

#### GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)

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#### QUESTIONBANK (DESCRIPTIVE)

Subject Name with Code: APPLIED PHYSICS SCIENCE IN ENGINEERING (22A0005T)

Course & Branch: I.B. Tech & CSE

Year & Semester: I year & II - Semister

Regulation: R22

### UNIT - I

S.No.	Question	[BT Level] [CO] [Marks]		
2Mar	2 Marks Questions (Short)			
1.	What is superposition principle	[L1] [C01] [2M]		
2.	Why central spot is dark in Newton's ring experiment	[L1] [C01] [2M]		
3.	Define diffraction	[L1] [C01] [2M]		
Ч.	Can you list three difference between fresnel and fraunhofer diffraction	[L1] [C01] [2M]		
5.	Define polarization	[L1] [C01] [2M]		
6.	What is double refraction	[L1] [C01] [2M]		
า.	State Huygens principle?	[L1] [C01] [2M]		
8.	DefineInterference?	[L1] [C01] [2M]		
9.	What is diffraction grating.	[L1] [C01] [2M]		
10.	Why central spot is dark in Newton's rings	[L1] [C01] [2M]		
Descr	iptiveQuestions(long)			
11.	Explain interference in thin film by reflection with conditions.	[L2] [C01] [8M]		
12.	a) Discuss Types of polarizations b) Write about Half wave and Quarter wave plates	[L2] [C01] [SM][L2] [C01] [SM]		
13.	Explain construction and working principle of Nicol's prism with limits.	[L2] [C01] [8M]		
14.	Explain Fraunhofer diffraction due to double slit	[L2][C01][12M]		
15.	a) Illustrate about double refraction b) What is diffraction grating? Explain it	[L2] [C01] [SM][L2] [C01] [SM]		
16.	Describe Fraunhofer Diffraction due to single slit and obtain Maxima, minima and secondary Maxima conditions?	[L2] [C01] [12M]		
<b>1</b> 7.	Describe polarization by reflection (brewster's law)	[L2] [C01] [SM]		
18.	Derive the expressions for the diameters of dark and bright fringes in Newton's rings experiment	[L2] [C01] [8M]		
Proble	ems			
19.	Newton's rings are observed in the reflected light of wave length 5900AO. The diameter of 10th dark ring is 0.5 cm. find the radius of curvature of the lensused?	[L3] [C01] [4M]		
20.	find the minimum thickness of half wave plate and quarter wave plate for a light beam ( $\lambda$ =589.3nm) if $\mu$ _0 = 1.65833 and $\mu$ _e = 1.48640	[L3] [C01] [4M]		
21.	A soap film of refractive index 1.33 and thickness 5000A° is exposed to white light what wavelengths in the visible region are reflected?	[L3] [C01] [4M]		
22.	In a Newton's rings experiment the diameter of 15 <sup>th</sup> ring was found	[L3] [C01] [4M]		

	to be 0.59 cm and that of $5^{\mathrm{th}}$ ring is 0.336 cm. If the radius of curvature	
	of lens is 100 cm. find the wave length of the light.	
	A source of light having a wavelength of 600nm is incident on a slit	
23.	with a width of 1 µ m. find the angular separation between the first	[L3] [C01] [4M]
	order minima and central maxima of either side.	
	A plane grating having 10520 lines per cm is illuminated with light	
24.	having a wavelength of $5 \times 10^{-5}$ cm at normal incidence. How many	[L3] [C01] [4M]
	orders are visible in the grating spectra	
25.	Refractive index of glass plate is 1.5. Calculate the Brewster's angle	[L3] [C01] [4M]
<i>L</i> J.	and angle of refraction for it	[[] [[] [[]

