

EXERCISE - O

SINGLE CORRECT TYPE QUESTIONS

Introduction and Classification of Polymer

1. Starch is a polymer of
 (A) α -D-Glucose (B) β -D-Glucose
 (C) α -D-Glucose and β -D-Glucose (D) α -D-Fructose
 CPL091
2. Polymer which has amide linkage is
 (A) Nylon-6, 6 (B) Terylene (C) Teflon (D) Bakelite
 CPL092
3. Number average molecular mass ($\bar{M}_n$) and weight average molar mass ($\bar{M}_w$) of synthetic polymers are related as
 (A) $\bar{M}_n < \bar{M}_w$ (B) $\bar{M}_n > \bar{M}_w$ (C) $\bar{M}_n = \bar{M}_w$ (D) $M_n > M_w$
 CPL093

Molecular Forces, Degradation and Mode of Polymerization

4. Which of the following is wrong ?
 (A) PMMA is called plexiglass (B) PTFE is called teflon
 (C) SBR is called natural rubber (D) LDPE is called low density polyethylene
 CPL094

Addition Polymers and Vulcanization of Rubber

5. Ziegler-Natta catalyst is
 (A) $K[PtCl_3(C_2H_4)]$ (B) $(Ph_3P)_3RhCl$ (C) $Al_2(C_2H_5)_6 + TiCl_4$ (D) $Fe(C_5H_5)_2$
 CPL095
6. Monomer of given polymer $\left[\begin{array}{c} CH_3 \\ | \\ -C-CH_2- \\ | \\ CH_3 \end{array} \right]_n$ is
 (A) 2-Methylpropene (B) Styrene (C) Propylene (D) Ethene
 CPL096
7. Buna-S is a polymer of
 (A) Butadiene only (B) Butadiene and nitrile
 (C) Styrene only (D) Butadiene and styrene
 CPL097
8. The polymerization reaction shown below

$$2CH \equiv CH \xrightarrow{CuCl} CH \equiv C-CH=CH_2 \xrightarrow[Cu_2Cl_2/NH_4Cl]{HCl}$$

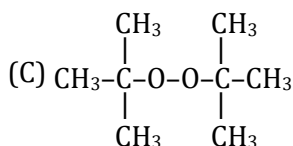
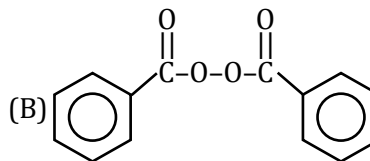
$$CH_2=C(Cl)-CH=CH_2 \xrightarrow[(2) \text{ Polymerisation}]{(1) CH_3MgCl} \left[CH_2-C(CH_3)=CH-CH_2 \right]_n$$
 would produce
 (A) PVC (B) neoprene (C) chloroprene (D) Rubber
 CPL098

9. Which of the following polymerises the most easily ?
 (A) $\text{CH}_3\text{CH}_2\text{C}\equiv\text{CH}$ (B) $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$
 (C) $\text{CH}_3\text{CH}_2-\text{CH}=\text{CH}_2$ (D) $\text{CH}\equiv\text{C}-\text{C}\equiv\text{CH}$

CPL099

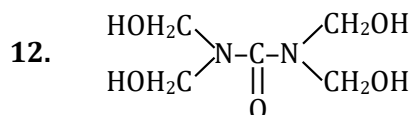
Condensation Polymer and Free Radical Mechanism of Addition Polymers

10. Condensation product of caprolactam is
 (A) nylon-6 (B) nylon-6, 6 (C) nylon-6, 0 (D) nylon-6, 10
11. Which of the following is radical initiator ?



(D) All

CPL101



The polymer obtained by the above compound is

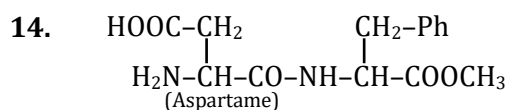
- (A) Bakelite (B) Urea formaldehyde resin
 (C) Melamine formaldehyde resin (D) Teflon

CPL102

13. Which of the following is a condensation polymer ?
 (A) Polystyrene (B) PVC (C) Polyester (D) Teflon

CPL103

Miscellaneous



Aspartame is 160 times as sweet as sucrose and used as a sugar substitute. The correct statement(s) about aspartame is (are)

- I. It is an ester derivative of dipeptide
 II. It can be named as aspartyl phenylalanine methyl ester
 III. It is tripeptide.
 IV. It is having four functional groups.

