# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

## B.Sc. DEGREE EXAMINATION – PHYSICS

### THIRD SEMESTER – NOVEMBER 2011

### PH 3504/PH 3502 - ELECTRONICS - I

Date : 01-11-2011          Dept. No. [                    ]          Max. : 100 Marks
Time : 9:00 - 12:00

## PART-A

### Answer All  Questions                                    (10x2=20 marks)
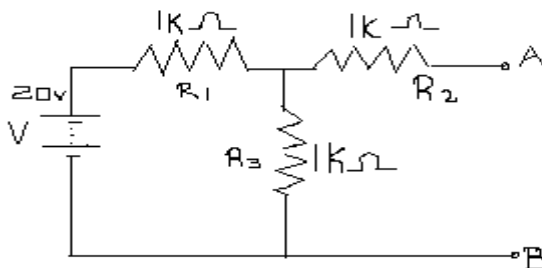
1. What is a constant current source?

2. State maximum power transfer theorem.

3. What is meant by transistor biasing?

4. State Barkhausen criterion for oscillation.

5. Calculate the CMRR value in decibel of an Op-amp (Given: $A_{CM}$= 12   & $A_{DM}$ = 8000).

6. What is a FET?

7. Draw the block diagram of a four – bit parallel binary adder.

8. What is a demultiplexer?

9. What is down counter?

10. What is the difference between synchronous counter and synchronous counter?

## PART-B

### Answer ANY FOUR  Questions                               (4X7.5=30 marks)

11. i) State Thevenin's theorem.              (1.5marks)

    ii)Find the Thevenin's equivalent circuit for the given ciruit. (6 marks)



12. Explain the operation of transistor Bistable multivibrator with a neat diagram.
13. Explain the function of inverting amplifier using Operational amplifier.

14. Simplify using K map Y=F(A,B,C,D)=$\Sigma$(0,1,3,5,7,9,11,12,13,14,15) and draw a logic circuit for the simplified expression.
15. Explain in detail the working of a 3-bit binary ripple counter.

## PART–C

**Answer ANY FOUR Questions** :                                      **( 4x12.5 = 50marks )**

16.   i) Give the equivalent circuit of a CE amplifier using h- parameters.   (3.5 marks)
      ii)  Derive expression for $A_i$ , $A_v$  and $Z_i$ in terms of h- parameters.    (9 marks)

17.    Explain the working of transistor RC coupled amplifier with special reference to frequency response, any two advantages and disadvantages.

18.  i) Draw the equivalent circuit of a UJT  and discuss  its working .        (6.5 marks)
      ii) Draw the V-I Characteristics curve of it and explain.                (6 marks)

19.    With the help of logic diagram and truth table explain the working of
                i) JK  flip flop                                            (5 marks)
                ii) JK Master slave flip flop                          (7.5 marks).

20.    i) What is shift register? Explain the working of a shift right shift register using JK flip flops.
                                                    (7.5 marks)
      ii) Write short notes on memory devices i) ROM        ii) RAM          (5 marks)


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