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18NT54

## Fifth Semester B.E. Degree Examination, July/August 2021 Synthesis of Nanomaterials

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions.**

- 1
  - a. Define metal oxide and semiconductor nanoparticles. Explain the procedure involved in the synthesis of CdO and AgO nanoparticles. (10 Marks)
  - b. Explain different methods to synthesis ZnO nanoparticles. Add note on applications of ZnO nanoparticles. (10 Marks)
  
- 2
  - a. Write a note on synthesis CuO nanoparticles. Add a note on advantages and drawbacks of CuO nanoparticles. (06 Marks)
  - b. Explain the synthesis of semiconductor nanoparticles CdS and TiO<sub>2</sub> nanostructure. Mention their applications. (08 Marks)
  - c. Discuss any two methods involved in synthesis of Al<sub>2</sub>O<sub>3</sub> nanoparticles. Mention its applications. (06 Marks)
  
- 3
  - a. Explain synthesis of metal nanoparticles – Ag and Au nanoparticle by chemical method. (08 Marks)
  - b. Explain the synthesis of AgS nanostructures. Add a note on advantages and disadvantages of AgS nanostructure. (06 Marks)
  - c. How can the toxicity of CdSe quantum dots be reduced? Explain with an example. (06 Marks)
  
- 4
  - a. Define Quantum dots. Add a note on advantages, disadvantages and applications of quantum dots in bio-imaging with an example. (10 Marks)
  - b. What are the methods that can be used for the synthesis of ZnS nanostructures? Add a note on advantages and disadvantages and applications of ZnS nanostructures. (10 Marks)
  
- 5
  - a. Explain the steps involved in the synthesis of CoFe<sub>2</sub>O<sub>4</sub>, M<sub>n</sub>Fe<sub>2</sub>O<sub>4</sub> and CoCrFe<sub>2</sub>O<sub>4</sub> nanoparticles. (10 Marks)
  - b. Explain the potential uses of oxide and non-oxide nanoparticles. (10 Marks)
  
- 6
  - a. Explain the synthesis of magnetic nanoparticles. (08 Marks)
  - b. What are magnetosomes? Write a note on the synthesis of magnetosomes by biological method. (06 Marks)
  - c. Give a note on advantages, disadvantages and applications of magnetite particles. (06 Marks)
  
- 7
  - a. Explain the synthesis of Aluminium phosphates and Iron phosphates. (08 Marks)
  - b. Write a note on synthesis of Aluminosilicate Zeolites. Add a note application of Aluminosilicate Zeolites. (06 Marks)
  - c. Explain the synthesis of Copper and Nickel phosphates. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- 8 a. Explain the synthesis of Cobalt and Manganese phosphates. (08 Marks)  
b. Describe the synthesis of Zirconium and Titanium phosphates. (06 Marks)  
c. Write a note on synthesis of phosphates of Gallium and Indium. (06 Marks)
- 9 a. Describe the steps involved in the synthesis of nanoparticles by making use of bacteria. Mention their applications. (10 Marks)  
b. Describe the steps involved in green synthesis of nanoparticles. (10 Marks)
- 10 a. Describe the role of magnetotactic bacteria for natural synthesis of magnetic nanoparticles. Mention their applications. (08 Marks)  
b. Explain the steps involved in the synthesis of nanoparticles by making use of fungi. (06 Marks)  
c. Explain the role of tobacco mosaic virus as the component for the formation of nanostructure material. Mention their applications. (06 Marks)

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