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PG CBCS
M.Sc. Semester-II Examination, 2021
PHYSICS
 PAPER: PHS 296
(ADVANCED PRACTICAL - 1)

Full Marks: 50

Time: 3 Hour

Answer any TWO questions from the following:

2×25=50

1. What is a Light Emitting Diode (LED)? Write down the basic working principle of a LED with a circuit diagram to study the LED characteristics. What kind of materials are used to make a LED? What do you mean by quantum efficiency?

5 + 10 + 5 + 5

2. Explain photo-electric effect. Write down Einstein's photo-electric equation and explain it. What is the work function? Write down the theory of measurement of Planck's constant (h) with the help of photo-electric effect. What is stopping potential? How does stopping potential vary with intensity and frequency?

3 + 5 + 2 + 10 + 2 + 3

3. What is the Hall effect? Write down the theory with mathematical expression to find the Hall coefficient and carrier concentration of a n-type sample. Mention some importances of Hall effect.

5 + 15 + 5

4. What is a magnetron valve? Explain the working principle of a magnetron valve. Write down the theory to measure the charge to mass (e/m) ratio using the magnetron valve.

5 + 10 + 10

5. What is a Photodiode? Write down the basic working principle of a Photodiode with a proper circuit diagram to study the $I-V$ characteristics. What is Dark current? Why do Photodiodes operate in reverse bias? What are the basic differences between the Photodiode and a normal diode? Write some applications of a Photodiode.

5 + 10 + 2 + 3 + 3 + 2

6. What is a Light Dependent Resistor (LDR) or Photoresistor? Explain the structure and working principle to study the LDR characteristics. What are the different types of LDR and explain them? Mention some application of LDR.

4 + 10 + 6 + 5