

U.G. 5th Semester Examination - 2020

PHYSICS

[HONOURS]

Course Code : PHY(H)-P-CC-12/PR

[PRACTICAL]

(Solid State Physics)

Full Marks : 20

Time : 2 Hours

The figures in the right-hand margin indicate marks.

Answer any **four** questions:

5×4=20

1. How does the resistivity of semiconductor changes with temperature? What is the advantage of four probe method over the other conventional methods? What do you understand by bandgap? 1+2+2
2. Define Hall coefficient. Why is Hall potential developed? Define mobility. 2+2+1
3. What are paramagnetic substances? What is the basic principle behind the experiment of the calculation of susceptibility of paramagnetic solution? 2+3
4. What do you mean by complex dielectric constant of material? What do you mean by Plasma frequency? 3+2

[Turn over]

5. Draw a typical B-H loop and describe the different magnetization processes which lead to the formation of M-H loop in ferromagnetic material. What is spontaneous magnetization? 1+2+2
6. What are piezoelectric effect? What are its application? 3+2
7. What are magnetic dipoles? Deduce the field at a point on the axis of the dipole due to the magnetic dipole. 2+3
8. What is the basic principle behind the surface Plasmon resonance method? What is the application of surface Plasmon resonance? 3+2