- (A) I, II (B) I, II, IV (C) II, III, IV (D) only II

CPL104

15. Which of the following contains isoprene unit ?
 (A) Natural-rubber (B) Polyethylene (C) Nylon-6, 6 (D) Dacron

CPL105

MATRIX MATCH TYPE QUESTION

Molecular Forces, Degradation and Mode of Polymerization

16. Match the items given in column I with those in column II.

Column I (Polymer)		Column II (Uses)	
a.	PHBV	p.	Non-sticky surface of cooking pans.
b.	PCTFE	q.	Transparent domes.
c.	PMMA	r.	Paints, lacquers
d.	Glyptal	s.	Control drug release

(A) a-s, b-p, c-r, d-q

(B) a-s, b-r, c-q, d-p

(C) a-s, b-p, c-q, d-r

(D) a-r, b-q, c-p, d-s

CPL106

Addition Polymers and Vulcanization of Rubber

17. Match the items given in column I with those in column II.

Column-I (Structure)		Column-II (Polymer)	
a.		p.	Polyisobutylene
b.		q.	PEA
c.		r.	Melmac
d.		s.	Dacron
e.		t.	Perlon

(A) a-r, b-t, c-p, d-q, e-s

(B) a-r, b-t, c-p, d-s, e-q

(C) a-t, b-r, c-s, d-q, e-s

(D) a-r, b-t, c-s, d-p, e-q

CPL107

COMPREHENSION TYPE QUESTIONS

Introduction and Classification of Polymer

For questions 18-20

The utility of polymers in various fields is due to their mechanical properties like tensile strength, elasticity, toughness, etc. These properties mainly depend upon intermolecular forces like van der Waals forces and hydrogen bonding operating in polymer molecules. Polymers have been classified on this basis as e.g.

(i) Elastomers (ii) Fibres (iii) Thermoplastics (iv) Thermosetting

18. The molecular forces of attraction are the weakest in

(A) elastomers (B) fibres (C) thermoplastics (D) thermosetting polymers

CPL108

19. Which of the following have usually a linear structure?

(A) Thermoplastics (B) Thermosetting polymers
(C) Polyethylene (D) Nylon-6, 6

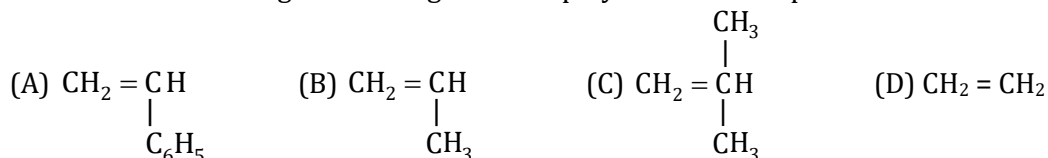
CPL109

20. Which of the following is hard?
 (A) Elastomer (B) Fibre (C) Thermoplastic (D) Thermosetting polymers
CPL110

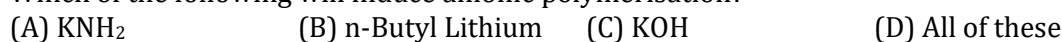
Miscellaneous**For questions 21-23**

Polymerisation involves various mechanisms depending upon the initiator. If initiator generates free radical, addition polymerisation takes place through free radical mechanism. If H^+ is initiator and electron releasing group is present, cationic polymerisation takes place. If electron withdrawing group is present and KNH_2 is initiator, anionic polymerisation takes place.

21. Which of the following will undergo anionic polymerisation in presence of KNH_2 ?

**CPL111**

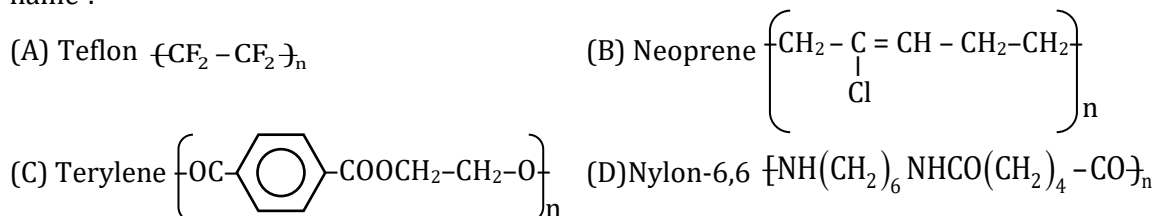
22. Which of the following will induce anionic polymerisation?

