



DAG-003-0491102 Seat No. _____

B. Sc. / M.Sc. (Sem. X) (CBCS) Examination

April / May - 2022

Nanotechnology and Environment : Paper-XIV

(Applied Physics)

(New Course)

Faculty Code : 003

Subject Code : 0491102

Time : **2.30** Hours]

[Total Marks : **70**

Instructions : (1) All questions are compulsory.
(2) Numbers in the right margin indicate marks.

1 Answer the following questions (any seven) **14**

- (1) State some of the natural processes which also pollute the environment.
- (2) What are VOCs and CFC? What is their role in the environment?
- (3) How does fullerene affect the skin?
- (4) Define 'Nanotoxicity'? What are the reasons for the toxicity of nanoparticles?
- (5) What are the advantages of single-walled carbon nanotubes?
- (6) Explain the cytotoxicity of TiO_2 nanoparticles in short.
- (7) Which are the non-point source pollutions?
- (8) Which are the existing technologies used for energy harvesting?
- (9) Give any two importance of biodiversity.
- (10) Why is it necessary for organisms to sequester iron in a non-toxic form?

2 Answer the following questions (any two) **14**

- (1) Describe any two solutions to combat greenhouse gases through nanotechnology.
- (2) Describe any two solutions to combat greenhouse gases through nanotechnology.

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- (3) Explain the approach of energy harvesting through solar roadways and wireless charging from electric vehicles.
- (4) Describe the role of nanotechnology in agriculture.
- 3 Answer the following questions (any two). 14**
- (1) What is Global warming ? Discuss its harmful effects environment.
- (2) What are Quantum dots ? How they are synthesized ? Give some examples.
- (3) Discuss the toxic effects of fullerene.
- (4) What are the possible mechanism for the antimicrobial activity of nanoparticles ?
- 4 Answer the following questions (any two). 14**
- (1) What is Reactivity, Fate and Lifetime of Nanoparticles used for ground water remediation ? Explain in detail.
- (2) Explain in detail : Nanomaterial based adsorbents for water and waste water treatments.
- (3) Write a detailed note : Membrane fabrication using nanomaterials.
- (4) Write a detailed note : Fullerene based membranes.
- 5 Answer the following questions (any two) 14**
- (1) (i) How Non-point source pollution can be controlled by nanofiltration process. **5**
- (ii) Name the compound which can be utilized as catalytic desulfurization. **2**
- (2) Write note on nanophotocatalysts for waste disposal.
- (3) Explain the role of nanotechnology in removal of volatile organic compounds and heavy metal ion.
- (4) (i) Write short note on Process emission control with the approach of nanotechnology. **5**
- (ii) State some of the pressure driven membrane process used treatment of waste water. **2**