M.Sc. 1st Semester Examination-2022-23

PHYSICS (PRACTICAL)

Course ID : 12465   **Course Code : PHYS/105PR**

Course Title : Practical

Time : 3 Hours   *Full Marks :* 40

The figures in the right hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Study the optical characteristics of a LED and determine the band gap of the material of LED.
   (a) Theory and working formula.   5
   (b) Experiment.   10
   (c) Result, graph and Discussion.   10
   (d) Laboratory Note Book.   5
   (e) Viva-voce.   10

2. Study the current mirror biasing and V_{BE} multiplier based voltage references
   (a) Theory and working formula.   5
   (b) Experiment.   10

(Turn Over)

(c) Result and Discussion.   10

(d) Laboratory Note Book.   5

(e) Viva-voce.   10

3. Study the transistor amplifier in common mode (CE) using CRO

   (a) Theory and working formula.   5

   (b) Experiment.   10

   (c) Result, graph and Discussion.   10

   (d) Laboratory Note Book.   5

   (e) Viva-voce.   10

4. Draw the LDR characteristics at different intensities and find out the value and the dark resistance of the LDR.

   (a) Theory and working formula.   5

   (b) Experiment.   10

   (c) Result and Discussion.   10

   (d) Laboratory Note Book.   5

   (e) Viva-voce.   10

5. Study the transfer characteristics of different networks and study the phase transfer characteristics of a given two-port RC network by using CRO.

   (a) Theory and working formula.   5

   (b) Experiment.   10

   (c) Result and Discussion.   10

(d) Laboratory Note Book.   5

(e) Viva-voce.   10

6. Design a three bit parallel adder using ex-OR or basic gates.

   (a) Theory and working formula.   5

   (b) Experiment.   10

   (c) Result, graph and Discussion.   10

   (d) Laboratory Note Book.   5

   (e) Viva-voce.   10

7. Study the opamp based linear and non-linear amplifier.

   (a) Theory and working formula.   5

   (b) Experiment.   10

   (c) Result and Discussion.   10

   (d) Laboratory Note Book.   5

   (e) Viva-voce.   10

8. Design a RC-Phase shift oscillator with characteristic frequency 7 kHz.

   (a) Theory and working formula.   5

   (b) Experiment.   10

   (c) Result and Discussion.   5

   (d) Graph Plotting.   5

   (e) Laboratory Note Book.   5

   (f) Viva-voce.   10

9. Study the input output voltage characteristics of Schmitt trigger circuit.

  (a) Theory and working formula.   5

  (b) Experiment.   10

  (c) Result and Discussion.   5

  (d) Laboratory Note Book.   10

  (e) Viva-voce.   10

10. Construct and test the operation of Pre-emphasis and De-emphasis circuits by plotting frequency response using opamp.

  (a) Theory and working formula.   5

  (b) Experiment.   10

  (c) Result and Discussion.   5

  (d) Laboratory Note Book.   10

  (e) Viva-voce.   10

11. Study the amplitude modulation technique and determine the modulation index.

  (a) Theory and working formula.   5

  (b) Experiment.   10

  (c) Result, graph and Discussion.   5

  (d) Laboratory Note Book.   10

  (e) Viva-voce.   10