**CPL112**

23. Which of the following will undergo cationic polymerisation in presence of H^+ ?

**CPL113****MULTIPLE CORRECT TYPE QUESTIONS****Addition Polymers and Vulcanization of Rubber**

24. Structure of some common polymers are given. Which is/are correctly matched with its/their name?

**CPL114****Miscellaneous**

25. The correct statement(s) about peptides is/are
 (A) A dipeptide has one peptide link between two amino acids.
 (B) By convention N-Terminus is kept at left and C-terminus at right in the structure of a peptide
 (C) If only one amino group and one carboxylic acid, group are available for reaction, then only one dipeptide can form.
 (D) A polypeptide with more than hundred amino acid residues (mol. mass > 10,000) is called a protein.
CPL115
26. Preparation of nylon from hexamethylene diamine and adipic acid is an example of
 (A) addition polymerisation (B) homopolymerisation
 (C) condensation polymerisation (D) copolymerisation
CPL116

EXERCISE - S***Introduction and Classification of Polymer***

1. PDI for natural polymers is generally close to

CPL117***Addition Polymers and Vulcanization of Rubber***

2. An acidic resin can be made by the polymerization of 4-vinylpyridine initiated by AIBN and heat followed by treatment of the polymer with bromoacetate. How many (C = C) bonds are in conjugation with each other in 4-vinylpyridine ?

CPL118***Condensation Polymer and Free Radical Mechanism of Addition Polymers***

3. How many of the following is/are a condensation polymer ?
- | | |
|-----------------|----------------------------------|
| (A) Polystyrene | (B) Neoprene |
| (C) PAN | (D) Poly(ethylene terephthalate) |

CPL119

EXERCISE - JEE (Main) PYQ

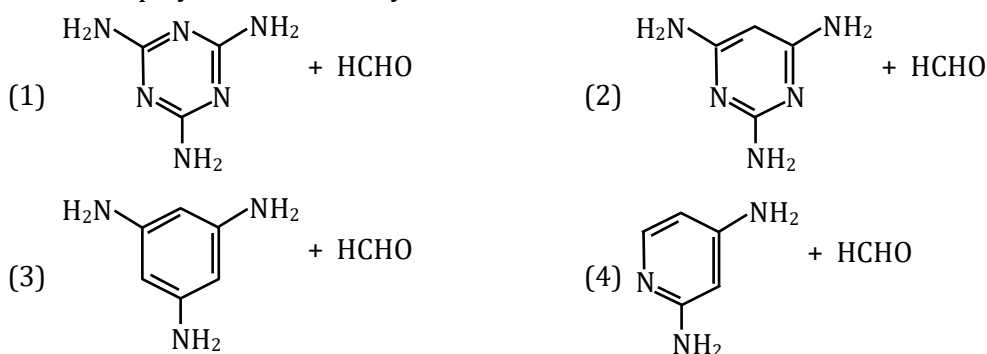
1. Which of the following is **not** an example of a condensation polymer? [JEE (Main) 2022]
 (1) Nylon 6,6 (2) Decron (3) Buna-N (4) Silicone

CPL062

2. Which of the following is an example of polyester? [JEE (Main) 2022]
 (1) Butadiene-styrene copolymer
 (2) Melamine polymer
 (3) Neoprene
 (4) Poly- β -hydroxybutyrate-co- β -hydroxy valerate

CPL063

3. Melamine polymer is formed by the condensation of : [JEE (Main) 2022]



CPL064

4. Match List I with List II : [JEE (Main) 2022]

	List-I Polymer		List-II used for items
A.	Nylon 6,6	I.	Buckets
B.	Low density polythene	II.	Non-stick utensils
C.	High density polythene	III.	Bristles of brushes
D.	Teflon	IV.	Toys

Choose the correct answer from the options given below:

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

CPL065

5. Match List-I with List-II. [JEE (Main) 2022]

List-I
(Polymer)

- (A) Neoprene
 (B) Teflon
 (C) Acrilan
 (D) Natural rubber

List-II
(Monomer)

- (I) Acrylonitrile
 (II) Chloroprene
 (III) Tetrafluoroethene
 (IV) Isoprene

Choose the correct answer from the option given below:

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

CPL120

6. Terylene polymer is obtained by condensation of :

[JEE (Main) 2022]

- (1) Ethane-1, 2-diol and Benzene-1, 3 dicarboxylic acid
- (2) Propane-1, 2-diol and Benzene-1, 4 dicarboxylic acid
- (3) Ethane-1, 2-diol and Benzene-1, 4 dicarboxylic acid
- (4) Ethane-1, 2-diol and Benzene-1, 2 dicarboxylic acid