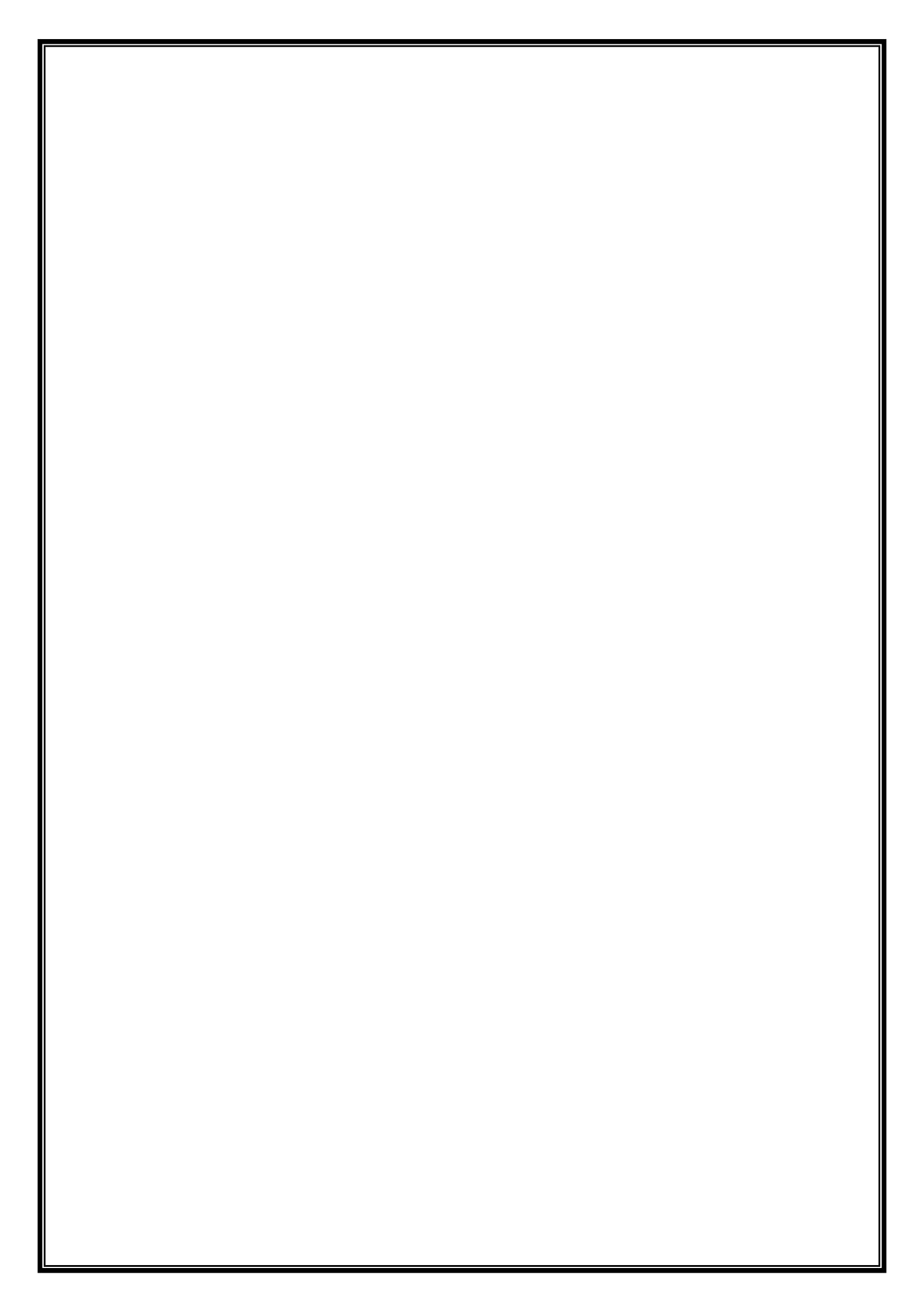
### <u>UNIT – II</u>

S.No.	Question	[BT Level][CO]
		[Marks]
2 Marl	ks Questions (Short)	
J.	LASERstandsfor	[L1] [C05] [SW]
2.	Define population inversion	[L1] [C02] [2M]
3.	Define Stimulating emission	[L1] [C02] [2M]
Ч.	What is step-index optical fiber	[L1] [C02] [2M]
5.	What are the components of optical fiber	[L1] [C02] [2M]
6.	Define Numerical aperture and acceptance angle.	[L1] [C02] [2M]
<b>1</b> .	What is an optical fiber?	[L1] [C02] [2M]
8.	Why is step-index optical fiber?	[L1] [C02] [2M]
9.	What is graded index optical fiber?	[L1] [C05] [SW]
10.	Define population?	[L1] [C02] [2M]
Descr	iptive Questions (long)	
11.	a)Explain Construction and working principles of Ruby laser	[F5] [C05] [8W]
11.	b)Write any six applications of laser	[L3] [C02] [4M]
12.	a)Describe Construction and working principles of He-Ne laser	[F5] [C05] [8W]
12.	b)Write any four applications of laser	[L3] [C02] [4M]
13.	a) Discuss characteristics of lasers	[F5] [C05] [eW]
10.	b) Write and explain Pumping methods of lasers	[F5] [C05] [eW]
14.	Derive equation for Acceptance angle and numerical aperture	[F5] [C05] [8W]
15.	Summarize about the Step index optical fiber	[F5] [C05] [8W]
16.	a) Explain working principles of Optical fiber	[F5] [C05] [6W]
10.	b) Write the signal losses in optical fiber	[F5] [C05] [eW]
1 <b>1</b> .	Demonstrate Optical fiber Communication system with neat diagram	[L5] [C05] [J0W]
18.	Write applications of Optical fiber	[F5] [C05] [EW]
19.	Distinguish between spontaneous and stimulated emission of	[L2] [C02] [6M]
10.	radiations	
Proble		
20.	A fiber has a core refractive index of 1.44 and cladding refractive index	[L3] [C02] [4M]
<i>5</i> 0.	of 1.4. find its acceptance angle, numerical aperture	
	An optical fiber has a core refractive index of 1.55 and cladding	
21.	refractive index of 1.50. find its numerical aperture and fractional	[L3] [C02] [4M]
	difference of refractive indices	
22.	The numerical aperture of an optical fibre is 0.39. If the difference in	[L3] [C02] [4M]
	refractive indices of its core and cladding is 0.05. Then find refractive	

	index of core	
23.	A light ray enters the core of refractive index 1.55 from a medium of refractive index 1.6 at an angle of incidence of 60°. Calculate the angle of refraction at the interface	[L3] [C02] [4M]
24.	An optical fibre has refractive indices 1.53 and 1.42 respectively. Find the critical angle of core and cladding	[L3] [C02] [4M]
25.	Calculate the wave length of emitted radiation from GaAs which has a band gap of 1.44eV	[L3] [C02] [4M]

