

1. Polymer used in orlon is:

[2023 (06 Apr Shift 1)]

- (1) Polyethene
- (2) Polycarbonate
- (3) Polyamide
- (4) Polyacrylonitrile

2. Match List-I with List-II.

	List-I Polymer		List-II Type/Class
A.	Nylon-2-Nylon-6	I.	Thermosetting polymer
B.	Buna-N	II.	Biodegradable polymer
C.	Ureaformaldehyde resin	III.	Synthetic rubber
D.	Dacron	IV.	Polyester

Choose the correct answer from the options given below:

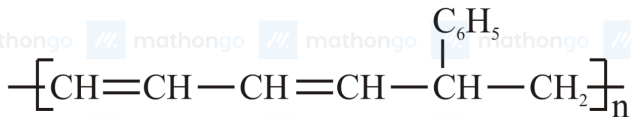
[2023 (10 Apr Shift 1)]

- (1) A → IV; B → I; C → II; D → II
- (2) A → II; B → III; C → I; D → IV
- (3) A → IV; B → III; C → I; D → II
- (4) A → II; B → I; C → IV; D → III

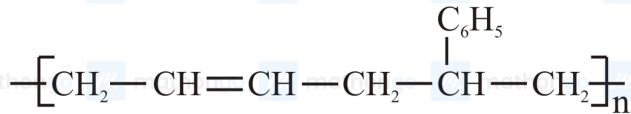
3. Buna – S can be represented as:

[2023 (10 Apr Shift 2)]

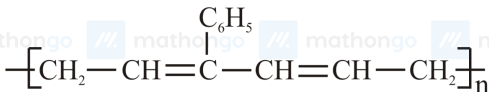
(1)



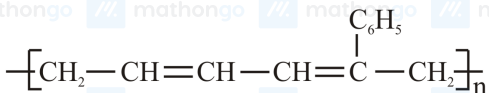
(2)



(3)



(4)



4. The polymer X-consists of linear molecules and is closely packed. It is prepared in the presence of trimethylammoniumpropyl and titanium tetrachloride under low pressure. The polymer X is

[2023 (11 Apr Shift 1)]

- (1) High density polythene
- (2) Polyacrylonitrile
- (3) Low density polythene
- (4) Polytetrafluoroethane

5. Given below are two statements:

Statement I: Ethane at 333 to 343 K and 6 – 7 atm pressure in the presence of AlEt_3 and TiCl_4 undergoes addition polymerization to give LDP.

Statement II: Caprolactam at 533 – 543 K in H_2O through step growth polymerizes to give Nylon 6.

In the light of the above statements, choose the correct answer from the options given below:

[2023 (11 Apr Shift 2)]

- (1) **Statement I** is false but **Statement II** is true
- (2) **Statement I** is true but **Statement II** is false
- (3) Both **Statement I** and **Statement II** are true
- (4) Both **Statement I** and **Statement II** are false

6. Match List I with List II

	List I (Example)		List II (Type)
A	2-chloro-1, 3-butadiene	I	Biodegradable polymer
B	Nylon 2-nylon 6	II	Synthetic Rubber
C	Polyacrylonitrile	III	Polyester
D	Dacron	IV	Addition Polymer

Choose the correct answer from the options given below:

[2023 (12 Apr Shift 1)]

- (1) A(II), B(IV), C(I), D(III)
- (2) A(II), B(I), C(IV), D(III)
- (3) A(IV), B(I), C(III), D(II)
- (4) A(IV), B(III), C(I), D(II)

7. Match the following

	Column–A		Column–B
a.	Nylon 6	I.	Natural Rubber
b.	Vulcanized Rubber	II.	Cross Linked
c.	cis–1, 4–polyisoprene	III.	Caprolactam
d.	Polychloroprene	IV.	Neoprene

Choose the correct answer from options given below:

[2023 (13 Apr Shift 1)]

- (1) a → III, b → II, c → I, d → IV
- (2) a → III, b → IV, c → I, d → II
- (3) a → IV, b → III, c → II, d → I
- (4) a → II, b → III, c → IV, d → I

8. Match List I with List II:

	List I (Monomer)		List II (Polymer)
(A)	Tetrafluoroethene	(I)	Orlon
(B)	Acrylonitrile	(II)	Natural rubber
(C)	Caprolactam	(III)	Teflon
(D)	Isoprene	(IV)	Nylon-6

Choose the correct answer from the options given below:

[2023 (15 Apr Shift 1)]

