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PG CBCS
M.Sc. Semester-II Examination, 2022
CHEMISTRY
PAPER: C-CEM 204
(NANOTECHNOLOGY: PRINCIPLES AND PRACTICES)

Full Marks: 40   **Time: 2 Hours**

GROUP - A

1. **Answer any <u>four</u> questions from the following questions:**   **2×4 = 8**

   a) What is nanotechnology in simple words?
   b) What are the methods of synthesis of nanoparticles?
   c) What is the mechanical method of synthesis of nanomaterials?
   d) What makes a material bulletproof?
   e) How can nanotechnology be used in space?
   f) Write some examples of nanomaterials in medical applications.

GROUP - B

2. **Answer any <u>four</u> questions from the following questions:**   **4×4 = 16**

   a) Describe the electrical properties of nanomaterials with suitable examples.
   b) Describe the potential applications of nanotechnology along the value-added chain in the energy sector.
   c) How does a Transmission electron microscope work?
   d) Write the working principle of a Scanning electron microscope.
   e) Describe the positive effects and negative effects of nanotechnology on the environment.
   f) What is the top-down and bottom-up approach for the synthesis of nanomaterials?

GROUP - C

3. **Answer any <u>two</u> questions from the following questions:**   **8×2 = 16**

   a) How do you synthesize gold nanoparticles? Describe the application of nanotechnology in electronics.   5+3
   b) How do you synthesize silver nanoparticles? Describe the application of nanotechnology in health and medicine.   5+3
   c) How do you synthesize TiO_2 nanoparticles? What are titanium dioxide nanoparticles used for?   5+3
   d) Describe the optical properties and mechanical properties of nanomaterials with suitable examples.   4+4

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