

NADAR SARASWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

Course/Branch : BE/EEE	Year / Semester :IV / VII	Format No.	NAC/TLP-07a.13
Subject Code :OML751	Subject Name : Testing of Materials	Rev. No.	02
Unit No : IV	Unit Name : Material Characterization Testing	Date	30.09.2020

OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices)	BTL
1.	Which of the following is used in electron microscope? a) electron beams b) magnetic fields c) light waves d) electron beams and magnetic fields	L2
2.	Electron Microscope can give a magnification up to _____ a) 400,000X b) 100,000X c) 15000X d) 100X	L2
3.	Which of the following are true for electron microscopy? a) specimen should be thin and dry b) image is obtained on a phosphorescent screen c) electron beam must pass through evacuated chamber d) specimen should be thin and dry, image is obtained on a phosphorescent screen and electron beam must pass through evacuated chamber	L2
4.	Degree of scattering in transmission electron microscope is a function of _____ a) wavelength of electron beam used b) number of atoms that lie in the electron path c) number and mass of atoms that lie in the electron path d) mass of atoms that lie in the electron path	L2
5.	Negative Staining is used for examining _____ a) virus particles b) protein molecules c) bacterial flagella d) virus particles, protein molecules and bacterial flagella	L2
6.	Which among the following helps us in getting a three-dimensional picture of the specimen? a) Transmission Electron Microscope b) Scanning Electron Microscope c) Compound Microscope d) Simple Microscope	L2
7.	The secondary electrons radiated back in scanning microscope is collected by? a) specimen b) anode c) vacuum chamber d) cathode	L2
8.	On what factors do the intensity of secondary electrons depend upon? a) shape of the irradiated object b) chemical composition of the irradiated object c) number of electrons ejected d) size and chemical composition of the irradiated object, number of electrons ejected and on the number of electrons reabsorbed by surrounding	L1
9.	Where do we obtain the magnified image of the specimen in SEM?	L1

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	<p>a) cathode ray tube b) phosphorescent screen c) anode d) scanning generator</p>	
10.	<p>Which of the following techniques are used in Transmission Electron Microscopy (TEM) for examining cellular structure? a) Negative-Staining b) Shadow Casting c) Ultrathin Sectioning d) Negative-Staining, Shadow Casting, Ultrathin Sectioning, Freeze-Etching</p>	L2
11.	<p>X-rays have larger wavelengths than which of the following? a) Gamma rays b) Beta rays c) Microwave d) Visible light</p>	L1
12.	<p>X-ray diffraction patterns are used for studying crystal structure of solids because a) They have very high energy, hence they can penetrate through solids b) They are electromagnetic radiation, and hence do not interact with matter (crystals) c) Their wavelengths are comparable to inter-atomic distances d) Their high frequency enables rapid analysis</p>	L1
13.	<p>For destructive interference to take place, the path difference between the two waves should be: a) $n\lambda$ b) $2n\lambda$ c) $(n + 1/2)\lambda$ d) $(2n + 1)\lambda$</p>	L2
14.	<p>The Miller indices h, k, and l of parallel planes in a BCC lattice should satisfy which of the following X-ray diffraction reflection rules? a) $h + k + l$ should be even b) h, k, and l should all be either even or odd c) h, k, and l should form Pythagoras triplet d) all planes allow reflections</p>	L2
15.	<p>Minimum interplanar spacing required for Bragg's diffraction is: a) $\lambda/4$ b) $\lambda/2$ c) λ d) 2λ</p>	L2
16.	<p>Laue's model pictures XRD as reflection from parallel crystalline planes. Reflection is different from refraction as: a) diffraction occurs throughout the bulk b) intensity of diffracted beams is less c) diffraction in crystals occurs only at Bragg's angles d) all of the mentioned</p>	L2
17.	<p>In Bragg's equation [$n\lambda = 2.d.\sin\theta$], θ is the angle between: a) specimen surface and incident rays b) normal to specimen surface and incident rays c) parallel lattice surfaces d distance apart and incident rays</p>	L2

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	d) normal to parallel lattice surfaces d distance apart and incident rays	
18.	In the powder method of XRD, the intensities of various bright lines are compared to determine the crystal structure. For simple cubic lattice the ratio of intensities at first two maxima are: a) $1/2$ b) $3/4$ c) $1/2$ d) None of the mentioned	L2
19.	K-alpha x-rays have shorter wavelengths than K-beta x-rays? a) True b) False	L1
20.	The different types of energies associated with a molecule are _____ a) Electronic energy b) Vibrational energy c) Rotational energy d) All of the mentioned	L2
21.	During the motion, if the centre of gravity of molecule changes, the molecule possess _____ a) Electronic energy b) Rotational energy c) Translational energy d) Vibrational energy	L1
22.	The correct order of different types of energies is _____ a) $E_{el} \gg E_{vib} \gg E_{rot} \gg E_{tr}$ b) $E_{el} \gg E_{rot} \gg E_{vib} \gg E_{tr}$ c) $E_{el} \gg E_{vib} \gg E_{tr} \gg E_{rot}$ d) $E_{tr} \gg E_{vib} \gg E_{rot} \gg E_{el}$	L2
23.	The region of electromagnetic spectrum for nuclear magnetic resonance is _____ a) Microwave b) Radio frequency c) Infrared d) UV-rays	L2
24.	Which of the following is an application of molecular spectroscopy? a) Structural investigation b) Basis of understanding of colors c) Study of energetically excited reaction products d) All of the mentioned	L1
25.	Select the correct statement from the following option. a) Spectroscopic methods require less time and more amount of sample than classical methods b) Spectroscopic methods require more time and more amount of sample than classical methods c) Spectroscopic methods require less time and less amount of sample than classical methods d) Spectroscopic methods require more time and less amount of sample than classical methods	L2
26.	The results obtained by spectroscopic methods are less reliable, less reproducible and incorrect than classical methods. a) True b) False	L1
27.	The transition zone for Raman spectra is _____ a) Between vibrational and rotational levels	L2

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	b) Between electronic levels c) Between magnetic levels of nuclei d) Between magnetic levels of unpaired electrons.	
28.	The criteria for electronic spin resonance is _____ a) Periodic change in polarisability b) Spin quantum number of nuclei > 0 c) Presence of unpaired electron in a molecule d) Presence of chromophore in a molecule	L2
29.	Sample recovery is possible after spectroscopic analysis because the sample is not chemically affected. a) True b) False	L1
30.	Bragg's law is not a sufficient condition for diffraction by crystalline solids. a) True b) False	L1