CPL121

7. Match List I with List II.

[JEE (Main) 2022]

	List-I (Polymers)		List-II (Nature)
A.	$\left(\text{CH}_2 - \underset{\text{Cl}}{\text{C}} = \text{CH} - \text{CH}_2 \right)_n$	I.	Thermosetting polymer
B.	$\left(\overset{\text{H}}{\text{N}} - (\text{CH}_2)_6 - \overset{\text{H}}{\text{N}} - \overset{\text{O}}{\parallel} \text{C} - (\text{CH}_2)_4 - \overset{\text{O}}{\parallel} \text{C} \right)_n$	II.	Fibers
C.	$\left(\text{CH}_2 - \underset{\text{Cl}}{\text{CH}} \right)_n$	III.	Elastomer
D.	$\left(\text{C}_6\text{H}_4(\text{OH}) - \text{CH}_2 - \text{C}_6\text{H}_4(\text{OH}) - \text{CH}_2 \right)_n$	IV.	Thermoplastic polymer

Choose the correct answer from the options given below:

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

CPL122

8. Which of the following is **NOT** a natural polymer?

[JEE (Main) 2022]

- (1) Protein
- (2) Starch
- (3) Rubber
- (4) Rayon

CPL123

9. Match List-I and List-II.

[JEE (Main) 2023]

List-I	List-II
A. Elastomeric polymer	I. Urea formaldehyde resin
B. Fibre polymer	II. Polystyrene
C. Thermosetting polymer	III. Polyester
D. Thermoplastic polymer	IV. Neoprene

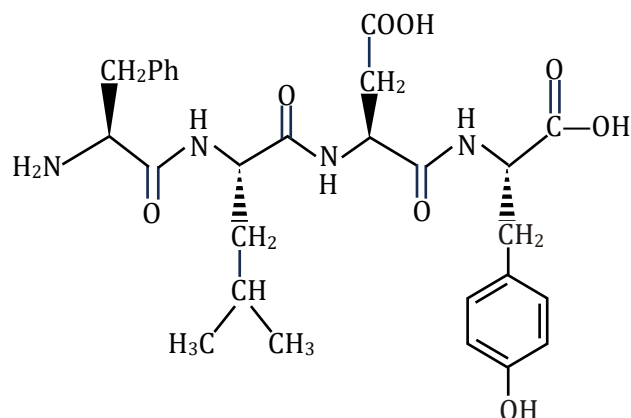
Choose the correct answer from the options given below:

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

CPL066

10. Following tetrapeptide can be represented as

[JEE (Main) 2023]



(F, L, D, Y, I, Q, P are one letter codes for amino acids)

- (1) FIQY (2) FLDY
(3) YQLF (4) PLDY

CPL124

11. Caprolactam when heated at high temperature in presence of water, gives

[JEE (Main) 2023]

- (1) Teflon (2) Dacron
(3) Nylon 6, 6 (4) Nylon 6

CPL067

12. Match List I with List II

List-I

(Name of polymer)

A. Glyptal

B. Neoprene

C. Acrilan

D. LDP

List-II

(Uses)

I. Flexible pipes

II. Synthetic wool

III. Paints and Lacquers

IV. Gaskets

Choose the correct answer from the options given below :-

[JEE (Main) 2023]

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

CPL068

13. A short peptide on complete hydrolysis produces 3 moles of glycine (G), two moles of leucine (L) and two moles of valine (V) per mole of peptide. The number of peptide linkages in it are ____.

[JEE (Main) 2023]

CPL125

14. Polymer used in orlon is:

[JEE (Main) 2023]

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

CPL126

15. Match List I with List II

[JEE (Main) 2023]

List-I

Polymer

- (A) Nylon-2-Nylon-6
(B) Buna-N
(C) Urea-formaldehyde
(D) Dacron

List-II

Type/Class

- (I) Thermosetting Polymer
(II) Biodegradable polymer
(III) Synthetic rubber resin
(IV) Polyester

Choose the correct answer from the options given below:

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

CPL127

16. Buna-S can be represented as:

[JEE (Main) 2023]

