ORGANIC CHEMISTRY

POLYMER

1. In the following reactions, P, Q, R and S are the major products.

[JEE(Advanced) 2023]

$$(i) \text{KMnO}_4, \text{KOH}, \Delta \\ (ii) \text{H}_3 \text{O}^{\oplus} \end{pmatrix} P$$

$$MeOOC \qquad COCI \qquad (i) \text{NaOH}, \text{H}_2 \text{O} \\ (ii) \text{H}_3 \text{O}^{\oplus} \end{pmatrix} Q$$

$$(i) \text{H}_3 \text{O}^{\oplus}, \Delta \\ (ii) \text{H}_2 \text{CrO}_4 \end{pmatrix} R$$

$$(i) \text{Mg}, \text{dry ether} \\ (ii) \text{CO}_2, \text{then H}_3 \text{O}^{\oplus} \\ (iii) \text{Ammoniacal AgNO}_3, \text{H}_3 \text{O}^{\oplus} \end{cases} S$$

The correct statement (s) about P, Q, R, and S is (are)

- (A) \mathbf{P} and \mathbf{Q} are monomers of polymers dacron and glyptal, respectively.
- (B) **P**, **Q**, and **R** are dicarboxylic acids.
- (C) Compounds \mathbf{Q} and \mathbf{R} are the same.
- (D) R does not undergo aldol condensation and S does not undergo Cannizzaro reaction.
- **2.** Among the following, the correct statement(s) about polymers is(are)

[JEE(Advanced) 2022]

- (A) The polymerization of chloroprene gives natural rubber.
- (B) Teflon is prepared from tetrafluoroethene by heating it with persulphate catalyst at high pressures.
- (C) PVC are thermoplastic polymers.
- (D) Ethene at 350-570 K temperature and 1000-2000 atm pressure in the presence of a peroxide initiator yields high density polythene.
- **3.** On complete hydrogenation, natural rubber produces

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- (A) ethylene-propylene copolymer
- (B) vulcanised rubber
- (C) polypropylene
- (D) polybutylene

SOLUTIONS

1. Ans. (C, D)

Sol.

$$\begin{array}{c} & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & \\ & & & \\ &$$

Br
$$MgBr$$
 Mg
 $Dry e ther$
 $O = C = O$
 $O = C = O$

2. Ans. (B, C)

Sol. (a) The polymerisation of neoprene gives natural rubber.

- (b) is correct statement
- (c) is correct statement
- (d) Ethene at 350-570 K temperature and 1000-2000 atm pressure in the pressure of a peroxide initiator yields low density polythene.

3. Ans. (A)

Sol.
$$CH_3$$
 $CH_2 = C - CH = CH_2$

Isoprene

 CH_3
 $CH_2 - C = CH - CH_2$
 $CH_2 - C = CH - CH_2$

Natural rubber
 $H_2(excess)$
catalyst

 $CH_2 = CH_2 + CH_2 = CH$

Ethylene

Propylene

 CH_3
 CH_3
 CH_3
 CH_4
 CH_5
 CH_5
 CH_7
 $COpolymerisation$
 CH_8
 CH_8
 CH_8
 CH_9
 CH_9
 CH_9
 $COpolymerisation$
 CH_9
 $COpolymerisation$
 CH_9
 CH_9