# <u>UNIT – III</u>

2.   Define dielectric polarization?	S.No.	Question	[BT Level][CO] [Marks]		
2. Define dielectric Displacement? 3. Relation between P.D. & P. 4. Define dielectric Permichility? 4. Define magnetic moment 5. Define magnetic moment 6. Define magnetic moment 6. Define magnetic field strength 7. Define magnetic field strength 8. What is relation between B.B&1	2 Mar	2 Marks Questions (Short)			
3.   Relation between P.D & C?   [L1] [C03] [2m]   4.   Define dielectric Permidbility?   [L1] [C03] [2m]   5.   Define magnetic Membrat.   [L1] [C03] [2m]   6.   Define magnetic field strength   [L1] [C03] [2m]   7.   Define magnetic susceptibility   [L1] [C03] [2m]   7.   Define magnetic susceptibility   [L1] [C03] [2m]   7.   Define magnetic susceptibility   [L1] [C03] [2m]   7.   Define bohr mageton   [L1] [C03] [2m]   7.   Define bohr mageton   [L1] [C03] [2m]   7.   Define bohr mageton   [L1] [C03] [2m]   7.   Define Hysteresis   [L1] [C03] [2m]   7.   Derive the expression for Electronic polarization   [L2] [C03] [2m]   10m]   12.   Derive the expression for Definition   [L2] [C03] [2m]   12.   Derive the expression for ionic polarization   [L2] [C03] [2m]   13.   Derive the expression for ionic polarization   [L2] [C03] [2m]   14.   Explain Elausius—Mosotti relation in dielectric constant and susceptibility   [L2] [C03] [2m]   18.   Explain Elausius—Mosotti relation in dielectrics subjected to static field   [L2] [C03] [2m]   18.   Explain Hysteresis of Ferromagnetic materials   [L2] [C03] [2m]   18.   Urite about Dia. Para and Ferro magnetic materials   [L2] [C03] [2m]   18.   Urite about Soft and Hard magnetic material   [L2] [C03] [2m]   18.   Urite about Orientation polarization   [L2] [2m] [2m]   18.   Urite about Orientation polarization   [L2] [2m] [2m]   19.   Problems   The magnetic susceptibility of copper subjected to magnetic field of   (L2] [2m] [2m]   19.   Problems   The magnetic susceptibility of copper subjected to magnetic field of   (L2] [2m] [2m]   10.	1.	Define dielectric polarization?	[L1] [C03] [2M]		
Particle description of the properties of the	2.	Define dielectric Displacement?	[L1] [C03] [2M]		
Sefine magnetic moment   Sefine magnetic field strength   Sefine magnetic field strength   Sefine magnetic field strength   Sefine magnetic susceptibility   Sefine magnetic field   Sefine magnetic susceptibility   Sefine magnetic field   Sefine magnetic susceptibility   Sefine magnetic magnetic field   Sefine magnetic magnetic field   Sefine magnetic magnetic magnetic field   Sefine magnetic field   Sefine magnetic magne	3.	Relation between P.D & E?	[L1] [C03] [2M]		
6. Define magnetic field strength  1. Define magnetic susceptibility  8. What is relation between B.NB.1  9. Define lysteresis  1. Define lysteresis  1. Define lysteresis  1. Derive the expression for Electronic polarization.  12. Derive the expression for Electronic polarization  13. Derive the expression for ionic polarization  14. Explain Clausius—Mosotti relation in dielectric constant and susceptibility.  15. Explain Prigin of magnetic moment.  16. Write about Dia. Para and Ferro magnetic materials.  17. Explain Hysteresis of Ferromagnetic materials.  18. Write about Dia. Para and Ferro magnetic materials.  19. Define terms magnetic moment.  10. Explain Brigin of magnetic moment.  10. Explain Hysteresis of Ferromagnetic materials.  10. Liz] [C03] [6m]  19. Define terms magnetic moment.magnetization.  10. Explain Brigin of magnetic moment.magnetization magnetic induction.  11. Explain Brigin of magnetic moment.magnetization magnetic induction.  12. [C03] [6m]  13. Define terms magnetic moment.magnetization magnetic field of [12] [C03] [6m]  14. Explain Brigin of magnetic moment.magnetization magnetic induction.  15. Explain Brigin of magnetic moment.magnetization magnetic induction.  16. Write about Dia fert and Bard magnetization magnetic induction.  17. Explain Brigin of magnetic moment.magnetization magnetic induction.  18. Write about Soft and Bard magnetization of [12] [C03] [6m]  19. Define terms magnetic moment.magnetization magnetic flux of [12] [C03] [6m]  20. explain about Drientation polarization  10. Problems  10. Problems  11. Explain Brigin of magnetic magnetic flux of [12] [C03] [6m]  12. [C03] [6m]  13. Define terms magnetic and Bard magnetic flux of [12] [C03] [6m]  14. Explain Brigin of [12] [C03] [6m]  15. Explain Brigin of [12] [C03] [6m]  16. Write about Brigin of [12] [C03] [6m]  17. Explain Brigin of [12] [C03] [6m]  18. Write about Brigin of [12] [C03] [6m]  19. Define terms magnetic moment.magnetic flux of [12] [C03] [6m]  10. Explain Brigin of [12] [6m]  10. Explain Brigin of [12]	Ч.	Define dielectric Permiability?	[L1] [C03] [SW]		
1. Define magnetic susceptibility	5.	Define magnetic moment	[LJ] [CO3] [SW]		
8. What is relation between B.H&.   [L1] [C03] [2M] 9. Define bohr mageton   [L1] [C03] [2M] 10. Define lysteresis   [L1] [C03] [2M] 11. Descriptive Questions (Long)   [L1] [C03] [2M] 12. Derive the expression for Electronic polarization   [L2] [C03] [10M] 13. Derive the expression for ionic polarization   [L2] [C03] [10M] 14. Explain Clausius—Mosotti relation in dielectric sontant and susceptibility.   [L2] [C03] [5M] 15. Explain Origin of magnetic moment   [L2] [C03] [6M] 16. White about Dia. Para and Ferro magnetic materials   [L2] [C03] [6M] 17. Explain Hysteresis of Ferromagnetic materials   [L2] [C03] [6M] 18. White about Soft and Hard magnetic materials   [L2] [C03] [6M] 19. Define terms magnetic moment. magnetization, magnetic induction.   [L2] [C03] [6M] 19. Define terms magnetic moment. magnetization magnetic field of   [L2] [C03] [6M] 20. explain about Orientation polarization   [L2] [C03] [6M] 21. Or   [L2] [C03] [6M] 22. The magnetic susceptibility of copper subjected to magnetic field of   [L2] [C03] [6M] 22. Define terms magnetic material has a volume of 10 magnetic flux   [L2] [C03] [4M] 22. Define terms magnetic field of 10 magnetic flux   [L3] [C03] [4M] 22. Define terms magnetic field of 10 magnetic flux   [L3] [C03] [4M] 23. Amagnetic field of 800 M/m produces a magnetic flux of 2 magnetic flux   [L3] [C03] [4M] 24. Definition of the slab.   [L3] [C03] [4M] 25. Definition of the slab.   [L3] [C03] [4M] 26. Find the total polarizability of [CD; if its susceptibility is 0.985 10 magnetic flux   [L3] [C03] [4M] 27. Eaclulate the polarizability of an argon atom is the relative permittivity   [L3] [C03] [4M] 28. Calculate the polarizability of an argon atom is the relative permittivity   [L3] [C03] [4M] 29. Definity of 10 magnetic moment associated with   [L3] [C03] [4M] 21. Find the capacitance of a layer of Al <sub>2</sub> D <sub>3</sub> that is 0.5m thick and 2000 mm² of   [L3] [C03] [4M] 29. Definity of 10 magnetic moment and magnetic flux   [L3] [C03] [4M] 21. Definity of 10 magnetic magnetic magnetic flux   [L3	6.	Define magnetic field strength	[LJ] [CO3] [SW]		
