SOLUTION TEST-A

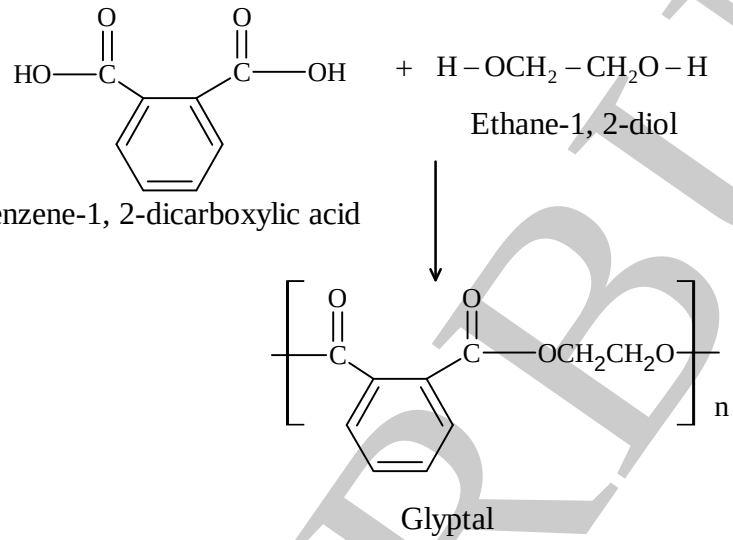
1. Proteins are natural polyamides

   The correct answer is (iii)

2. Novolac is a thermoplastic polymer.

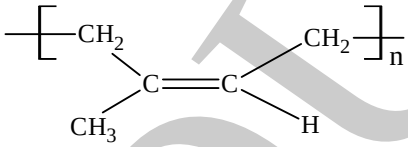
   The correct answer is (ii)

3. Glyptal is a polyester



   The correct answer is (i)

4. Both assertion and reason are the correct statements. Natural rubber is a cis isomer of 1, 4-polyisoprene.



Natural rubber.

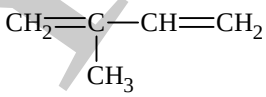
   The correct answer is (ii)

5. Bakelite is a cross-linked polymer which is derived when novolac is heated with formaldehyde. Bakelite is a thermosetting polymer which cannot be remoulded once set a desired shape.

   The correct answer is (i)

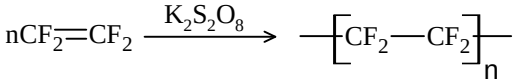
6. Buna-S < Polythene < Nylon-66 < Bakelite

7. Name: 2-methyl butadiene-1, 3

   Structure: 

8. PTFE stands for polytetra fluoro ethene

   Preparation:



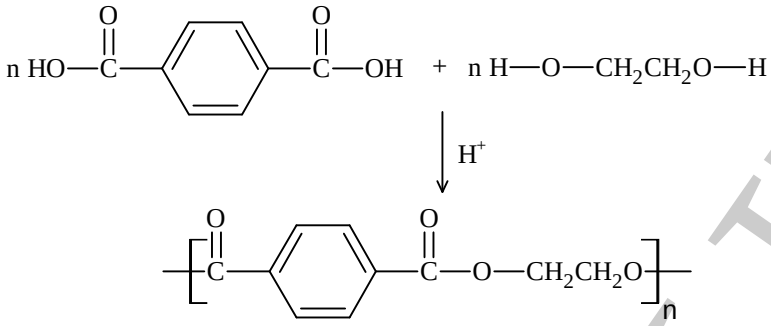
   PTFE is an addition homopolymer.

9. Monomers of Dacron:

(i) Terephthalic acid

(ii) Ethylene glycol

It is prepared by the condensation reaction in the presence of acid catalyst.



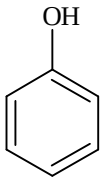
Dacron

10. (i) Benzoyl peroxide

Tert-butyl peroxide

(ii) The process of adding molten sulphur to molten rubber at a temperature 373 to 415K to improve the properties of rubber is called **vulcanization of rubber**.

11. (i) Monomer and structures of Novolac are



Phenol

and HCHO formaldehyde

Novolac is used in paints.

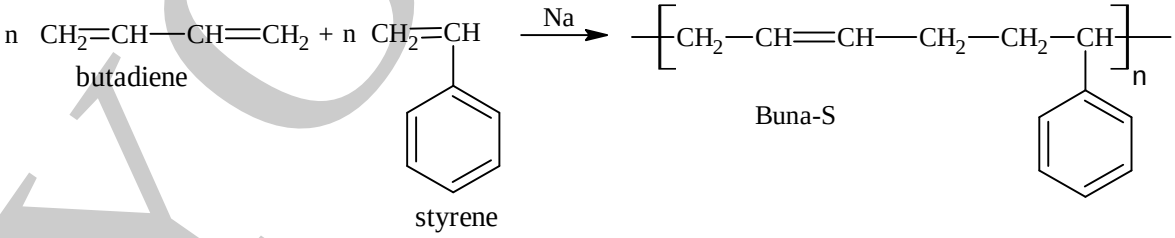
(ii) Polymer which is derived by the polymerisation of only one kind of monomer is called homopolymer. Example: Polythene, PVC.

