; R_3=6 Ω.



18. Explain the working of a two stage RC coupled amplifier in CE configuration. State the advantages of RC coupling.

19. (a) State the characteristics of an ideal op-amp.

(b) Describe with suitable circuit diagrams the functioning of an op-amp as a summing and difference amplifier. **(2.5+10)**

20. Draw the logic circuit and explain the working of a 4 bit up/down counter with relevant truth table.

21. Describe the various processes involved in the fabrication of transistors, diodes, resistors and capacitors.

22. Explain with a logic diagram how shift right and shift left operations can be performed using a 4-bit shift register.

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