

CBCS SCHEME

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15NT52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021 Synthesis of Nanomaterials

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define metal oxide and semiconductor nanoparticles. Explain the procedure involved in the synthesis of A_gO and C_uO nanoparticles. (10 Marks)
- b. Discuss potential uses of semiconductor nanoparticles. (06 Marks)

OR

- 2 a. Discuss different applications of Z_nO and Al_2O_3 nanoparticles. (06 Marks)
- b. Explain the synthesis of semiconductor nanoparticles CdS and Pbs . Mention their applications. (10 Marks)

Module-2

- 3 a. Define Quantum Dots. Discuss the advantages, disadvantages and applications of quantum dots in Bio-imaging process with example. (10 Marks)
- b. Explain synthesis of A_gS quantum dots with advantages and drawbacks of A_gS nanostructures. (06 Marks)

OR

- 4 a. How toxicity of $CdSe$ quantum dot can be reduced? Explain with an example. (06 Marks)
- b. Explain synthesis of Pt nanoparticles by chemical method. (04 Marks)
- c. Discuss different applications of Ag and Au nanoparticles. (06 Marks)

Module-3

- 5 a. What are oxide and non-oxide nanoparticles? Explain the synthesis of magnetite nanoparticles. (10 Marks)
- b. Discuss the potential uses of oxide and non-oxide nanoparticles. (06 Marks)

OR

- 6 a. What are magnetosomes? Discuss the synthesis of magnetosomes by biological method. (06 Marks)
- b. Describe the steps involved in the synthesis of $CoFe_2O_4$, $MnFe_2O_4$ and $CoCrFeO_4$ nanoparticles. (10 Marks)

Module-4

- 7 a. Define Nanoporous materials. Discuss the synthesis of Aluminosilicate Zeolites. Mention applications of Aluminosilicate Zeolites. (10 Marks)
- b. Explain in brief the synthesis of Zirconium and Titanium phosphates. (06 Marks)

OR

- 8 a. Discuss the advantages, disadvantages and applications of nanoporous materials. (06 Marks)
b. Explain the synthesis of cobalt phosphates. (04 Marks)
c. Describe the potential uses of nano-porous materials. (06 Marks)

Module-5

- 9 a. Explain the steps involved in the synthesis of Ag nanoparticles using bacteria. Mention their applications. (10 Marks)
b. Describe the role of Tobacco Mosaic virus in the formation of nanostructured materials. Mention their applications. (06 Marks)

OR

- 10 a. Explain the role of magnetotactic bacteria in the natural synthesis of magnetic nanoparticles. (06 Marks)
b. Describe the steps involved in green synthesis of nanoparticles. (10 Marks)
