SHRI RAMSWAROOP MEMORIAL UNIVERSITY

End Semester Examination (2021-22)-Odd Semester

B.Tech. (CSE) – I Year (I Sem)	
Course Name: Physics	**Code: BPH1701**
Time: 02 Hours	**Max Marks: 60**

University Roll No.															
(To be filled by the Student)															

Note: Please read instructions carefully:

a) The question paper has 03 sections and it is compulsory to attempt all sections.

b) All questions of Section A are compulsory; questions in Section B and C contain choice.

Section A: Very Short Answer type Questions **Attempt all the questions.**		**BL**	**CLO**	**Marks (10)**
1.	Illustrate E-K diagram in extended zone picture.	BL2	CLO1	02
2.	Define Fermi energy level.	BL1	CLO1	02
3.	Explain the carrier drift in a semiconductor.	BL2	CLO2	02
4.	Quote an expression for hall mobility.	BL1	CLO4	02
5.	Discuss Spontaneous emission.	BL2	CLO3	02
Section B: Short Answer Type Questions **Attempt any 03 out of 06 questions.**		**BL**	**CLO**	**Marks (30)**
1.	Explain photovoltaic effect.	BL4	CLO3	10
2.	Compare the density of states in 1D, 2D and 0D.	BL4	CLO5	10
3.	Explain band gap calculation by UV-Vis spectroscopy	BL4	CLO4	10
4.	Demonstrate carrier recombination process with diagram.	BL4	CLO2	10
5.	Calculate the hole and electron concentrations in p-type semiconductor if the acceptor density is 2×10^{20} atoms/m^3 and intrinsic concentration is 4.0×10^{19} per m^3 at 300°K.	BL3	CLO2	10
6.	Calculate the energy difference between the first excited state and ground state for an electron in a box of length 2Å.	BL3	CLO1	10
Section C: Long Answer Type Questions/Case Study **Attempt any 01 out of 04 questions. Answer question in appropriate word limit.**		**BL**	**CLO**	**Marks (20)**
1.	Discuss four point probe method of measurement of carrier density.	BL4	CLO2	20
2.	Derive an expression for density of states in a semiconductor in term of energy.	BL4	CLO2	20
3.	Discuss the different methods of fabrication and characterization techniques.	BL4	CLO5	20
4.	Explain the formation of energy band in solids.	BL4	CLO1	20