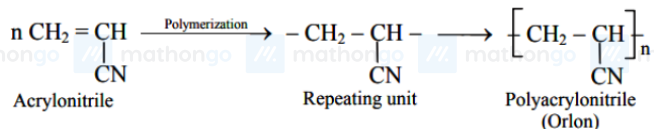
- (1) (A)–(III), (B)–(I), (C)–(IV), (D)–(II)
- (2) (A)–(IV), (B)–(I), (C)–(II), (D)–(III)
- (3) (A)–(III), (B)–(IV), (C)–(II), (D)–(I)
- (4) (A)–(II), (B)–(III), (C)–(IV), (D)–(I)

ANSWER KEYS

1. (4) 2. (2) 3. (2) 4. (1) 5. (1) 6. (2) 7. (1) 8. (1)

1. (4)

The addition polymerisation of acrylonitrile in presence of a peroxide catalyst leads to the formation of polyacrylonitrile. The commercial name of polyacrylonitrile is orlon (acrilan). That is, it is used as a substitute for wool in making commercial fibres as orlon or acrilan.



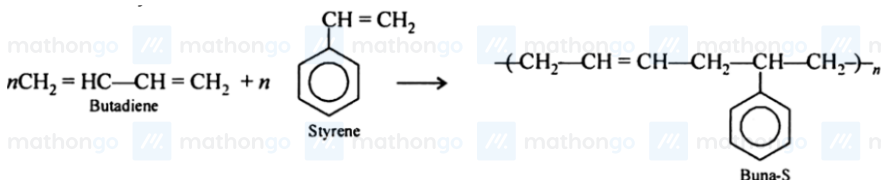
2. (2)

Thermoset plastics retain their form and stay solid under heat once cured. Urea-formaldehyde is an example of thermosetting polymer. Polymers which disintegrate by themselves over a period of time due to environmental degradation by bacteria etc. are called biodegradable polymers.

Nylon-2-nylon-6 is an example of biodegradable polymer. Any artificial elastomer is referred to as synthetic rubber. Buna-N is an example of synthetic rubber. Polyester is a synthetic or man-made fiber material. Dacron is an example polyester.

3. (2)

Buna-S is a copolymer of 1,3-butadiene and styrene. It is prepared by copolymerisation of 1,3 butadiene and styrene along with sodium. In this process peroxide is used as a catalyst at 5°C therefore the formed product is also known as cold rubber.



4. (1) High-density polyethylene (HDPE) is commonly prepared in the presence of a Ziegler-Natta catalyst.

The information provided describes the preparation and characteristics of a high-density polyethylene (HDPE) polymer. HDPE is a widely used thermoplastic polymer known for its high strength, durability, and excellent chemical resistance.

The presence of trimethylammoniumpropyl (TMP) and titanium tetrachloride (TiCl₄) indicates that the polymerization process is likely carried out using a Ziegler-Natta catalyst system. This catalyst system enables the production of high-density polyethylene by controlling the polymerization conditions.

5. (1)

Low Density Polyethylene is obtained by the polymerisation of ethene under high pressure of 1000 – 2000 atm at 350 – 570 K in the presence of an initiator.

High Density Polyethylene is obtained when polymerisation is done in the presence of Ziegler-Natta catalyst at 333 – 343K under 6 – 7 atm pressure. Nylon-6 is manufactured from the monomer called caprolactam. The monomer caprolactam is heated at 533 – 543K in an inert atmosphere, it polymerises to give nylon-6.

6. (2)

2-chloro-1,3-butadiene can undergo polymerization to form a polymer known as polychloroprene. Polychloroprene is a synthetic rubber commonly known as neoprene.



Polyacrylonitrile (PAN) is an addition polymer. Addition polymers are formed through a polymerization process called addition polymerization, where monomers add to each other without the loss of any small molecules. Nylon-2-nylon-6 is Biodegradable polymer. Dacron is a type of polyester. Polyester is a polymer that belongs to the polyester family of polymers.

So, A-II; B-I; C-IV; D-III

7. (1)

Nylon 6 or polycaprolactam is a polymer, in particular semicrystalline polyamide.

Vulcanization is a chemical process in which the rubber is heated with sulphur, accelerator and activator at 140–160°C. The process involves the formation of cross-links between long rubber molecules to achieve improved elasticity, resilience, tensile strength, viscosity, hardness and weather resistance.

Polychloroprene is the polymer name for the synthetic rubber known as neoprene.

Natural rubber is the only addition polymer found in nature and is known as Cis - 1,4 - polyisoprene.

8. (1) Orlon is a man-made polymer of acrylonitrile. Thus, its monomer is vinyl cyanide or Prop-2-ene-1-nitrile. Natural Rubber is obtained from latex which is a sap of a tree. Natural rubber is a polymer of isoprene. Teflon is made of a chemical compound named polytetrafluoroethylene (PTFE) which is a synthetic fluoropolymer. Nylon-6 is produced by ring-opening chain growth polymerisation of caprolactam in the presence of water vapour and an acid catalyst at the melt.

