LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – PHYSICS

THIRD SEMESTER – November 2009

PH 3504/PH 3502 - ELECTRONICS - I

Date & Time: 04/11/2009 / 9:00 - 12:00   Dept. No.　　　　　　　Max. : 100 Marks

PART A

Answer ALL questions:　　　　　　　　　　**10 x 2 = 20 marks**

1. Convert a constant current source producing 6 mA across 2kΩ into an equivalent voltage source.
2. List any two limitations of h parameters.
3. Draw the dc Load line for a CE type transistor amplifier with V_{CC}=12v and R_C=2KΩ.
4. State the necessity for an Amplifier in an Oscillator circuit.
5. List the two basic characteristics of an ideal Opamp.
6. Determine the values of R_{B1} and R_{B2} of a UJT which has the intrinsic stand-off ratio = 0.6 & inter-base resistance = 10kΩ.
7. What is a 'Redundant Group' in a K map ? What is its effect?
8. What is a Multiplexer ?
9. How many flip flops are required to store 2009_{10} in a binary register.
10. What is the modulus of a (i) 3BIT ripple counter & ii) 3BIT ring counter ?

PART B

Answer ANY FOUR questions:　　　　　　　　**4 x 7.5 = 30 marks**

11. Derive the condition for maximum power transfer from a source to a load.
12. Explain the need for biasing and any one method of biasing a transistor.
13. Explain how the gate looses control once the SCR is triggered ON.
14. Describe the logic circuit of a M/S- JK Flip Flop and explain its working.
15. List the differences between Static RAM & Dynamic RAM.
    Explain any one application of ROM.

PART C

Answer ANY FOUR questions:　　　　　　　　**4 x 12.5 = 50 marks**

16. Find the h parameters of the circuit given below:
    CIRCUIT

17. Draw Wien's bridge oscillator circuit using Transistor and explain its working.
18. Explain the mechanism of current conduction in a MOSFET.
19. Explain Add/Sub operations of 4-bit Parallel Binary Adder circuit with examples.
20. Draw a 3-Bit Johnson's Shift counter using JK flip flops and describe the sequence of operations. List the two illegal states of the counter.

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