PREVIEW QUESTION BANK

Module Name : cec24-cy02 Chemistry Of Nanomaterials-ENG
Exam Date : 18-May-2024 Batch : 15:00-18:00

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	14292001	Nanomaterials are the materials with at least one dimension measuring less than 1. 1 nm 2. 10 nm 3. 1000 nm 4. 100 nm A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
2	14292002	The increase in intensity of absorption maximum due to substituent or solvent effect is termed as 1. Hyperchromic shift 2. Bathochromic shift 3. Hyporchromic shift 4. Hypsochromic shift A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
3	14292003	The 'physical colour' of butterfly wings is due to 1. Pigments 2. Periodical nanostructure 3. Dyes 4. Biological macro arrays A1 : 1 A2 : 2	1.0	0.00

		A3 : 3 A4 : 4		
Objective Question				
4	14292004	The ***adhesives*** can be considered as biomimetic inspiration from 1. Gecko's feet 2. Spider silk 3. Shark skin 4. Lotus leaf A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
5	14292005	Graphene sheet can be represented as 1. The 0-D nanomaterials 2. The 2-D nanomaterials 3. The 1-D nanomaterials 4. The 3-D nanomaterials A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
6	14292006	Which of the following represents a 3-D nanomaterial? 1. All dimensions are outside nano regime 2. Only one dimension is outside nano regime 3. All dimensions are inside nano regime 4. Only one dimension is inside nano regime A1 : 1 A2 : 2 A3 : 3	1.0	0.00

		A4 : 4		
Objective Question				
7	14292007	Which of the following is an oldest technique used for the synthesis of metal nanoparticles? 1. Sputtering 2. RF plasma method 3. Thermolysis 4. Nanolithography A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
8	14292008	Which is *incorrect* about laser ablation method? 1. It can be considered as a green technique 2. Low heat transfer to surrounding 3. Wide range of nanomaterials can be produced 4. It can be performed only by using pulsed laser A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
9	14292009	Which one of the following is a 'top-down method' for the synthesis of nanomaterials? 1. Chemical Vapour Deposition 2. Sol-gel synthesis 3. Laser Ablation 4. Co-precipitation A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00

Objective Question

10	14292010	In which following synthesis an autoclave is used? 1. Spray pyrolysis 2. Electrodeposition 3. Hydrothermal synthesis 4. Chemical vapour deposition A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00

Objective Question

11	14292011	Pick out the optical probe characterization method from the following 1. DLS 2. SEM 3. AFM 4. STM A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00

Objective Question

12	14292012	Mass spectroscopy belongs to which type of characterization method? 1. Ion-particle probe method 2. Electron probe method 3. Optical probe method 4. Thermodynamic method A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00

Objective Question

13	14292013	Which of the following is *not* an electron probe method? 1. Scanning Electron Microscopy 2. Scanning Tunnelling Microscopy 3. Transmission Electron Microscopy 4. Auger Electron Spectroscopy A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00

Objective Question

14	14292014	Which of the following method is hampered by small risk of radiation exposure? 1. Atomic Force Microscopy (AFM) 2. Dynamic Light Scattering (DLS) 3. Mass Spectroscopy (MS) 4. Scanning Electron Microscopy (SEM) A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00

Objective Question

15	14292015	In Transmission Electron Microscopy (TEM), the high energy electron beam is obtained from 1. Interferometer 2. Photo multiplier tube 3. Electron gun 4. Cathode ray generator A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00

Objective Question

16	14292016		1.0	0.00

		Which of the following steps is *not* connected to sample preparation in TEM? 1. Fixation 2. Rinsing 3. Dehydration 4. Condensation A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
17	14292017	Which is *incorrect* about Atomic Force Microscopy (AFM)? 1. Allows the use of conductive samples only 2. Allows the use of conductive and non-conductive samples 3. It belongs to scanning probe method 4. There are different imaging modes A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
18	14292018	Which imaging mode in Atomic Force Microscopy (AFM) is suitable for biological samples? 1. Non- contact mode 2. Tapping mode 3. Contact mode 4. Constant current mode A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
19	14292019		1.0	0.00

		First scanning tunneling microscope was developed by 1. Gerd Binnig and Heinrich Rohrer 2. Ernst Ruska and Max Knoll 3. Gerd Binning and Andre Geim 4. Norio Taniguchi A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
20	14292020	Excellent vibration control and sharp probe tips are required for better imaging with 1. SEM 2. AFM 3. STM 4. STEM A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
21	14292021	Which technique is used for the band-gap determination of semiconductor nanocrystals? 1. IR spectroscopy 2. Atomic Absorption Spectroscopy 3. Surface Enhanced Raman Spectroscopy (SERS) 4. UV-Visible spectroscopy A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
22	14292022		1.0	0.00

		X-ray fluorescence is obtained after 1. Primary X-rays removes core electrons 2. Primary X-rays removes outer electrons 3. Electron holes are created at outer shell 4. Primary X-rays are reflected by electrons A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
23	14292023	Which is *incorrect* about the EDAX Spectrum 1. It is a plot of X-ray counts against the energy 2. A high value of peak-to background ratio is essential for proper identification of elements 3. Characteristic X-ray represents the back ground 4. Continuum X-rays represent the background A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
24	14292024	Elemental composition of materials can be determined by 1. Powder XRD 2. Thermo Gravimetric Analysis 3. Scanning Tunnelling Microscopy 4. Energy Dispersive X-ray Analysis A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
25	14292025		1.0	0.00

		Thin-film of single crystals can be prepared using 1. Molecular beam epitaxy 2. Chemical vapour deposition 3. Laser ablation 4. Hydrothermal synthesis A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
26	14292026	With reference to nanomaterial characterization by UV-Visible spectroscopy, which of the following is *not* possible? 1. Surface Plasmon Resonance (SPR) studies 2. Band-gap determination 3. Monitoring drug delivery 4. Evaluation of crystallinity A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
27	14292027	The Near-Infrared (NIR) region has an approximate wave number range of 1. 13000 to 4000 cm^{-1} 2. 100 to 400 cm^{-1} 3. 3000 to 9000 cm^{-1} 4. 4000 to 400 cm^{-1} A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
28	14292028		1.0	0.00

		Plasmonic metal nanoparticles are important in 1. Mass spectroscopy 2. SEIRA spectroscopy 3. FT-IR spectroscopy 4. ESR spectroscopy A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
29	14292029	Disproportionation is a reaction in which 1. Same element undergoes oxidation and reduction 2. Redox reaction in which oxidizing agent is a metal and reducing agent is a non-metal 3. Redox reaction in which oxidizing agent is a non- metal and reducing agent is a metal 4. Different metals undergo simultaneous oxidation and reduction A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
30	14292030	The only nanoparticle whose plasmon resonance can be tuned to any wavelength in the visible spectrum is 1. Cu 2. Ag 3. Au 4. Pt A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
31	14292031		1.0	0.00

		Metal nanoparticles (MNPs) are *not* associated with 1. Large surface to volume ratio compared to bulk 2. Quantum confinement 3. Long range ordering 4. Large surface energies A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
32	14292032	Surface Plamon Resonance (SPR) phenomenon is related to size of metal nanoparticles (MNPs). The colour of small and big-sized gold nanoparticles will expect to be 1. Black and colourless respectively 2. Red and purple respectively 3. Purple and red respectively 4. Purple and blue respectively A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
33	14292033	Which of the following material is useful in the imaging of prostate cancer cells? 1. Gold nanoshells 2. Gold nanorods 3. Gold nanobeacons 4. Silver nanorods A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
34	14292034		1.0	0.00

		The existence of metal nanoparticles (MNPs) in solution was first recognized by 1. Turkevich 2. Brust and Schiffrin 3. Feynmann 4. Faraday A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
35	14292035	Plasmon excitation can be exhibited by 1. Metal nanoclusters 2. Metal nanoparticles 3. Silica nanoparticles 4. Metal oxide nanoparticles A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
36	14292036	Select the spectroscopic methods for characterization of surface plasmons in alloy nanoparticles 1. SERS and UV-Visible spectroscopy 2. ESR and Raman spectroscopy 3. ESR and IR-spectroscopy 4. ESR and NMR spectroscopy A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
37	14292037		1.0	0.00

		The band structure in metal nanoparticle become discrete energy levels when their size changed to 1. Compton wavelength 2. Fermi wavelength 3. de-Broglie wavelength 4. Surface plasmon wavelength A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
38	14292038	PAMAM can be used in the preparation of gold nanoclusters (Au NCs) as a 1. Reducing agent 2. Encapsulating agent 3. Oxidizing agent 4. Sequestering agent A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
39	14292039	Quantum dots can be considered as 1. Two-dimensional nanomaterials 2. Zero-dimensional nanomaterials 3. One-dimensional nanomaterials 4. Three-dimensional nanomaterials A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
40	14292040		1.0	0.00

		The band-gap energy in semiconductor quantum dots is 1. Directly proportional to size 2. Inversely proportional to size 3. Independent on size 4. Independent on material A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
41	14292041	The CdSe quantum dots are highly toxic when added to cultured cells. This is because of 1. The heat generated during light absorption 2. The liberation of cadmium ions into the culture medium 3. The liberation of selenide ions into the culture medium 4. The accumulation in the cytoplasm A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
42	14292042	Which of the following is a *not* considered a carbon-based nanomaterial (CBN)? 1. Carbon nanotubes 2. Graphene 3. Nanodiamonds 4. Graphite A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
43	14292043		1.0	0.00

		Pick out the factor which does not adversely affect electronic and optical properties of graphene 1. Defects 2. Grain boundaries 3. Wrinkles in the graphene sheet 4. Sheet structure A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
44	14292044	Carbon quantum dots (C-dots) are cluster of carbon atoms with diameter range 1. 1 to 100 nm 2. 2 to 8 nm 3. 10 to 100 nm 4. 100 to 200 nm A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
45	14292045	Which of the following is considered as the smallest member of the fullerene family? 1. C_{15} 2. C_{20} 3. C_{40} 4. C_{60} A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
46	14292046		1.0	0.00

		Which of the following method is *not* used to synthesize fullerenes 1. Laser ablation method 2. Arc discharge method 3. Pyrolysis of hydrocarbons 4. Hydrothhermal synthesis A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
47	14292047	The pyrolysis of naphthalene at 1000° C in an argon atmosphere mainly produces …… 1. C_{60} 2. C_{70} 3. C_{72} 4. C_{84} A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
48	14292048	In the case of *zig-zag* single walled carbon nanotube, the coefficients n and m in the chiral vector follows that 1. In the two integers (n and m), n = m 2. In the two integers (n and m), m =0 3. In the two integers (n and m), m ≠ n 4. In the two integers (n and m), m = n = 0 A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
49	14292049		1.0	0.00

		The Young's modulus of CNTs are in the range of 1. Nearly 100 GPa 2. 1000 to 1270 GPa 3. Nearly 10 GPa 4. 2500 to 2750 GPa A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
50	14292050	Compared to single -walled carbon nanotubes (SWCNTs), the multi-walled carbon nanotubes (MWCNTs) have 1. High purity 2. Easiness to twist 3. High chance of defect during functionalization 4. Required catalyst for synthesis A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
51	14292051	Graphene is an allotrope of carbon consisting of a single layer of carbon atoms arranged in .....lattice 1. Cubic 2. Tetragonal 3. Hexagonal 4. Pentagonal A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
52	14292052		1.0	0.00

		Graphene membranes have the capacity to reject approximately ..... of NaCl from seawater 1. 70 % 2. 50 % 3. 79 % 4. 97 % A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
53	14292053	Which of the following designates graphene oxide (GO)? 1. Completely oxidized graphite 2. Oxygenated counterpart of multi walled CNT 3. Oxygenated counterpart of one-atom thick graphene 4. Oxygenated counterpart of fullerene A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
54	14292054	How does the size of Carbon Quantum Dots (CQDs) affect their optical properties, specifically photoluminescence? 1. Larger size enhances photoluminescence 2. Smaller size enhances photoluminescence 3. Size has no effect on photoluminescence 4. Photoluminescence is independent of size of CQD A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
55	14292055		1.0	0.00

		What is the hybridization of carbon in nanodiamonds (NDs)? 1. sp^2 2. sp^3 3. sp^2 and sp^3 4. sp A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
56	14292056	CQDs display absorption in which of the following range? 1. UV to NIR 2. Visible to NIR 3. UV to visible 4. Microwave to NIR A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
57	14292057	What is the primary characteristic that distinguishes nanocomposites from conventional composites? 1. Size of the particles 2. Matrix material 3. Synthesis method 4. Mechanical properties A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
58	14292058		1.0	0.00

		In nanofiber synthesis, what does electrospinning primarily rely on? 1. Magnetic fields 2. Centrifugal force 3. Electric fields 4. Electrical and magnetic fields A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
59	14292059	Which nanofiber synthesis technique relies on the spontaneous organization of molecules or nanoparticles into a fibrous structure? 1. Electrospinning 2. Template Synthesis 3. Phase Separation 4. Self-Assembly A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
60	14292060	Which is the most common imaging mode in STM? 1. Constant current mode 2. Constant height mode 3. Contact mode 4. Non-contact mode A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
61	14292061		1.0	0.00

		What is the primary advantage of Polymer Nanoparticles (PNPs) as drug carriers? 1. Small size 2. Slow drug release 3. Limited bioavailability 4. Controlled release and improved bioavailability A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
62	14292062	Chondroitin Sulphate is a 1. Natural polymer 2. Biosynthetic polymer 3. Synthetic polymer 4. Semisynthetic monomer A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
63	14292063	Which of the following is *not* a method for MOF synthesis? 1. Solvothermal Method 2. Electrochemical Method 3. Sol-gel Method 4. Sonochemical Method A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
64	14292064		1.0	0.00

		Which classification term is used for MOFs related to the general class of coordination polymers? 1. Isoreticular MOFs 2. Porous Coordination Polymers (PCPs) 3. Zeolitic Imidazolate Frameworks (ZIFs) 4. Materials Institute Lavoisier (MIL) MOFs A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
65	14292065	Pick out the primary advantage of MOF-nanoparticles compared to bulk MOFs? 1. Lower surface area 2. Reduced tunability 3. Smaller dimensions and enhanced surface area 4. Higher stability A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
66	14292066	Which of the following is an example of an intermolecular bond? 1. Ionic bond 2. Hydrogen bond 3. Covalent bond 4. Metallic bond A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
67	14292067		1.0	0.00

		Which type of bonding is twice as strong as dipole-dipole bonding and is relatively weak compared to covalent bonds? 1. Hydrogen bonding 2. Metallic bonding 3. Van der Waals forces 4. Ionic bonding A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
68	14292068	The bond strength of the H-H covalent bond is 1. 412 kJ/mol 2. 348 kJ/mol 3. 463 kJ/mol 4. 436 kJ/mol A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
69	14292069	What is the spontaneous arrangement of molecules into organized structures driven by non-covalent interactions called? 1. Molecular recognition 2. Supramolecular assembly 3. Hydrophobic interaction 4. Covalent bonding A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
70	14292070		1.0	0.00

		Which of the following is the role of molecular self-assembly in living organisms? 1. Formation of inorganic structures 2. Construction of lipid membranes 3. Creation of metallic bonds 4. Development of covalent structures A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
71	14292071	Which supramolecular nanosystem serves as a scaffold for tissue engineering applications by mimicking the extracellular matrix? 1. Metal-organic frameworks (MOFs) 2. Dendritic supramolecular assemblies 3. Supramolecular polymers 4. Supramolecular hydrogels A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
72	14292072	Which of the following relates emission from triplet excited states? 1. Fluorescence 2. Inter system crossing (ISC) 3. Phosphorescence 4. Transmittance A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
73	14292073		1.0	0.00

		Which of the following is *not* a basic mechanism for upconversion luminescence? 1. Excited state absorption 2. Cross relaxation 3. Photon avalanche 4. Excited state emission A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
74	14292074	Which lanthanide ions are mentioned as important for their biologically appropriate emission in the visible region? 1. Erbium and Holmium 2. Lutetium and Neodymium 3. Europium and Terbium 4. Samarium and Dysprosium A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
75	14292075	What term describes the measure of remaining magnetization of a material when the external magnetic field is dropped to zero? 1. Remanence (M_r) 2. Coercivity (H_c) 3. Magnetization (M) 4. Saturation magnetization (M_s) A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
76	14292076		1.0	0.00

		How does the size of nanoparticles affect their magnetic behaviour? 1. Larger size enhances superparamagnetism 2. Smaller size increases coercivity 3. Decreasing size below a certain value induces superparamagnetism 4. Size has no impact on magnetic behaviour A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
77	14292077	What role does the magnetically active core play in magnetic nanoparticles? 1. It provides stability to the nanoparticles 2. It enables manipulation using magnetic fields 3. It prevents agglomeration of nanoparticles 4. It enhances the biocompatibility of magnetic nanoparticles A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
78	14292078	The T2 contrast agents in MRI leads to 1. Brightening effect 2. Darkening effect 3. They have no effect on image contrast 4. They improve imaging speed A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
79	14292079		1.0	0.00

		In magnetic hyperthermia therapy, what causes the destruction of cancer cells? 1. Absorption of visible light 2. Reversal of magnetization in magnetic nanoparticles 3. Release of oxygen radicals 4. Activation of immune response A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
80	14292080	Which is the characteristic application of luminomagnetic nanoparticles which utilize both the functional properties in them? 1. Gene therapy 2. Multimodal imaging 3. Hyperthermia therapy 4. Drug delivery A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
81	14292081	What role do exosomes play in intercellular communication? 1. Store genetic material 2. Transport biomolecules between cells 3. Synthesize proteins 4. Enable cellular metabolism A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
82	14292082		1.0	0.00

		How do virus-like particles (VLPs) differ from natural viruses? 1. VLPs lack a protein coat 2. VLPs are incapable of infecting cells 3. VLPs lack genetic material needed to replicate 4. VLPs are significantly larger A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
83	14292083	What is the primary function of lipoproteins? 1. Transport of lipids 2. Transport of nucleic acids 3. Catalysing metabolic reactions 4. Transport of proteins A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
84	14292084	What is the primary function of nanowires in sensors? 1. Enhancing accuracy 2. Increasing mechanical strength 3. Detecting gases, chemicals, and biomolecules 4. Storing binary data A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
85	14292085		1.0	0.00

		Nanocomposite materials are used in printed circuit boards (PCBs) primarily to enhance 1. Light absorption 2. Mechanical strength, thermal conductivity, and electromagnetic shielding 3. Storage capacity 4. Heat dissipation A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
86	14292086	Which nanoelectronic device utilizes nanoscale magnetic materials to control electron spin? 1. Nanoscale transistors 2. Quantum computing systems 3. Spintronics devices 4. Nanoelectromechanical Systems A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
87	14292087	Which type of nanosensor utilizes changes in light interactions to detect specific substances? 1. Chemical nanosensors 2. Biological nanosensors 3. Physical nanosensors 4. Optical nanosensors A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
88	14292088		1.0	0.00

		Which of the following statements best describes the concept of quantum size effects in nanosensors? 1. Quantum size effects refer to the ability of nanosensors to detect quantum fluctuations in the environment. 2. Quantum size effects arise from the changes in the electronic and optical properties of nanomaterials at the nanoscale. 3. Quantum size effects are solely responsible for the high sensitivity of nanosensors. 4. Quantum size effects in nanosensors are not significant compared to traditional sensor technologies. A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
89	14292089	Which type of nanosensor offers the potential for highly sensitive label-free detection of biomolecules? 1. Nanoparticle-based biosensors 2. Nanowire biosensors 3. Nanocantilever biosensors 4. Nanopore biosensors A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
90	14292090	What is the effect of reducing the domain size of a nanocatalyst? 1. Decreases the number of active sites 2. Increases the particle size 3. Maximizes the number of active sites 4. Reduces the reactivity A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
91	14292091		1.0	0.00

		What is the primary aim of using a catalyst in a chemical reaction? 1. To decrease the rate of reaction 2. To increase the activation energy 3. To increase the rate of reaction by lowering the activation energy 4. To maintain the thermodynamic equilibrium of the reaction A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
92	14292092	Biocompatibility refers to 1. The ability of a material to be hostile to living tissue 2. The inability of a material to interact with biological systems 3. The compatibility of a material with living tissue 4. The resistance of a material to biological degradation A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
93	14292093	Which of the following nanoparticles is optically transparent and inert to pH? 1. Gold nanoparticles 2. Silica nanoparticles 3. Iron nanoparticles 4. Titanium nanoparticles A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
94	14292094		1.0	0.00

		What distinguishes theranostic nanomaterials from other nanomaterials? 1. They can only be used for therapy 2. They can only be used for diagnosis 3. They can be used for both therapy and diagnosis 4. They have no therapeutic or diagnostic applications A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
95	14292095	What is the primary advantage of using multimodal imaging techniques? 1. They simplify imaging procedures. 2. They offer complementary benefits such as high spatial resolution and soft tissue contrast 3. They reduce the need for contrast agents. 4. They are less expensive compared to single-modal imaging A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
96	14292096	Which type of nanoparticles can enhance the effects of radiotherapy by increasing the radiation dose delivered to cancer cells? 1. Iron oxide nanoparticles 2. Gadolinium-based nanoparticles 3. Gold nanoparticles 4. Carbon-based nanoparticles A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
97	14292097		1.0	0.00

		Institute of Nano Science and Technology (INST) is located at 1. Mohali 2. Bengaluru 3. Chennai 4. Kanpur A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
98	14292098	The lotus effect refers to 1. self-wetting property 2. self-cleaning property 3. self-drying property 4. self-oxidising property A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
99	14292099	Core-shell bimetallic nanoparticles can be obtained by 1. Successive Reduction 2. Co-reduction 3. Co-precipitation 4. Laser Ablation A1 : 1 A2 : 2 A3 : 3 A4 : 4	1.0	0.00
Objective Question				
100	14292100		1.0	0.00

Bright dotted ring that appeared in the SAED pattern indicates that the material is

1. Amorphous
2. Single crystalline
3. Polycrystalline
4. A soft material

A1 : 1

A2 : 2

A3 : 3

A4 : 4