- (1) $\left[\text{CH}=\text{CH}-\text{CH}=\text{CH}-\overset{\text{C}_6\text{H}_5}{\underset{|}{\text{CH}}}-\text{CH}_2 \right]_n$
(2) $\left[\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\overset{\text{C}_6\text{H}_5}{\underset{|}{\text{CH}}}-\text{CH}_2 \right]_n$
(3) $\left[\text{CH}_2-\text{CH}=\overset{\text{C}_6\text{H}_5}{\underset{|}{\text{C}}}-\text{CH}=\text{CH}-\text{CH}_2 \right]_n$
(4) $\left[\text{CH}_2-\text{CH}=\text{CH}-\text{CH}=\overset{\text{C}_6\text{H}_5}{\underset{|}{\text{C}}}-\text{CH}_2 \right]_n$

CPL128

17. The polymer X – consists of linear molecules and is closely packed. It is prepared in the presence of triethylaluminium and titanium tetrachloride under low pressure. The polymer X is –

[JEE (Main) 2023]

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

CPL129

18. Given below are two statements :

[JEE (Main) 2023]

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

Statement II : Caprolactam at 533-543K in H_2O through step growth polymerizes to give Nylon 6. In the light of the above Statements, chose the correct answer from the options given below :

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

CPL130

19. Match the following

[JEE (Main) 2023]

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 option given below:

(1) a → IV, b → III, c → II, d → I

(2) a → III, b → IV, c → I, d → II

(3) a → II, b → III, c → IV, d → I

(4) a → III, b → II, c → I, d → IV

CPL131

20. Match List I with List II

[JEE (Main) 2023]

	LIST-I		LIST-II
A.	Weak intermolecular forces of attraction	I.	Hexamethylenediamine + adipic acid
B.	Hydrogen bonding	II.	AlEt ₃ + TiCl ₄
C.	Heavily branched polymer	III.	2-chloro-1, 3-butadiene
D.	High density polymer	IV.	Phenol + formaldehyde

Choose the correct answer from the options given below:

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

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

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

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

CPL132

21. Match List I with List II:

[JEE (Main) 2023]

List I-(Monomer)

(A) Tetrafluoroethene

(B) Acrylonitrile

(C) Caprolactam

(D) Isoprene

List II-(Polymer)

(i) Orlon

(ii) Natural rubber

(iii) Teflon

(IV) Nylon-6

Choose the correct answer from the options given below :

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

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

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

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

CPL133

EXERCISE - JEE (Advanced) PYQ

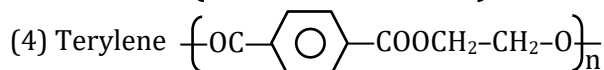
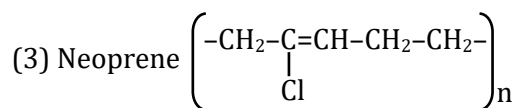
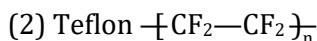
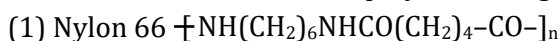
1. The total number of lone-pairs of electrons in melamine is [JEE (Advanced) 2013]
CPL089
2. On complete hydrogenation, natural rubber produces [JEE (Advanced) 2016]
(A) Ethylene-propylene copolymer (B) Vulcanised rubber
(C) Polypropylene (D) Polybutylene
CPL090
3. Choose the correct option(s) from the following [JEE (Advanced) 2019]
(A) Natural rubber is polyisoprene containing *trans* alkene units
(B) Nylon-6 has amide linkages
(C) Cellulose has only α -D-glucose units that are joined by glycosidic linkages
(D) Teflon prepared by heating tetrafluoroethene in presence of a persulphate catalyst at high pressure
CPL134
4. 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.
CPL135

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

- This section contains **TWENTY** questions.
- Each question has **FOUR** options (1), (2), (3) and (4). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
Full Marks : +4, if only the bubble corresponding to the correct option is darkened.
Zero Marks : 0, if none of the bubbles is darkened.
Negative Marks : -1 in all other cases

