University of Mumbai
Examination 2020

Program: First Year Engineering
Curriculum Scheme: REV- 2012
Examination: First Year Semester I
Course Code: FEC102 and Course Name: Applied Physics-I

Time: 1 hour Max. Marks: 50

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For the students: - All the Questions are compulsory and carry equal marks.

Q1.	Ultrasonic waves carry more
Option A:	Energy only
Option B:	Frequency only
Option C:	Heat
Option D:	Energy and frequency
Q2.	Stacking sequence in face centered cubic (FCC) close packed structure is?
Option A:	AAAAA
Option B:	ABABAB
Option C:	ABCABC
Option D:	AABBAA
Q3.	The wavelength of ultrasonic waves is Sounds of frequency higher than 20,000 Hz which are inaudible to normal human ear are called
Option A:	Noise
Option B:	Frequency
Option C:	Ultrasonic
Option D:	Amplitude
Q4.	When the temperature of either n-type or p-type increases, determine the movement of the position of the Fermi energy level?
Option A:	Towards up of energy gap
Option B:	Towards down of energy gap
Option C:	Towards Centre of energy gap
Option D:	Towards out of page
Q5.	The value of B at H=0 in a Hysteresis curve is called _____
Option A:	Remanence
Option B:	Coercivity
Option C:	Magnetization
Option D:	Porosity
Q6.	_____ occurs when a foreign substance replaces an atom in a crystal.
Option A:	Vacancy defect
Option B:	Substitutional impurity
Option C:	Frankel defect
Option D:	Interstitial impurity

Q7.	Liquid crystal are generally composed of
Option A:	Circular molecule
Option B:	Rod like molecule
Option C:	Oval molecules
Option D:	Triangular molecules
Q8.	At high temperature a Ferro magnet becomes _____
Option A:	Diamagnetic
Option B:	Paramagnetic
Option C:	Hard Ferro magnet
Option D:	Soft Ferro Magnet
Q9.	Identify a good dielectric.
Option A:	Iron
Option B:	Ceramics
Option C:	Plastic
Option D:	Magnesium
Q10.	What is the velocity when the electric field is 5V/m and the magnetic field is 5A/m?
Option A:	1m/s
Option B:	25m/s
Option C:	0.2m/s
Option D:	0.125m/s
Q11.	FCC structure having atomic radius is 1.414 Aº. Find the interplanar spacing for (2 0 0) planes.
Option A:	1.999 Aº
Option B:	2.999 Aº
Option C:	3.999 Aº
Option D:	1.555 Aº
Q12.	Find the dielectric constant for a material with electric susceptibility of 4.
Option A:	3
Option B:	5
Option C:	8
Option D:	16
Q13.	Calculate the Hall Effect coefficient when number of electrons in a semiconductor is 10^{20}
Option A:	0.625
Option B:	0.0625
Option C:	6.25
Option D:	62.5
Q14.	For a dielectric which of the following properties hold good?
Option A:	They are superconductors at high temperatures
Option B:	They are superconductors at low temperatures

Option C:	They can never become a superconductor
Option D:	They have very less dielectric breakdown voltage
Q15.	Which of the following equation describes Bragg's law of diffraction? (Assume that all symbols have their usual meaning.)
Option A:	$2d \sin\theta = \lambda$
Option B:	$2d = n\lambda$
Option C:	$2d = n\lambda \sin\theta$
Option D:	$2d \sin\theta = n\lambda$
Q16.	Calculate decrease in acoustic intensity level when the sound intensity is reduced to half of its original intensity
Option A:	1 dB
Option B:	2 dB
Option C:	3 dB
Option D:	4 dB
Q17.	For a dielectric which of the following properties hold good?
Option A:	They are superconductors at high temperatures
Option B:	They are superconductors at low temperatures
Option C:	They can never become a superconductor
Option D:	They can never become a superconductor
Q18.	SONAR stands for
Option A:	Sound navigation and ranging
Option B:	Sound number approximation and ranging
Option C:	Sound nullifying ranging
Option D:	Sound measurement
Q19.	In the Hall Effect, the electric field is in x direction and the velocity is in y direction. What is the direction of the magnetic field?
Option A:	X
Option B:	Y
Option C:	Z
Option D:	XY
Q20.	Magnetostriction transmitter uses _____
Option A:	Electrostrictive phenomena
Option B:	Horizontal vibration of nickel tube
Option C:	Longitudinal vibration of nickel tube
Option D:	Horizontal vibration and Longitudinal vibration of nickel tube
Q21.	Calculate the length of iron rod which can be used for production of ultrasonic wave of 20 KHz. Given $Y=11.6\times10^{10}$ N/m^2 and density 7.23×10^3 Kg/m^3
Option A:	20 cm
Option B:	10 cm
Option C:	30 cm

Option D:	40 cm
Q22.	The defect that occurs due to a displacement of an ion is known as _____
Option A:	Vacancy defect
Option B:	Schottky defect
Option C:	Frankel defect
Option D:	Interstitial defect
Q23.	How does a semiconductor behave at absolute zero?
Option A:	Conductor
Option B:	Insulator
Option C:	Semiconductor
Option D:	Protection device
Q24.	The loudness (or intensity) of a sound wave is related to its
Option A:	Duration
Option B:	Frequency
Option C:	Wavelength
Option D:	Amplitude
Q25.	Materials in which magnetization persists even after the field has been removed are called _____
Option A:	Diamagnetic
Option B:	Paramagnetic
Option C:	Paramagnetic
Option D:	Hard Ferro magnets