		Course Code: B23BS1102			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		I B.Tech. I Semester MODEL QUESTION PAPER			
		ENGINEERING PHYSICS			
		CSE, CSIT, ECE, EEE & IT			
Time: 3 Hrs.					**Max. Marks: 70 M**
		Answer Question No.1 compulsorily			
		Answer **ONE Question** from **EACH UNIT**			
		Assume suitable data if necessary			
					10 x 2 = 20Marks
			CO	**KL**	**M**
1.	**a).**	State the Principle of Superposition.	**1**	**1**	**2**
	b).	Explain the double refraction phenomena of light.	**1**	**2**	**2**
	c).	What are lattice parameters?	**2**	**2**	**2**
	d).	Draw the lattice planes with Miller Indices (100) and (111).	**2**	**2**	**2**
	e).	What do you understand by polar and nonpolar dielectrics?	**3**	**1**	**2**
	f).	Define relative permeability, magnetic susceptibility and give their relation?	**3**	**2**	**2**
	g).	State the Heisenberg's uncertainty principle.	**4**	**1**	**2**
	h).	Define Fermi energy?	**4**	**1**	**2**
	i).	What are extrinsic semiconductors?	**5**	**2**	**2**
	j).	List out the characteristic properties of semiconductors.	**5**	**2**	**2**
					5 x 10 =50Marks
		UNIT-1			
2.	**a).**	Elaborate the essential conditions for producing sustained interference of light.	**1**	**2**	**4**
	b).	How are Newton's rings formed and deduce an expression for the wavelength of light?	**1**	**3**	**6**
		OR			
3.	**a).**	Analyze the diffraction of light at a single slit and obtain the condition for maxima.	**1**	**4**	**6**
	b).	What are Half wave plate and Quarter wave plate and mention their applications?	**1**	**2**	**4**
		UNIT-2			

4.	**a).**	Define Packing fraction of atomic crystals and calculate the Packing fraction for an FCC lattice?	**2**	**3**	**5**
	b).	What are Miller indices and explain how they are determined?	**2**	**3**	**5**
		OR			
5.	**a).**	Deduce the Bragg's X-ray diffraction condition?	**2**	**3**	**5**
	b).	Describe the Laue's method for the determination of crystal structure.	**2**	**3**	**5**
		UNIT-3			
6.	**a).**	Explain the different types of Polarizations possible in dielectrics.	**3**	**2**	**4**
	b).	Deduce the Clausius-Mosotti equation and explain its significance in dielectrics?	**3**	**3**	**6**
		OR			
7.	**a).**	Classify the Magnetic materials based on atomic magnetic moment.	**3**	**2**	**4**
	b).	Describe the hysteresis exhibited by a ferromagnetic material and explain it using a suitable theory.	**3**	**3**	**6**
		UNIT-4			
8.	**a).**	Obtain the Schrodinger's time independent wave equation.	**4**	**3**	**6**
	b).	Calculate deBroglie wavelength of an electron moving with a velocity of $1/20^{th}$ of the velocity of light?	**4**	**3**	**4**
		OR			
9.	**a).**	Give an account of successes and failures of classical free electron theory.	**4**	**2**	**4**
	b).	Obtain an expression for the electrical conductivity of a metal using Quantum free electron theory.	**4**	**3**	**6**
		UNIT-5			
10.	**a).**	Derive an expression for the density of electrons in the conduction band of an intrinsic semiconductor?	**5**	**3**	**6**
	b).	Describe the variation of Fermi energy with temperature and dopant concentration in n-type semiconductor.	**5**	**2**	**4**
		OR			
11.	**a).**	Discuss the Hall effect, in detail, and explain its significance.	**5**	**3**	**6**
	b).	Distinguish between drift and diffusion currents in semiconductors.	**5**	**2**	**4**

CO-COURSE OUTCOME **KL-KNOWLEDGE LEVEL** **M-MARKS**

NOTE: Questions can be given as **a, b** splits or as a single Question for 10 marks