9. Define bohr maget on [L1] [C03] [2m] 10. Define Hysteresis [L1] [C03] [2m]  Descriptive Questions (Long) 11. Derive the expression for Electronic polarization. [L2] [C03] [10m] 12. Derive the expression for ionic polarization [L2] [C03] [10m] 13. Derive the expression for ionic polarization [L2] [C03] [10m] 14. Explain Clausius—Mosotti relation in dielectrics subjected to static field [L2] [C03] [5m] 15. Explain Origin of magnetic moment [L2] [C03] [6m] 16. Write about Dia. Para and Ferro magnetic materials. [L2] [C03] [10m] 17. Explain Hysteresis of Ferromagnetic materials [L2] [C03] [6m] 18. Write about Soft and Hard magnetic material [L2] [C03] [6m] 19. Define terms magnetic moment, magnetization, magnetic induction. [L2] [C03] [6m] 19. Define terms magnetic moment, magnetization, magnetic induction. [L2] [C03] [6m] 20. explain about Orientation polarization [L2] [C03] [6m] 21. 10° 8/m is 0.8°10° 3. Calculate the mognetization and magnetic field of 10° 8/m is 0.8°10° 3. Calculate the mognetization and magnetic flux density.  22. In 10° 10° 4 [L2] [C03] [4m] 23. Anisotropic material has a volume of 10° cm³ and the polarization of 10° 10° 10° 10° 10° 10° 10° 10° 10° 10°	<b>1</b> .	Define magnetic susceptibility	[LJ] [CO3] [SW]		
Descriptive Questions (Long)	8.	What is relation between B.H&I	[LJ] [CO3] [SW]		
Descriptive Questions (Long)   11.   Derive the expression for Electronic polarization.   [L2] [C03] [10m]   12.   Derive the expression for ionic polarization   [L2] [C03] [10m]   13.   Derive the expression for ionic polarization   [L2] [C03] [5m]   14.   Explain Clausius—Mosottirelation in dielectrics subjected to static field   [L2] [C03] [6m]   15.   Explain Origin of magnetic moment   [L2] [C03] [6m]   16.   Write about Dia, Para and Ferro magnetic materials.   [L2] [C03] [6m]   17.   Explain Hysteresis of Ferromagnetic materials   [L2] [C03] [6m]   18.   Write about Soft and Hard magnetic materials   [L2] [C03] [6m]   18.   Write about Soft and Hard magnetic material   [L2] [C03] [6m]   19.   Define terms magnetic moment, magnetization, magnetic induction.   [L2] [C03] [6m]   19.   Define terms magnetic moment, magnetization, magnetic induction.   [L2] [C03] [6m]   Problems   The magnetic susceptibility of copper subjected to magnetic field of 10° A/m is 0.8° 10° 3. Calculate the magnetization and magnetic flux   [L3] [C03] [4m]   density.   [L3] [C03] [4m]   density.   [L3] [C03] [4m]   Density of C02 is 1.9° 1.0° 2.0° 2.0° 2.0° 2.0° 2.0° 2.0° 2.0° 2	9.	Define bohr mageton	[LJ] [CO3] [SW]		
11. Derive the expression for Electronic polarization.  12. Derive the expression for ionic polarization  13. Derive the relation between the dielectric constant and susceptibility.  14. Explain Clausius—Most tirelation in dielectrics subjected to static field  15. Explain Drigin of magnetic moment  16. Write about Dia. Para and ferro magnetic materials.  17. Explain Hysteresis of Ferromagnetic materials  18. Write about Soft and Hard magnetic material  19. Define terms magnetic moment. magnetization. magnetic induction.  10. explain about Drientation polarization  10. explain about Drientation polarization  11. Diff H/m is 0.8° 10⁻³. Calculate the magnetization and magnetic field of 10° H/C. Find the dipole moment of the slab.  22. Amagnetic field of 800 H/m produces a magnetic flux of 2⁻10⁻⁵ weber in a lron bar of cross sectional area 0.2 cm². Calculate the permeability.  23. Iron bar of cross sectional area 0.2 cm². Calculate the permeability.  24. Density of C0₂ is 1.911 kg/m³.  25. Calculate the polarizability of an argon atom is the relative permittivity of requency of 10° rev/s. Calculate the magnetic moment associated with the revolution.  24. Find the capacitance of a layer of fl² 0₃ that is 0.5m thick and 2000 mm² of area.  26. Calculate the electronic pelarization of argon atom. Given at εn=  1002 Yat H/P and M=2. T100² stoms/m².  27. The magnetic susceptibility of copper subjected to magnetic field of 10° H/M in an angular frequency of 10° rev/s. Calculate the magnetic moment associated with the revolution.  27. Find the capacitance of a layer of fl² 0₃ that is 0.5m thick and 2000 mm² of area.  28. Calculate the electronic pelarization of argon atom. Given at εn=  1002 Yat H/P and M=2. T100² stoms/m².  1006 H/m is 0.8° 10⁻³. Calculate the magnetization and magnetic field of 10° H/M is 0.8° 10⁻³. Calculate the magnetization and magnetic field of 10° H/M is 0.8° 10⁻³. Calculate the magnetization and magnetic flux  11. The magnetic susceptibility of copper subjected to magnetic flux  12. Calculate the	10.	Define Hysteresis	[LJ] [CO3] [SW]		
12.   Derive the expression for ionic polarization   12.   [103] [10m]   13.   Derive the relation between the dielectric constant and susceptibility.   [12] [103] [5m]   14.   Explain Clausius—Mosotti relation in dielectrics subjected to static field   [12] [103] [6m]   15.   Explain Origin of magnetic moment   [12] [103] [6m]   16.   Urite about Dia. Para and Ferro magnetic materials.   [12] [103] [6m]   17.   Explain Hysteresis of Ferromagnetic materials   [12] [103] [6m]   18.   Urite about Soft and Hard magnetic material   [12] [103] [6m]   19.   Define terms magnetic moment. magnetization. magnetic induction.   [12] [103] [6m]   19.   Define terms magnetic moment. magnetization.   [12] [103] [6m]   19.   Define terms magnetic between the magnetization and magnetic flux   [12] [103] [6m]   10.0 f. Mr mis 0.8*10-3. Calculate the magnetization and magnetic flux   [13] [103] [14m]   10.0 f. Mr mis 0.8*10-3. Calculate the magnetization and magnetic flux   [13] [103] [14m]   10.0 f. Mr mis 0.8*10-3. Calculate the magnetic flux of 2*10-5 weber in a long to the slab.   In magnetic field of 800 f/m produces a magnetic flux of 2*10-5 weber in a long to the slab.   In magnetic field of 800 f/m produces a magnetic flux of 2*10-5 weber in a long for cross sectional area 0.2 cm <sup>6</sup> . Calculate the permeability.   [13] [103] [14m]   12.   [13] [13] [14m]   12.   [13] [14m]   12.   [13] [14m]   12.   [14] [15] [15] [15] [15] [15] [15] [15] [15	Descr	iptive Questions (long)			
