# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD& FIFTH SEMESTER – **APRIL 2018**

### PH 3504 / PH 3502 / PH 5501– ELECTRONICS - I

Date: 05-05-2018          Dept. No.                    Max. : 100 Marks
Time: 01:00-04:00

## PART-A

**Answer ALL the questions**                    **(10x2=20 Marks)**

1.  State Thevenin's Theorem.

2.  What is a constant voltage source?

3.  Write the different methods of transistor biasing.

4.  What is a monostablemultivibrator?

5.  Draw the equivalent circuit of UJT.

6.  A difference amplifier has a differential voltage gain of 2000 and a common mode gain of 0.2.Calculate CMRR and write it in dB.

7.  What is the function of a multiplexer?

8.  Draw the logic diagram and write the truth table of a D - flip-flop.

9.   What is a ripple counter?

10.   Write any two differences between ROM and RAM.


## PART-B

**Answer Any Four questions**                    **(4x7.5=30Marks)**

11. State the maximum power theorem and derive the condition for transfer of maximum power from source to a load.**(2.0 + 5.5)**

12.(a) Explain the working of a phase shift oscillator with a neat circuit diagram.      **(5.0)**

   (b) A phase shift oscillator uses 5pF capacitors. Find the value of R to produce a frequency of 800 kHz.                                   **(2.5)**

13.With relevant circuit diagrams, explain the operation of OP-AMP as summing and difference amplifier.                                   **(3.5+4.0)**

14.Describe the function of a 7 segment decoder with a neat diagram.     **(7.5)**

15. Explain the working of three bit binary ripple counter using JK flip flop.**(7.5)**

# PART-C

**Answer Any Four questions**                                    (4x12.5=50)

16. Obtain expressions for the input impedance, current gain, voltage gain and output impedance in terms of h-parameters using the equivalent circuit of a transistor in CE configuration.

17. With necessary circuit explain the construction and working of a Bistablemultivibtator.**(5.0+7.5)**

18. Describe the construction and working of a silicon controlled rectifier. With circuit diagram, explain how it acts as a half wave rectifier.                                    **(7.5+5.0)**

19. Explain the operation of JK flip - flop and JK Master Slave flip-flop with their logic diagrams and truth tables.        **(6.5+6.0)**

20) With neat circuit diagrams, explain the function of (a) shift left and (b) shift right shift registers. **(6.5+6.0)**

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