- | | | |
|----|---|--------|
| 1. | Which of the following is monomer unit of polystyrene:-
(1) $\text{CH}_2=\text{CH}$
<div style="text-align: center;">
CN</div> (2) $\text{CF}_2=\text{CF}_2$ (3) $\text{CH}_2=\text{CH}$
<div style="text-align: center;">
Cl</div> (4) $\text{CH}=\text{CH}_2$
<div style="text-align: center;">
C₆H₅</div> | CPL001 |
| 2. | Weakest intermolecular forces are present in :-
(1) Neoprene (2) Terylene (3) Polystyrene (4) Bakelite | CPL002 |
| 3. | Thermosetting polymer, Bakelite is formed by the reaction of phenol with :-
(1) $\text{CH}_3\text{CH}_2\text{CHO}$ (2) CH_3CHO (3) HCHO (4) HCOOH | CPL003 |
| 4. | Which one is classified as a condensation polymer?
(1) Teflon (2) Acrylonitrile (3) Dacron (4) Neoprene | CPL004 |
| 5. | Novolac is a :
(1) linear polymer of urea and formaldehyde
(2) crosslink polymer of urea and formaldehyde
(3) linear polymer of phenol and formaldehyde
(4) crosslink polymer of phenol and formaldehyde | CPL005 |
| 6. | Which of the following is not a semisynthetic polymer.
(1) cis-polyisoprene (2) cellulose nitrate
(3) cellulose acetate (4) vulcanised rubber | CPL006 |
| 7. | Which one of the following polymers is prepared by condensation polymerization
(1) Styrene (2) Nylon-6,6 (3) Teflon (4) Rubber | CPL007 |
| 8. | Which of the following statement is not true :
(1) Natural rubber has the trans-configuration at every double bond.
(2) Buna-S is a copolymer of butadiene and styrene.
(3) Natural rubber is a 1, 4-polymer of isoprene.
(4) In vulcanization, the formation of sulphur bridges between different chains make rubber harder and stronger. | |

9. Structures of some common polymers are given. Which one is not correctly presented ?



CPL009

10. Of the following which one is classified as polyester polymer?

(1) Terylene

(2) Bakelite

(3) Melamine formaldehyde

(4) Nylon-66

CPL010

11. Which one of the following is not a condensation polymer?

(1) Dacron

(2) Neoprene

(3) Melamineformaldehyde

(4) Glyptal

CPL011

12. Which of the following statements is false?

(1) The repeat unit in natural rubber is isoprene

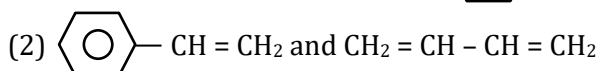
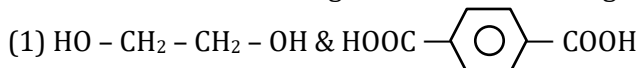
(2) Both starch and cellulose are polymers of glucose

(3) Artificial silk is derived from cellulose

(4) Nylon-66 is an example of elastomer

CPL012

13. Which one of the following sets forms the biodegradable polymer ?



CPL013

14. Nylon is an example of:-

(1) Polythene

(2) Polyester

(3) Polysaccharide

(4) Polyamide

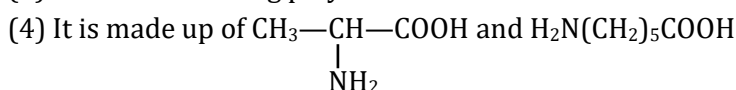
CPL014

15. Select the incorrect statement about Nylon 2-nylon-6.

(1) It is a copolymer

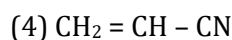
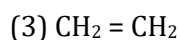
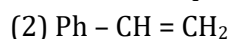
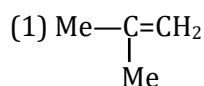
(2) It is biodegradable

(3) It is an alternating polyamide



CPL015

16. The monomer that can undergo radical, cationic and anionic polymerisation with equal ease-



CPL016

17. Which of the following statements are incorrect :

(1) Copolymer of 1,3-butadiene & acrylonitrile is Buna-S

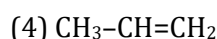
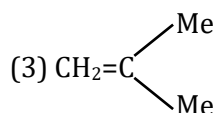
(2) HDPE is obtained by Ziegler-Natta polymerisation

(3) Polymer dacron can be polyester fabric

(4) Phenol & formaldehyde resin is called novolac

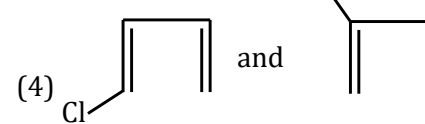
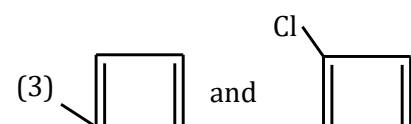
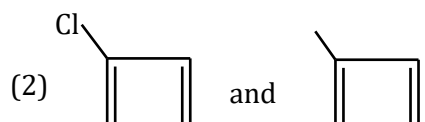
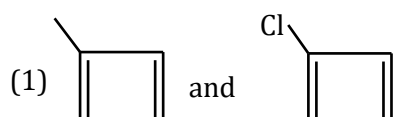
CPL017