<ul> <li>13. Derive the relation between the dielectric constant and susceptibility.</li> <li>14. Explain Clausius—Mosotti relation in dielectrics subjected to static field [L2] [C03] [6M]</li> <li>15. Explain Origin of magnetic moment [L2] [C03] [8M]</li> <li>16. Write about Dia. Para and ferro magnetic materials. [L2] [C03] [8M]</li> <li>17. Explain Hysteresis of Ferromagnetic materials. [L2] [C03] [8M]</li> <li>18. Write about Soft and Hard magnetic material [L2] [C03] [8M]</li> <li>19. Define terms magnetic moment, magnetization, magnetic induction. [L2] [C03] [6M]</li> <li>19. explain about Orientation polarization [L2] [C03] [6M]</li> <li>19. The magnetic susceptibility of copper subjected to magnetic field of 10<sup>6</sup> M/mis 0.8° 10<sup>-3</sup>. Calculate the magnetization and magnetic flux density. [L3] [C03] [4M]</li> <li>21. density. [L3] [C03] [4M]</li> <li>22. A magnetic field of 800 M/m produces a magnetic flux of 2° 10<sup>-5</sup> weber in a Iron bor of cross sectional area 0.2 cm<sup>2</sup> Calculate the permeability. [L3] [C03] [4M]</li> <li>22. Find the total polarizability of C0<sub>2</sub> if its susceptibility is 0.985° 10<sup>-3</sup>. [L3] [C03] [4M]</li> <li>23. A magnetic field of 800 M/m produces a magnetic flux of 2° 10<sup>-5</sup> weber in a Iron bor of cross sectional area 0.2 cm<sup>2</sup> Calculate the permeability. [L3] [C03] [4M]</li> <li>24. Pind the total polarizability of C0<sub>2</sub> if its susceptibility is 0.985° 10<sup>-3</sup>. [L3] [C03] [4M]</li> <li>25. of Argon at NTP is 1.000435</li> <li>26. fine etcron is circulating in an orbit of radius 1A with an angular frequency of 10<sup>6</sup> rev/s. Calculate the magnetic moment associated with the revolution. [L3] [C03] [4M]</li> <li>26. fine the capacitance of a layer of Al<sub>2</sub>0<sub>3</sub> that is 0.5m thick and 2000 mm<sup>2</sup> of area. [L3] [C03] [4M]</li> <li>27. area. [L3] [C03] [4M]</li> <li>28. Calculate the electronic polarization of argon atom. Biven at εr area. [L3] [C03] [4M]</li> <li>29. 10<sup>6</sup> A/mis 0.8° 10<sup>3</sup> . Calculate the magne</li></ul>	11.	Derive the expression for Electronic polarization.	[L2] [C03] [10M]		
14. Explain Clausius—Mosotti relation in dielectrics subjected to static field [L2] [C03] [6M] 15. Explain Origin of magnetic moment [L2] [C03] [8M] 16. Write about Dia, Para and Ferro magnetic materials. [L2] [C03] [10M] 17. Explain Hysteresis of Ferromagnetic materials [L2] [C03] [8M] 18. Ulrite about Soft and Hard magnetic material [L2] [C03] [6M] 19. Define terms magnetic moment, magnetization, magnetic induction. [L2] [C03] [6M] 19. Define to be magnetic polarization [L2] [C03] [6M] 19. Define terms magnetic moment, magnetization, magnetic induction. [L2] [C03] [6M] 19. Explain about Orientation polarization [L2] [C03] [6M] 19. Define terms magnetic moment, magnetization, magnetic field of [L2] [C03] [6M] 10. Problems  The magnetic susceptibility of copper subjected to magnetic field of 10. [L2] [C03] [6M] 10. Anisotropic material has a volume of 10. Copper subjected to magnetic flux of [L3] [C03] [4M] 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	12.				
15. Explain Drigin of magnetic moment  16. Write about Dia. Para and ferro magnetic materials.  17. Explain Hysteresis of Ferromagnetic materials.  18. Write about Soft and Hard magnetic material  19. Define terms magnetic moment, magnetization, magnetic induction.  20. explain about Orientation polarization  10. Problems  21. Dis Armiso Dr. 3. Calculate the magnetization and magnetic field of los Horisotropic material has a volume of 105 cm³ and the polarization of 1.0 °10 °4  22. C/m², which introduces an electric field of 10 °4 N/C. Find the dipole moment of the slab.  23. A magnetic field of 800 A/m produces a magnetic flux of 2 °10 °5 weber in a lron bar of cross sectional area 0.2 cm². Calculate the premability.  24. Find the total polarizability of C0₂, if its susceptibility is 0.985 °10 °3.  25. Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is 1.000435  26. frequency of 106 rev/s. Calculate the magnetic moment associated with the revolution.  27. Find the capacitance of a layer of Al₂0₃ that is 0.5m thick and 2000 mm² of area.  28. Calculate the electronic polarization of argon atom. Given at ε <sub>r</sub> = [1.3] [C03] [4m]  29. 106 β/m is 0.8 °10 °3. Calculate the magnetization and magnetic field of 100 °4 M/m is 0.8 °10 °3. Calculate the magnetization and magnetic field of 100 °4 M/m is 0.8 °10 °3. Calculate the magnetization and magnetic field of 100 °4 M/m is 0.8 °10 °3. Calculate the magnetization and magnetic field of 100 °4 M/m is 0.8 °10 °3. Calculate the magnetization and magnetic field of 100 °4 M/m is 0.8 °10 °3. Calculate the magnetization and magnetic field of 100 °4 M/m is 0.8 °10 °3. Calculate the magnetization and magnetic field of 100 °4 M/m is 0.8 °10 °3. Calculate the magnetization and magnetic flux 11 °10 °10 °10 °10 °10 °10 °10 °10 °10	13.		[L2] [C03] [5M]		
16. Write about Dia, Para and Ferro magnetic materials.  17. Explain Hysteresis of Ferromagnetic materials  18. Write about Soft and Hard magnetic material  19. Define terms magnetic moment, magnetization, magnetic induction.  20. explain about Orientation polarization  10. explain Hysteresis of Ferromagnetic material  10. explain Hysteresis of Etall Icon Icon Icon Icon Icon Icon Icon Icon	14.	Explain Clausius—Mosotti relation in dielectrics subjected to static field	[L2] [C03] [6M]		
