

35134

M.Sc DEGREE EXAMINATION, OCTOBER/NOVEMBER 2019

THIRD SEMESTER

Material Science and Nanotechnology

Paper IV — NANOCATALYSIS AND ITS APPLICATIONS

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. What are the characteristics of catalytic reactions?
2. What are the Requirements for successful catalysts?
3. Write a note on determination of surface acidity.
4. Write a note on Mesoporous carbon.
5. Write a short note on band energy engineering.
6. Discuss selective oxidation and reduction reactions.
7. What is crude oil refinery - Briefly discussed?
8. Explain about polymerization.

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. Explain about intermediate compound formation and Adsorption Theories.

Or

10. Explain in detail about determination of surface area in non-porous and porous materials using BET method.

11. What are the micro porous materials? And explain overall steps in Zeolite crystallization.

Or

12. Write a Brief note on synthesis of mesoporous silica and MCM-41 and also explain SBA-15.

13. Explain the following Gold catalysts.

- (a) Uniqueness.
- (b) Particle size.
- (c) Metal support Interaction.

Or

14. Explain the following Preparative Methods.

- (a) Co-precipitation.
- (b) Deposition.
- (c) Precipitation.

15. Explain

- (a) Biomass Gasification and Biodiesel.
- (b) Naphtha Reforming.

Or

16. Describe about

- (a) Synthesis of fine chemicals.
- (b) Selective Oxidation Reactions.

