GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)

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QUESTIONBANK(DESCRIPTIVE)

Subject Name with Code: Engineering physics

Course & Branch:1st B.tech, Mech

Year& Semester:1-11

Regulation:R22

UNIT – I

S.No.	Question	[BT Level] [CO][Marks]
2 Marks Questions (Short)		
1.	What is superposition principle	L2, CO1
2.	Why central spot is dark in Newton's ring experiment	L2, CO1
3.	What is coherence	L2, CO1
4.	What are the conditions to get interference	L2, CO1
5.	Define diffraction	L2, CO1
6.	Difference between fresnel and fraunhofer diffraction	L2, CO1
7.	Define polarization	L2, CO1
8.	What is double refraction	L2, CO1
9.	Define Brewster's law	L2, CO1
10.	Define mauls law	L2, CO1
Descriptive Questions (Long)		
11.	What is interference? Explain interference in thin film by reflection with conditions	L2, CO1
12.	Describe the formation of Newton Rings with necessary theory.	L2., CO1
13.	Derive the expressions for the diameters of dark and bright rings..	L2, CO1
14.	Explain Fraunhofer Diffraction due to single slit and obtain Maxima, minima and secondary Maximaconditions?	L2, CO1
15.	Describe Fraunhofer Diffraction due to Doubleslit.	L2, CO1
16.	Describe Fraunhofer Diffraction due to Grating.	L2, CO1
17.	Explain construction and working principle of Nicol' s prism with limits	L2, CO1
18.	Write about Half wave and Quarter wave plates	L2, CO1
19.	Discuss Types of polarizations	L2, CO1
Problems		
20.	Newton' s rings are observed in the reflected light of wave length 5900A^0. The diameter of 10^{th} dark ring is 0.5 cm. find the radius of curvature of the lens used?	L2, CO1
21.	What is the thickness of the thinnest film of 1.33 refractive index in	L2, CO1

	which desctructive interference of theyellow light 6000 A^0 of normally incident beam in air can take place by reflection.	
22.	A plane grating having 10520lines percm is illuminated with light having a wavelength of $5x10^{-5}$cm at normal incidence.How many orders are visible in the grating spectra.	L2,C01

UNIT – II

S.No.	Question	[BT Level] [CO] [Marks]
2 Marks Questions (Short)		
1.	LASER stands for	L2,CO2
2.	Define population inversion	L2,CO2
3.	Define Stimulating emission	L2,CO2
4.	What is step-index optical fiber	L2,CO2
5.	What are the components of optical fiber	L2,CO2
6.	Define Numerical aperture	L2,CO2
7.	Define acceptance angle	L2,CO2
8.	Write any two applications of optical fibers	L2,CO2
Descriptive Questions (Long)		
9.	Explain the characteristics of Laser.	L2,CO2
10.	Derive the Relation between the Einsteins co-efficients.	L2,CO2
11.	Explain various Excition Mechanisms.	L2,CO2
12.	Explain Construction and working principles of He-Ne laser	L2,CO2
13.	Explain Construction and working principles of Ruby laser.	L,CO2
14.	Describe the construction and working principles of Optical fibre	L2,CO2
15.	Derive expression for numerical aperture and acceptance angle of optical fiber.	L2,CO2
16.	Explain the various types of optical fibres	L2,CO2
17.	Explain attenuation and losses in fibre.	L2,CO2
Problems		
18.	A semiconductor diode laser has apeak emission wavelength of 1.55μm. Find its band gap in ev.	L2,CO2
19.	Caculate the angle of acceptance of given optical fibre, if the refractive indices of the core and cladding are 1.563 and 1.498 respectively	L2,CO2
20.	Calculate the refractive indices of core and cladding of an optical fiber with numerical aperture of 0.33 and their fractional difference of refractive indices being 0.02	L2,CO2