17. Explain Hysteresis of Ferromagnetic materials  18. Write about Soft and Hard magnetic material  19. Define terms magnetic moment. magnetization. magnetic induction.  20. explain about Orientation polarization  10. explain about Orientation polarization  10. The magnetic susceptibility of copper subjected to magnetic field of 10.6 A/m is 0.8° 10.3°. Calculate the magnetization and magnetic flux density.  10. Anisotropic material has a volume of 10.6 cm³ and the polarization of 1.0°10.4 [L3] [C03] [4m]  22. C/m². Which introduces an electric field of 10.4 N/C. Find the dipole moment of the slab.  23. In magnetic field of 80.0 A/m produces a magnetic flux of 2°10.5 weber in a 1.0°10.4 [L3] [C03] [4m]  24. Find the total polarizability of C02. if its susceptibility is 0.985°10.5 [L3] [C03] [4m]  25. Calculate the polarizability of C02. if its susceptibility is 0.985°10.5 [L3] [C03] [4m]  26. An electronic circulating in an orbit of radius 1 Awith an angular 2.5 frequency of 10.6 rev/s. Calculate the magnetic moment associated with 1.0 the revolution.  27. Find the capacitance of a layer of Al203 that is 0.5 m thick and 2000 mm² of area.  28. Calculate the electronic polarization of argon atom. Given at tr=  10.024at NTP and N=2.710.5 atoms/m³. [L3] [C03] [4m]  29. 10.6 A/m is 0.8°10.3 Calculate the magnetization and magnetic field of 29. 10.6 A/m is 0.8°10.3 Calculate the magnetization and magnetic flux	15.	Explain Origin of magnetic moment	[L2] [C03] [8M]		
18.   Write about Soft and Hard magnetic material   12.   [C03] [6M]   19.   Define terms magnetic moment, magnetization, magnetic induction.   [L2] [C03] [6M]   20.   explain about Drientation polarization   [L2] [C03] [6M]   Problems	16.	Write about Dia, Para and Ferro magnetic materials.	[L2] [C03] [J0W]		
19. Define terms magnetic moment. magnetization. magnetic induction.  20. explain about 0 rientation polarization  Problems  The magnetic susceptibility of copper subjected to magnetic field of 106 A/mis 0.8*10-3. Calculate the magnetization and magnetic flux density.  Anisotropic material has a volume of 106 cm³ and the polarization of 1.0*10-4  C/m². which introduces an electric field of 104N/C. Find the dipole moment of the slab.  23. Amagnetic field of 800 A/m produces a magnetic flux of 2*10-5 weber in a Iron bar of cross sectional area 0.2 cm². Calculate the permeability.  124. Find the total polarizability of C0₂. if its susceptibility is 0.985*10-3.  Calculate the polarizability of C0₂. if its susceptibility is 0.985*10-3.  Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is 1.000435  An electron is circulating in an orbit of radius 1 Awith an angular frequency of 106 rev/s. Calculate the magnetic moment associated with the revolution.  21. Find the capacitance of a layer of Al₂0₃ that is 0.5m thick and 2000 mm² of area.  Calculate the electronic polarization of argon atom. Given at ε <sub>r</sub> =  L0024at NTP and N=2.7*1025 atoms/m³.  The magnetic susceptibility of copper subjected to magnetic field of 29.  106 A/m is 0.8*10-3. Calculate the magnetization and magnetic flux	17.		[L2] [C03] [8M]		
<ul> <li>20. explain about Orientation polarization</li> <li>Problems</li> <li>21. The magnetic susceptibility of copper subjected to magnetic field of 10<sup>6</sup> A/m is 0.8*10<sup>-3</sup>. Calculate the magnetization and magnetic flux density.</li> <li>22. An instruction of the slab.</li> <li>23. A magnetic field of 800 A/m produces a magnetic flux of 2*10<sup>-5</sup> weber in a 1 ron bar of cross sectional area 0.2 cm². Calculate the permeability.</li> <li>24. Find the total polarizability of CO₂. if its susceptibility is 0.985*10<sup>-3</sup>. [L3] [C03] [4m]</li> <li>25. Calculate the polarizability of CO₂. if its susceptibility is 0.985*10<sup>-3</sup>. [L3] [C03] [4m]</li> <li>26. An electron is circulating in an orbit of radius 1A with an angular frequency of 10<sup>6</sup> rev/s. Calculate the magnetic moment associated with the revolution.</li> <li>21. Find the capacitance of a layer of Al₂O₃ that is 0.5m thick and 2000 mm² of area.</li> <li>22. Calculate the electronic polarization of argon atom. Given at ε<sub>r</sub>= 1.0024at NTP and N=2.7*10<sup>25</sup> atoms/m³. [L3] [C03] [4m]</li> <li>23. The magnetic susceptibility of copper subjected to magnetic field of 1.006 A/m is 0.8*10<sup>-3</sup>. Calculate the magnetization and magnetic flux</li> </ul>	18.	Write about Soft and Hard magnetic material	[L2] [C03] [6M]		
The magnetic susceptibility of copper subjected to magnetic field of 10 <sup>6</sup> A/m is 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux density.  An isotropic material has a volume of 10 <sup>6</sup> cm <sup>3</sup> and the polarization of 1.0*10 <sup>-4</sup> C/m <sup>2</sup> . which introduces an electric field of 10 <sup>4</sup> N/C. find the dipole moment of the slab.  23. A magnetic field of 800 A/m produces a magnetic flux of 2*10 <sup>-5</sup> weber in a Iron bar of cross sectional area 0.2 cm <sup>2</sup> . Calculate the permeability.  24. Find the total polarizability of C0 <sub>2</sub> . if its susceptibility is 0.985*10 <sup>-3</sup> .  Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is 1.000435  An electron is circulating in an orbit of radius 1 Awith an angular frequency of 10 <sup>6</sup> rev/s. Calculate the magnetic moment associated with the revolution.  21. Find the capacitance of a layer of Al <sub>2</sub> O <sub>3</sub> that is 0.5m thick and 2000 mm <sup>2</sup> of area.  Calculate the electronic polarization of argon atom. Given at ε <sub>r</sub> =  L0024at NTP and N=2. T 10 <sup>25</sup> atoms/m <sup>3</sup> .  The magnetic susceptibility of copper subjected to magnetic field of 1.00 flam is 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux  [L3] [C03] [4m]	19.		[L2] [C03] [6M]		
The magnetic susceptibility of copper subjected to magnetic field of 10 <sup>6</sup> R/mis 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux density.  Anisotropic material has a volume of 10 <sup>6</sup> cm <sup>3</sup> and the polarization of 1.0*10 <sup>-1</sup> [L3] [C03] [4M]  22. Anisotropic material has a volume of 10 <sup>6</sup> cm <sup>3</sup> and the polarization of 1.0*10 <sup>-1</sup> [L3] [C03] [4M]  23. Anisotropic material has a volume of 10 <sup>6</sup> cm <sup>3</sup> and the polarization of moment of the slab.  23. Anisotropic material has a volume of 10 <sup>6</sup> km of 2*10 <sup>-5</sup> weber in a Iron bar of cross sectional area 0.2 cm <sup>2</sup> . Calculate the permeability.  24. Find the total polarizability of C0 <sub>2</sub> , if its susceptibility is 0.985*10 <sup>-3</sup> .  Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is 1.000435  Anelectron is circulating in an orbit of radius 1Awith an angular frequency of 10 <sup>6</sup> rev/s. Calculate the magnetic moment associated with the revolution.  26. Find the capacitance of a layer of Al <sub>2</sub> D <sub>3</sub> that is 0.5m thick and 2000 mm <sup>2</sup> of area.  27. Find the capacitance of a layer of Al <sub>2</sub> D <sub>3</sub> that is 0.5m thick and 2000 mm <sup>2</sup> of area.  28. Calculate the electronic polarization of argon atom. Given at c <sub>r</sub> = [L3] [C03] [4M]  29. 10 <sup>6</sup> R/mis 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic field of 10 <sup>6</sup> R/mis 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux		-	[L2] [C03] [6M]		
