AS–1453

B.Sc. Part—III (Semester—V) Examination

PETROCHEMICAL SCIENCE

Time : Three Hours] [Maximum Marks : 80

Note :— (i) Question No **1** is compulsory.

(ii) Discuss the reaction, mechanisms wherever necessary.

(iii) Diagrams and chemical equations should be given wherever necessary.

(iv) Illustrate your answers with the help of neat sketches wherever is necessary.

1. (A) Fill in the blanks :

(i) Polymopylene produced by tetrachloride contains less _____ polymer, hence trichloride has been recommended.

(ii) Polyethylene can be produced by _____ mechanism.

(iii) Generic name of nylon is _____.

(iv) _____ process for dewaxing operation is time consuming. ½×4=2

(B) Choose correct alternative :

(i) In dewaxing process the chilling temperature is guided by the _____ of oil.

(a) Boiling point (b) Pour point

(c) Drop point (d) Smoke point

(ii) Copolymer containing 95–85% mole propylene and 5–15% mole ethylene are called as _____.

(a) Stereopolymer (b) Atactic polymer

(c) Polyallomer (d) Isotactic polymer

(iii) Acrylonitrile-butadiene copolymer are _____ copolymers.

(a) Random (b) Craft

(c) Alternating (d) None of the above

(iv) _____ is obtained as the ultimate bottom product of vaccum distillation column.

(a) Wax (b) Asphalt

(c) Grease (d) Lube oil ½×4=2

(C) Answer the following questions in **one** sentence :

(i) What is Monomer ?

(ii) Name the initiaters used for the vinyl chloride, vinyl acetate copolymer production.

(iii) Name the product obtained by dimerization of isobutylene.

(iv) Which is the better qualiy of butyl rubber ? 1×4=4

2. (A) What do you mean by monomer ? Mention any four polymers alongwith their monomers. 6

(B) Discuss the importance of size and shape in polymers. 6

OR

3. (P) Mention the unique properties of high polymers. 6

(Q) Discuss the bulk polymerization in detail. 6

4. (A) Discuss the development in the polymerization technology of propylene in brief. 3

(B) What are the various olefin polymers ? Mention the market for these polymers. 4

(C) Describe the ethylene-propylene copolymers. 5

OR

5. (P) Discuss the derivatives of polyethylene rubber. 6

(Q) Describe the gas phase polymerization of ethylene. 6

6. (A) How chloroprene monomer is formed ? Explain. 6

(B) Name the co-polymers of butadiene. Explain any one of them. 6

OR

7. (P) Explain the production of polyisoprene with the chemistry involved. 6

(Q) How the structure of butyl rubber is represented ? Discuss the manufacture of butyl rubber in brief. 6

8. (A) What is the impact of polystyrene ? Explain the chemistry of such rubber modified polystyrene. 6

(B) Mention the uses of polystyrene and polyvinyl chloride. 6

OR

9. (P) Discuss the mass polymerization for the manufacture of polystyrene, in detail. 6

(Q) Explain the reaction scheme of ABS formation. 6

10. (A) What are the uses of nylon and resins ? 4

(B) Discuss the production of polyethylene terephthalate with the chemistry involved. 8

OR

11. (P) Describe the manufacture of urea formaldehyde resin with the chemistry involved. 6

(Q) Discuss the production of nylon-6 with the chemistry and process parameters involved. 6

12. Discuss the Methyl-Ethyl-Ketone dewaxing process in detail with neat sketch of flow diagram and process parameters invovled. 12

OR

13. Explain the propane self-refrigeration process for the production of wax in detail with neat sketch of flow diagram and process parameters involved. 12