18. The monomer that undergo radical polymerisation most easily is



CPL018

19. Which of the following are monomers of natural rubber and neoprene respectively :-



CPL019

20. Match the polymers given in Column I with their main applications given in Column II.

Column I

(P) Bakelite

(Q) Melamine-formaldehyde resin

(R) Nylon 6

(S) Polytetrafluoroethylene

Column II

(1) Unbreakable crockery

(2) Non-stick cookwares

(3) Electrical switches

(4) Tyre, cords

CPL020

Code :

	P	Q	R	S
(1)	3	1	4	2
(2)	2	1	4	3
(3)	3	2	4	1
(4)	3	1	2	4

SECTION-B

- This section will have **TEN questions**. Candidate can choose to attempt any 5 questions out of these 10 questions. In case if candidate attempts more than 5 questions, first 5 attempted questions will be considered for marking.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (Answer should be rounded off to the nearest integer).
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +4, if only correct answer is given.
 Zero Marks : 0, if no answer is given.
 Negative Marks :-1 for incorrect answer

1. Molecular mass of monomer used in the following polymer is?

$$\left[\begin{array}{c} \text{O}-\text{CH}-\text{CH}_2-\text{C} \\ | \quad \quad \quad || \\ \text{CH}_3 \quad \quad \quad \text{O} \end{array} \right]_n$$

CPL021
2. How many statements are correct about natural rubber?
 (i) Gutta percha is naturally occurring isomer of natural rubber.
 (ii) It has all cis double bonds.
 (iii) It is a polymer of 2-Methyl-1, 3-butadiene (isoprene).
 (iv) It is also known as Orlon.

CPL022
3. How many of the following are addition polymer ?
 (i) Teflon (ii) Polypropylene (iii) Orlon (iv) Dacron
 (v) Nylon-66 (vi) Bakelite (vii) Buna-S (viii) Neoprene
 (ix) PVC (x) Glyptal

CPL023
4. Among the following number of condensation polymers are ?
 Nylon-6, Buna-N, Buna-S, Nylon-6,6, Nylon-6,10, PVC, Polystyrene, Teflon.

CPL024
5. How many sp^2 carbon atoms are present in terephthalic acid ?

CPL025
6. Number of nitrogen atoms in a monomer unit of melamine is ?

CPL026
7. What will be the mass percentage of acrylonitrile in copolymer formed with vinylacetate (it contains alternate monomers of each type)?

CPL027
8. Poly β -hydroxybutyrate-co- β -hydroxyvalerate (PHBV) is obtained by the copolymerisation of two hydroxy acids (A) & (B)
 $(A) + (B) \longrightarrow \text{PHBV}$
 Find the sum of number of chiral centres present in A & B

CPL028
9. How many carbon atoms are present in a monomer of neoprene?

CPL029
10. How many sp^3 carbon atoms are present in caprolactam ?

CPL030

JEE (Advanced) Practice Paper

This paper is for yourself practice and assessment the discussion of this paper is optional though you can see PDF solutions or video solutions or solutions in hardcopy whichever is provided.

SECTION-I

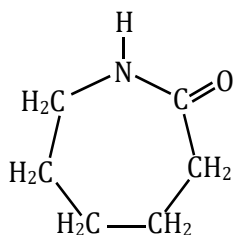
- This section contains **FOUR** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1, in all other cases

1. Which of the following is a step growth polymer ?
 (A) Polyisoprene (B) Polythene (C) Nylon (D) Polyacrylonitrile
CPL069

2. An example of chain growth polymer is -
 (A) Nylon -66 (B) Bakelite (C) Terylene (D) Teflon
CPL070

3. Which of the following is not an example of natural polymer?
 (A) Wool (B) Silk (C) Leather (D) Nylon
CPL071

4. Which of the following polymer can be formed by using the following monomer unit ?



- (A) Nylon 6, 6 (B) Nylon 2-nylon 6
 (C) Melamine polymer (D) Nylon-6

CPL072

SECTION-II

- This section contains **SIX** questions.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +4, if only (all) the correct option(s) is (are) chosen.
 Partial Marks : +3, if all the four options are correct but **ONLY** three options are chosen.
 Partial Marks : +2, if three or more options are correct but **ONLY** two options are chosen, both of which are correct options.
 Partial Marks : +1, if two or more options are correct but **ONLY** one option is chosen and it is a correct option.
 Zero Marks : 0, if none of the options is chosen (i.e. the question is unanswered).
 Negative Marks : -2, in all other cases.