21. 106 A/mis 0.8*10-3. Calculate the magnetization and magnetic flux density.  Anisotropic material has a volume of 106 cm³ and the polarization of 1.0*10-4  C/m².which introduces an electric field of 104N/C. Find the dipole moment of the slab.  23. Amagnetic field of 800 A/m produces a magnetic flux of 2*10-5 weber in a Iron bar of cross sectional area 0.2 cm². Calculate the permeability.  24. Find the total polarizability of CO₂, if its susceptibility is 0.985*10-3.  Density of CO₂ is 1.971 kg/m³.  Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is 1.000435  An electron is circulating in an orbit of radius 1Awith an angular frequency of 106 rev/s. Calculate the magnetic moment associated with the revolution.  21. Find the capacitance of a layer of Al₂O₃ that is 0.5m thick and 2000 mm² of area.  Calculate the electronic polarization of argon atom. Given at εr=  L0024at NTP and N=2.7*10 <sup>2/3</sup> atoms/m³.  The magnetic susceptibility of copper subjected to magnetic field of 106 A/mis 0.8*10-3. Calculate the magnetization and magnetic flux  [L3] [C03] [4m]	Proble				
22. 1.0°10-4 C/m².which introduces an electric field of 10 <sup>4</sup> N/C. Find the dipole moment of the slab.  23. A magnetic field of 800 A/m produces a magnetic flux of 2°10-5 weber in a Iron bar of cross sectional area 0.2 cm². Calculate the permeability.  24. Find the total polarizability of CO₂. if its susceptibility is 0.985°10-3. Density of CO₂ is 1.971 kg/m³.  Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is 1.000435  An electron is circulating in an orbit of radius 1Awith an angular frequency of 10 <sup>6</sup> rev/s. Calculate the magnetic moment associated with the revolution.  21. Find the capacitance of a layer of Al₂O₃ that is 0.5m thick and 2000 mm² of area.  28. Calculate the electronic polarization of argon atom. Given at εr = [L31 [CO31 [4M]]]  29. 10 <sup>6</sup> A/m is 0.8°10-3. Calculate the magnetic do magnetic field of 10 <sup>6</sup> A/m is 0.8°10-3. Calculate the magnetization and magnetic flux [L31 [CO31 [4M]]]	21.	$10^6\mathrm{A/mis}0.8$ ° $10^{-3}$ . Calculate the magnetization and magnetic flux	[L3] [C03] [4M]		
Iron bar of cross sectional area 0.2 cm². Calculate the permeability.   133 [133 [1411]   24.   Find the total polarizability of $CO_2$ , if its susceptibility is $0.985^*10^{-3}$ .   [L3] [C03] [4M]   25.   Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is $1.000435$   (L3] [C03] [4M]   26.   frequency of $10^6$ rev/s. Calculate the magnetic moment associated with the revolution.   27.   Find the capacitance of a layer of $Al_2O_3$ that is $0.5$ m thick and $Al_2O_3$ [L3] [C03] [4M]   28.   Calculate the electronic polarization of argon atom. Given at $al_2 classes$   (L3] [C03] [4M]   29.   $Al_2 classes$   $Al_2 classes$   $Al_2 classes$   (L3] [C03] [4M]   29.   $Al_2 classes$	22.	An isotropic material has a volume of 10 <sup>6</sup> cm <sup>3</sup> and the polarization of 1.0*10 <sup>-4</sup> C/m <sup>2</sup> ,which introduces an electric field of 10 <sup>4</sup> N/C. Find the dipole	[L3] [C03] [4M]		
Density of CO <sub>2</sub> is 1.977 kg/m³.  Calculate the polarizability of an argon atom is the relative permittivity of Argon at NTP is 1.000435  An electron is circulating in an orbit of radius 1 hwith an angular 26. frequency of 10 <sup>6</sup> rev/s. Calculate the magnetic moment associated with the revolution.  27. find the capacitance of a layer of Al <sub>2</sub> O <sub>3</sub> that is 0.5m thick and 2000 mm² of area.  28. Calculate the electronic polarization of argon atom. Given at ε <sub>r</sub> = 1.0024at NTP and N=2.7*10 <sup>25</sup> atoms/m³.  The magnetic susceptibility of copper subjected to magnetic field of 29. 10 <sup>6</sup> A/mis 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux  [L3] [C03] [4M]	23.	Iron bar of cross sectional area 0.2 cm².Calculate the permeability.	[L3] [C03] [4M]		
25. of Argon at NTP is 1.000435  An electron is circulating in an orbit of radius 1Åwith an angular  26. frequency of $10^6$ rev/s. Calculate the magnetic moment associated with the revolution.  27. find the capacitance of a layer of $Al_2O_3$ that is 0.5m thick and 2000 mm² of area.  28. Calculate the electronic polarization of argon atom. Given at $\epsilon_r$ =  1.0024at NTP and N=2.7* $10^{25}$ atoms/ $m^3$ .  The magnetic susceptibility of copper subjected to magnetic field of 106 A/m is $0.8$ * $10^{-3}$ . Calculate the magnetization and magnetic flux  [L3] [C03] [4M]	24.	Density of $CO_2$ is 1.977 kg/m $^3$ .	[L3] [C03] [4M]		
26. frequency of $10^6$ rev/s. Calculate the magnetic moment associated with the revolution.  27. find the capacitance of a layer of $Al_2O_3$ that is 0.5m thick and 2000 mm <sup>2</sup> of area.  28. Calculate the electronic polarization of argon atom. Given at $\epsilon_r$ = 1.0024at NTP and N=2.7* $10^{25}$ atoms/m <sup>3</sup> .  The magnetic susceptibility of copper subjected to magnetic field of 29. $10^6$ A/m is $0.8*10^{-3}$ . Calculate the magnetization and magnetic flux  [L3] [C03] [4M]	25.	of Argon at NTP is 1.000435	[L3] [C03] [4M]		
28. Calculate the electronic polarization of argon atom. Given at ε <sub>r</sub> = 1.0024at NTP and N=2.7*10 <sup>25</sup> atoms/m <sup>3</sup> .  The magnetic susceptibility of copper subjected to magnetic field of 29. 10 <sup>6</sup> A/m is 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux  [L3] [C03] [4M]	26.	frequency of $10^6\mathrm{rev/s}$ . Calculate the magnetic moment associated with	[L3] [C03] [4M]		
The magnetic susceptibility of copper subjected to magnetic field of 29. 10 <sup>6</sup> A/m is 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux [L3] [C03] [4M]	<b>2</b> 7.	area.	[L3] [C03] [4M]		
29. 106 A/mis 0.8*10 <sup>-3</sup> . Calculate the magnetization and magnetic flux [L3] [C03] [4M]	28.	$1.002$ 4at NTP and N= $2.7$ * $10^{25}$ atoms/m $^3$ .	[L3] [C03] [4M]		
	29.		[L3] [C03] [4M]		