Polymer derived from the polymerisation of two different monomers is called copolymer.

Example: Nylon-66, Terelene.

12. Buna-N is an addition copolymer of butadiene and acrylonitrile. Buna-S is an addition copolymer of butadiene and styrene.

Preparation of Buna-S is



butadiene

styrene

Buna-S

Buna-S is used in Hose pipes, rubber parts in automobile industry.

13. (i) $(H_3C)_3—\overset{\curvearrowleft}{O}—\overset{\curvearrowright}{O}—C(CH_3)_3 \longrightarrow 2(CH_3)_3C\dot{O}$

t-butyl peroxide

Step-I Chain initiation $(CH_3)_3C\dot{O} + CH_2 = CH_2 \longrightarrow (CH_3)_3COCH_2\dot{C}H_2$

Step-II Chain propagation $(CH_3)_3COCH_2\dot{C}H_2 \xrightarrow{nCH_2=CH_2} (CH_3)_3CO(CH_2CH_2)_nCH_2\dot{C}H_2$

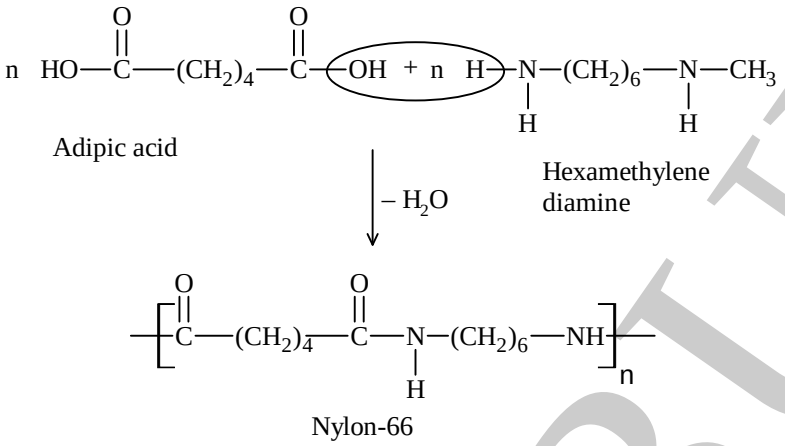
Step-III Chain termination

$$(CH_3)_3CO(CH_2CH_2)_nCH_2\dot{C}H_2 \xrightarrow{-H^{\bullet}} (CH_3)_3CO(CH_2CH_2)_nCH = CH_2$$

(ii) The double bonds in the rubber molecules determine the configuration. The cis configuration makes the rubber soft. The double bond is also the site of reactivity. On vulcanisation, sulphur forms cross links at these reactive sites. Thus, the rubber gets stiffened and results in change of physical character of rubber.

14. (i) In Nylon-6, the number 6 stands for the presence of only one raw material containing six carbon atom. In Nyon-66, there are two raw materials, each containing six carbon atom.

(ii)



Nylon-66

(iii) Properties: Nylon-66 is strong fibre with high elasticity and tensile strength.

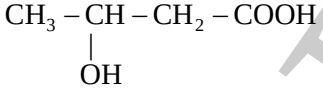
(v) Nylon-66 shows drip and dry property.

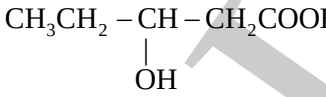
Uses:

- In making surgical threads and surgical gloves.
- In textile industry.

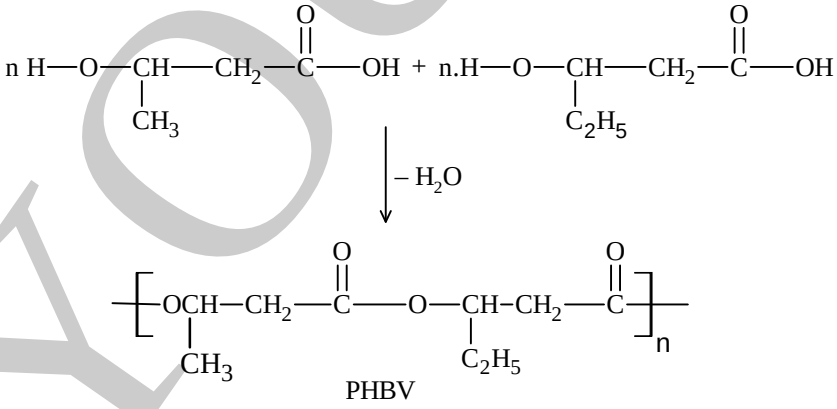
15. (i) PHBV

(ii) Poly-β-hydroxy butyrate-co-β–hydroxy valerate.

(iii)  β-hydroxy butyric acid and

 β-hydroxy valeric acid.

(iv)



PHBV

(v) PHBV is a condensation copolymer.

