Reg. No.

III Semester M.Sc. Degree Examination, April/May 2022 INDUSTRIAL CHEMISTRY Polymers and Soft Materials

Time : 3 Hours

Max. Marks : 70

(5x2=10)

ICS 504

Instructions : 1) Answer any five questions from Part – A and any five questions from Part – B. 2) Figures to the right indicate marks.

PART – A

Answer any five questions.

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- 1. a) What are thermoplastics ? Give one example and its application.
 - b) Define polydispersity. What is significance and the
 - c) State the principle of reverse osmosis.
 - d) Give an example and an application of a biodegradable polymer.
 - e) Mention any two applications of liquid crystals.
 - f) State the parameters that are used to describe the liquid crystals.
 - g) Explain the principle of MOCVD³technique of thin film preparation.
 - h) Give any two properties and applications of thin films.

Answer any five full questions. It is its significance?

(5x12=60)

- 2. a) Discuss in detail the different ways of classifying polymers.
 - b) Define and explain the terms number average, weight average and viscosity average molecular weight of polymers. (6+6)
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ICS 504 3. a) What are elastomeric materials ? Describe in detail the structural features which impart elastic nature to these materials. b) Explain the importance of additives in improving polymer properties. c) Write a note on dry melt spinning. (6+3+3)4. a) Discuss the application of polymers in i) Nano filtration ii) Electrodialysis. b) Explain the medical application of polymers in targeted drug delivery systems. (6+6) 5. a) Describe the preparation and uses of polymer blend and composites. b) What are nano composites ? Explain any one synthetic route of nano composites. c) Write a note on application of polymers in food industry. (6+3+3)6. a) Explain nematic, smectic and cholesteric phases of liquid crystals. b) Discuss in detail the optical properties of liquid crystals. (6+6)7. a) Write a note on tight in proviners in i) Lyotropic liquid crystals. ii) LED materials. b) What are NLO materials ? What are the essential conditions for an organic molecule to exhibit NLO properties ? c) Explain briefly the theoretical treatment of liquid crystals. (6+3+3)8. a) What are Langmuir-Blodgett films ? Explain the principle and procedure for their preparations. Mention the applications of these films. b) Explain : Te on app 導作 prolyman in logad in aut the i) sol-gel method of preparation of thin films. ii) Photolithography. (6+6)iping plant éla tof lín uí dí chyara ha 9. a) What are fullerenes? How are they prepared? Explain the superconductivity of doped fullerenes. b) Write a note on : i) Organic superconductors in tangent decase that conduct of the second se ii) Magnetism in organic materials. (6+6) If the strain of a light discrete c 8. al N*thei* ar Langrand # films ? Ebalain die principia and procedure for strations, mations, In a spolication a of these fillant. the Copiesia

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