## <u>UNIT - IU</u>

S.No.	Question	[BT Level][CO] [Marks]
2 Mar	ks Questions (Short)	
1.	Define intrinsic and extrinsic Semiconductor	[L1] [CO4] [2M]
2.	What are the Majority and Minority charge carriers in p-type Semiconductor	[L1] [C04] [2M]
3.	What is Einstein relation	[L1] [CO4] [2M]
Ч.	Define Superconductivity	[L1] [C05] [2M]
5.	What are the properties of Superconductors	[L1] [C05] [2M]
6.	What is Hall effect	[L1] [C04] [2M]
<b>1</b> .	Define Drift current.	[L1] [C04] [2M]
8.	What is critical magnetic field.	[L1] [C05] [2M]
9.	What is meissner effect.	[L1] [C05] [2M]
10.	What is P-N junction.	[L1] [C04] [2M]
	iptiveQuestions (long)	
11.	Explain extrinsic semiconductors?	[L2] [C04] [8M]
12.	Explain the influence of temperature on Fermi level in extrinsic Semiconductor	[L2] [C04] [8M]
13.	Derive the expression for drift and diffusion current	[L2] [C04] [10M]
14.	Derive the equation for Einstein relation	[L2] [C04] [8M]
15.	Describe Direct and indirect band gap semiconductors	[L2] [C04] [6M]
16.	What is Hall effect and derive an expression for hall coefficient with its applications	[L2] [CO4] [10M]
າາ.	Explain Meissner effect	[L2] [C05] [6M]
18.	Write about Type-1 and Type-2 Superconductors	[L2] [C05] [6M]
19.	Discuss about BCS theory	[L2] [C05] [8M]
20.	Write applications of Superconductors.	[L2] [C05] [6M]
21.	Describe Density of energy stats	[L2] [CO4] [8M]
22.	What is Josephson's effect? Explain Josephson effects (AC and DC)	[L2] [C05] [10M]
23.	Explain Meissner effect. Using Meissner effect show that superconductors are perfect diamagnetic	[L2] [C05] [6M]
roble	· · · · · · · · · · · · · · · · · · ·	
24.	Calculate the intrinsic concentration of charge carriers at 300K given that m.e. =0.12me, m.h=0.28me and the value of band gap=0.67eV.	[L3] [C04] [4M]
25.	A particular sample of Ge has a donor density of $N_d=10^{14}~a$ toms/cm³. Assuming all the donor atoms to be ionized, calculate the conductivity of the sample. Given electron mobility $\mu_n=3900~cm^2/V$ sat 300K.	[L3] [C04] [4M]
26.	A current of 50A is established in a Cu slab (0.2cm thick and 2 cm wide).A magnetic field of 1.5T perpendicular to the plane of slab to the current is applied. Find the Hall voltage across the width of the slab	[L3] [C04] [4M]
2 J.	Find the conductivity of Intrinsic Ge at 300K if the carrier density is 2. 15°10 <sup>-13</sup> /cm <sup>3</sup> . The electron and hole nobilities of Ge are 3900 cm <sup>2</sup> /Us and 1900 cm <sup>2</sup> /Us respectively.	[L3] [C04] [4M]
28.	Derive the expression for electron concentration in conduction band of an Intrinsic semiconductor	[L2] [C04] [10M]
29.	for Si with a band gap of 1.12eV, determine the position of the fermi level at 300 K if effective masses of electron and hole are m*=0.12m <sub>e</sub> and m = U.28m <sub>e</sub>	[L3] [C04] [4M]

30. An n-type semiconductor has a Hall coefficient R <sub>H</sub> =3.66*10 <sup>-11</sup> m <sup>3</sup> /As. Calculate the charge carrier density.	[L3] [C04] [4M]

## <u>UNIT – U</u>

S.No.	O.,	[BT Level][CO]
<b>3.NO.</b>	Question	[Marks]
2 Mar	ks Questions (Short)	
1.	Define nano-scale.	[L1] [C06] [2M]
2.	Write any two applications of nano materials	[L1] [C06] [2M]
3.	Write any two properties of SMA	[L1] [C06] [2M]
Ч.	Write any two applications of SMA	[L1] [C06] [2M]
5.	J vw= 5	[L1] [C06] [2M]
6.	What is 1-D nano materials	[L1] [C06] [2M]
<b>1</b> .	What is 2-D nano materials	[L1] [C06] [2M]
8.	What is 3-D nano materials	[L1] [C06] [2M]
Descr	iptiveQuestions (long)	
9.	Explain Surface area to volume ratio and quantum confinement	[F5] [C06] [eW]
10.	What are the Properties of Nano materials	[L2] [C06] [8M]
11.	Describe the synthesis of nano materials Ball Milling method with advantages	[F5] [C06] [8W]
12.	What are the Applications of nano materials	[L2] [C06] [6M]
13.	Describe the synthesis of nano materials by Chemical Vapour Deposition method.	[L2] [C06] [8M]
14.	Discuss about Smart Memory alloys (SMA)	[rs] [coe] [ew]
15.	Write about properties of SMA	[L2] [C06] [6M]
16.	Explain about applications of SMA	[L2] [C06] [6M]

Signature of the Staff: pvramanaiah

Signature of Department Academic Committee Member 1:

Signature of Department Academic Committee Member 2:

Signature of Department Academic Committee Member 3: