

B.Sc. Part—III Semester—V Examination

5S : PETROCHEMICAL SCIENCE

Time : Three Hours]

[Maximum Marks : 80

- Note** :—(1) Question No. 1 is compulsory and carries 8 marks.
 (2) The remaining **SIX** questions carry 12 marks each.
 (3) Draw a diagram and chemical equations wherever necessary.

1. (A) Fill in the blanks :— 2
- (i) The small molecule which is the building block of the giant polymer molecule is called _____.
- (ii) _____ polymerization offers polymers relatively free from any contamination.
- (iii) Polypropylene being _____ denser than polyethylene.
- (iv) _____ is the monomeric unit present in natural rubber.
- (B) Choose correct alternatives :— 2
- (i) Polyester results when condensation of diol takes place with a _____ acid.
- (a) Dicarboxylic (b) Monocarboxylic
 (c) Tricarboxylic (d) All of them
- (ii) Novalac resin is obtained with _____ formaldehyde phenol ratio.
- (a) Low (b) High
 (c) Medium (d) None of these
- (iii) _____ has become an attractive thing for making water floating objects.
- (a) Polyethylene (b) Polystyrene
 (c) Polyacrylonitrile (d) Polypropylene
- (iv) Polyethylene, nylon, acrylics are all examples of _____.
- (a) Thermoplastics (b) Thermosets
 (c) Thermocouple (d) Thermological

- (C) Answer in **ONE** sentence :—
- (i) Which components are obtained during low density polyethylene production along with gases ?
- (ii) How the molecular weight is controlled in polymerization of chloroprene ?
- (iii) Which emulsifiers are used in emulsion polymerization of styrene ?
- (iv) Which are the different forms of Wax ?
2. (A) "Justify plastic, rubbers and fibers are polymers." Describe all three with their physical properties. 6
- (B) Describe addition polymerization with reaction. 5
- OR**
3. (P) What is Copolymer ? Describe them according to their constituent monomeric unit. 6
- (Q) Describe mass polymerization process in detail. 5
4. (A) Describe copolymers of ethylene-propylene with mole percent in detail. 6
- (B) Discuss gas-phase polymerization of ethylene with respect to their process parameters and uses. 6
- OR**
5. (P) Describe year wise development in Polyethylene production. 6
- (Q) Describe high density polyethylene manufacture by Solvay process. 6
6. (A) Describe the process for diisobutylene with respect to their chemistry, process parameters and uses. 6
- (B) How we will manufacture nitrile rubber ? Give their chemistry. 6
- OR**
7. (P) Discuss the following in brief :—
- (i) Styrene butadiene block copolymer. 6
- (ii) Butyl Rubber composition, properties and uses. 6
8. (A) Describe suspension polymerization process for production of polystyrene with their uses. 6
- (B) Which are the Vinyl Polymers ? Discuss in detail. 6

OR

9. (P) Describe the chemistry process parameter for production of acrylonitrile—butadiene-styrene copolymer. 6
(Q) Describe Poly vinyl Chloride production with respect to their process parameter and uses. 6
10. (A) Discuss the following Nylons in detail :—
(i) Nylon-6 4
(ii) Nylon-6.6 4
(iii) Nylon-12. 4

OR

11. (P) Describe Phenolic resins with respect to their chemistry and process parameter. 6
(Q) How unsaturated polyesters formed ? Discuss with respect to their chemistry and process parameter. 6
12. (A) Describe Ketone dewaxing with respect to their process flow, process parameter and process description. 12

OR

13. (P) Discuss air blowing process for bitumen with well labeled diagram. 12