UNIT – III

S.No.	Question	[BT Level] [CO] [Marks]
2 Marks Questions (Short)		
1.	Define unit cell	L2,CO3
2.	Define Space lattice	L2,CO3
3.	Lattice parameters of monoclinic	L2,CO3
4.	Define BCC	L2,CO3
5.	Define atomic radius	L2,CO3
6.	Define packing fraction	L2,CO3
7.	What is basis	L2,CO3
8.	What is co ordination number	L2,CO3
Descriptive Questions (Long)		
9.	Describe seven crystal systems with neat diagrams	L2,CO3
10.	Deduce packing fraction for SCC, BCC?	L2,CO3
11.	What is packing fraction show that FCC is the most closely packed of the three cubic structures	L2,CO3
12.	Derive bragg's law of X-ray diffraction	L2,CO3
13.	Describe with a suitable diagram, the powder method for the determination of crystal structure	L2,CO3
14.	Define Miller indices. Sketch the following atomic planes in simple cubic structure (010), (110) and (111	L2,CO3
Problems		
15.	What is the angle at which the third order reflection of X-ray of 0.79 A^0 wave length can occur in a calcite crystal of 3.04 10^{-10} spacing	L2,CO3
16.	Iron crystallizes in bcc structure .calculate the lattice constant .given that the atomic weight and density of iron are 55.85 and 7860kg/m^3,respectively	L2,CO3
17.	Lattice constant of copper is 0.38nm.calculate the distance between(110) planes.	L2,CO3
18.	X-Rays of wavelength 1.5418 A^0 are diffracted by (111)planes in a crystal at an angle 30 ^{0} in the first order. calculate the inter atomic spacing.	L2,CO3

UNIT – IV

S.No.	Question	[BT Level] [CO] [Marks]
2 Marks Questions (Short)		
1.	Define reverberation	L2,CO4
2.	Define reverberation time	L2,CO4
3.	Define absorption coefficient of a material	L2,CO4
4.	Define Ultrasonic waves	L2,CO4
5.	Write the properties of ultrasonic waves	L2,CO4
6.	Write the different methods to find the ultrasonic waves	L2,CO4
Descriptive Questions (Long)		
7.	Define Reverberation and Reverberation time	L2,CO4
8.	Deduce absorption coefficient and its determination	L2,CO4
9.	Explain factors affecting acoustics of buildings and their remedies.	L2,CO4
10.	Define ultrasonic waves. Describe the piezoelectric method for their production	L2,CO4
11.	**What is magnetostriction effect. Explain how ultrasonic waves are produced by a magnetostriction method.**	L2,CO4
12.	**. Discuss the properties of ultrasonic waves**	L2,CO4
13.	Explain the use of ultrasonic waves in non-destructive testing.	L2,CO4
Problems		
14.	If Y of iron is $11.6 \times 10^{10} N/m^2$ and density of iron is $7.23 \times 10^3 kg/m^3$ find the length of iron rod to produce ultra sonic waves of 20KHZ.	L2,CO4
15.	Calculate the natural frequency of ultra sonic waves using the following data. Thickness is $5.5 \times 10^{-3} m$ .young's modulus is $8.0 \times 10^{10} N/m^2$ and density of quartz plate is $2.65 \times 10^3 kg/m^3$	L2,CO4

UNIT – U

S.No.	Question	[BT Level] [CO][Marks]
2 Marks Questions (Short)		
1.	Define magnetic moment	L1,CO5
2.	Define the magnetic susceptibility	L1,CO5
3.	Define bohr magneton	L1,CO5
4.	What is the relation between μ,B and H	L1,CO5
5.	Define nano-scale.	L2,CO6
6.	Write any two applications of nano materials	L2,CO6
7.	Write any two properties of SMA	L2,CO6
8.	Write any two applications of SMA	L2,CO6
Descriptive Questions (Long)		
9.	Explain the origin of magnetic moment in an atom.	L1,CO5
10.	Explain the classification of Dia, Para and Ferro magnetic materials.	L1,CO5
11.	Explain the hysteresis of ferromagnetic materials	L1,CO5
12.	Explain the soft and hard magnetic materials	L1,CO5
13.	What are nano materials? How they are classified.	L2,CO6
14.	Describe the basic principles of nano materials	L2,CO6
15.	Explain the various properties exhibited by the nano materials	L2,CO6
16.	Explain the SMA with two stable solid phases along with applications	L2,CO6
Problems		
17.	A circular loop of copper having a diameter of 10 cm carries a current of 500mA .calculate the magnetic moment associated with the loop.	L1,CO5
18.	Find the relative permeability of ferro magnetic material if afield of strength 220amp/meter produces a magnetisation 3300A/m in it.	L1,CO5
19.	Calculate the magnetic momemt per unit volume and flux density of amagnetic material placed in a magnetic field of intensity 1000A/m .The magnetic susceptability is $-0.42x10^{-3}$	L1,CO5

Signature of the Staff:

Signature of Department Academic Committee Member 1:

Signature of Department Academic Committee Member 2:

Signature of Department Academic Committee Member 3: