QPC: RN18001262 AR - 18 Reg. No.

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, November – 2021

(Seventh Semester)

BBTPE7040 – NANOBIOTECHNOLOGY

(Biotechnology)

Time: 3 hrs Maximum: 100 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) (2 x 10 = 20 Marks)

Q.1. Answer ***ALL*** questions	[CO#]	[PO#]
a. Nanomaterials are the materials with at least one dimension measuring less than (i) 1 nm (ii) 10 nm (iii) 100 nm (iv) 1000 nm	CO1	PO1
b. The melting point of particles in nano form (i) increases (ii) decreases (iv) remains same (iv) increases then decreases	CO1	PO1
c. Which property of nanoparticles provides a driving force for diffusion? (i) Optical properties (ii) High surface area to volume ratio (iii) Sintering (iv) There is no such property	CO1	PO1
d. One among them is a physical method of nanomaterial synthesis (i) Laser ablation (ii) Ball Milling (iii) Spray pyrrolysis (iv) Sol gel synthesis	CO2	PO2
e. Biological method of synthesis includes (i) Intracellular synthesis (ii) Extracellular synthesis (iii) Intracellular & extracellular synthesis (iv) None of the above	CO2	PO3
f. Nanomaterials can confer cytotoxicity by (i) Generating free radicals (ii) Disrupting membrane potential (iii) Promoting apoptosis (iv) all of the above	CO4	PO2
g. Nanoparticles are surface functionalized for (i) Preventing aggregation (ii) Specific drug targeting (iii) Diagnosis and sensing (iv) All of the above	CO3	PO3
h. Which of the following is used in electron microscopy (i) Electron beam (ii) Magnetic fields (iii) Light source (iv) Electron beams and magnetic fields	CO2	PO5
i. Which metal is used with nanoparticles for antibiotic delivery? (i) Gold (ii) Titanium (iii) Zinc (iv) Silver	CO4	PO3
j. F1-ATPase is an example of a (i) Protein (ii) Molecular motors (iii) Enzyme (iv) ATP	CO3	PO1

PART – B: (Short Answer Questions) **(2 x 10 = 20 Marks)**

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. "There is plenty room at the bottom". Justify the sentence along with scientist name.	CO1	PO1
b. What do you mean by Lotus effect? Explain.	CO1	PO2
c. Differentiate between Top-down and Bottom-up approach?	CO2	PO3
d. What is the function of EDX?	CO2	PO5
e. Why self-assembled monolayer is important?	CO2	PO2
f. Give the examples of zero dimensional and one dimensional nanomaterials?	CO1	PO1
g. What are the drawbacks of Physical and Chemical methods of nanoparticle synthesis over green synthesis?	CO3	PO3
h. How nanomaterials are used in cancer therapy?	CO4	PO3
i. What is bionanomachine? Give examples.	CO3	PO1
j. How lipid nanoparticles are used for drug delivery?	CO4	PO5

PART – C: (Long Answer Questions) **(15 x 4 = 60 Marks)**

Answer ***ALL*** questions	Marks	[CO#]	[PO#]
3. a. Discuss the various applications and future prospects of Nanobiotechnology?	10	CO1	PO1
b. Explain detail about any three properties of nanomaterials?	5	CO1	PO2
(OR)			
c. Briefly classify the nanomaterials with examples based on dimensions?	8	CO1	PO1
d. "Nanotechnology exists in nature". Discuss the statement with examples.	7	CO1	PO2
4. a. Diagramatically explain in details about the steps of CVD?	8	CO2	PO3
b. Explain the principle of SEM with diagram?		CO2	PO5
(OR)			
c. Write the principle and instrumentation of UV-Visible spectroscopy?	8	CO2	PO1
d. Describe with diagram the working principle of AFM?	7	CO2	PO5
5. a. Discuss the mechanism involved in biogenic synthesis of nanoparticles from plants and microorganisms?	8	CO3	PO2
b. Why surface functionalizations of nanomaterials are required? Explain in details with diagram.	7	CO3	PO3
(OR)			
c. Discuss about the various antimicrobial nanoparticles with examples?	8	CO3	PO1
d. Write notes on Bionanomotors with examples?	7	CO3	PO3
6. a. What is nanotoxicity? Discuss the cytotoxic and genotoxic effect of nanomaterials?	8	CO4	PO1
b. Define biopolymers? Classify the biopolymers with their functions?	7	CO4	PO2
(OR)			
c. How lipid nanoparticles are useful for drug delivery? Explain.	8	CO4	PO2
d. Explain the toxicity of nanomaterials on environment?	7	CO4	PO7

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