5. Select the **correct** statement
 (A) High density polythene is a linear polymer.
 (B) Low density polythene is a branched chain polymer.
 (C) Chain growth polymers are also known as addition polymer.
 (D) Step growth polymer is also known condensation polymer. CPL073
6. Select the correct statement.
 (A) Elastomers have the weakest intermolecular forces
 (B) Buna-N is example of synthetic copolymer
 (C) Some fibres have crystalline nature
 (D) Thermoplastic polymers have stronger intermolecular forces than fibres CPL074
7. Correct statement
 (A) Nylon-66 is example of addition polymer
 (B) Alanine having pH 9 at isoelectric point
 (C) Fructose when reacts with Fehling solution reddish brown ppt. formed
 (D) All of these CPL075
8. Which of the following polymer(s) is/are thermoplastic?
 (A) Teflon (B) Natural rubber (C) Neoprene (D) Polystyrene CPL076
9. Which of the following monomers form biodegradable polymers?
 (A) 3-hydroxybutanoic acid + 3-hydroxypentanoic acid
 (B) Glycine + amino caproic acid
 (C) Ethylene glycol + phthalic acid
 (D) Caprolactum CPL077
10. Which of the following polymer(s) have vinylic type monomer units?
 (A) PVC (B) Polystyrene (C) Nylon (D) Teflon CPL078

SECTION-III

- This section contains **TWO** questions.
- Each question has matching lists.** The codes for the lists have choices (A), (B), (C) and (D) out of which **ONLY ONE is correct**
- For each question, marks will be awarded in one of the following categories :
 Full Marks : +3, if only the bubble corresponding to the correct option is darkened.
 Zero Marks : 0, if none of the bubbles is darkened.
 Negative Marks : -1 in all other cases.

11. Match the column :

Column I	Column II
(A) Addition polymer	(P) Buna-S
(B) Condensation polymer	(Q) Buna-N
(C) Homopolymer	(R) Polythene
(D) Copolymers	(S) Nylon 6,6

- (A) (A) → R, P, Q ; (B) → S ; (C) → R ; (D) → S, Q, R)
 (B) (A) → P, Q, R ; (B) → S ; (C) → R ; (D) → P, Q, S)
 (C) (A) → P, Q ; (B) → S ; (C) → R ; (D) → Q, S)
 (D) (A) → P, R ; (B) → S ; (C) → R ; (D) → Q, S)

CPL079

12. Match Column-I with Column-II.

	Column-I (polymer)		Column-II (monomer)
(A)	Bakelite	(p)	caprolactum
(B)	Polypropylene	(q)	Ethylene glycol + phthalic anhydride
(C)	Glyptal	(r)	propene
(D)	Nylon-6	(s)	Phenol + formaldehyde

(A) $A \rightarrow s, B \rightarrow r, C \rightarrow q, D \rightarrow p$ (B) $A \rightarrow r, B \rightarrow s, C \rightarrow q, D \rightarrow p$ (C) $A \rightarrow q, B \rightarrow s, C \rightarrow q, D \rightarrow p$ (D) $A \rightarrow p, B \rightarrow r, C \rightarrow q, D \rightarrow s$

CPL080

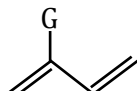
SECTION-IV

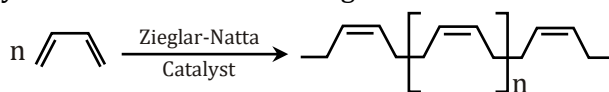
- This section contains **ONE** paragraph.
- Based on paragraph, there are **THREE** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :

Full Marks : +3, if only the bubble corresponding to the correct answer is darkened.

Zero Marks : 0, in all other cases.

Paragraph Question Nos. 13 to 15

The monomer  (G = Me or Cl) when treated with Ziegler - Natta catalyst undergo polymerisation in the manner given below -



cis-poly-1,3-butadiene

13. The Ziegler-Natta catalyst is

(A) TiCl_4 (B) R_3Al (C) $\text{R}_3\text{Al} / \text{TiCl}_4$ (D) $\text{R}_3\text{B} / \text{TiCl}_4$

CPL081

14. The polymer obtained when monomeric unit used is $\text{CH}_2=\text{C}(\text{Cl})-\text{CH}=\text{CH}_2$

(A) Neoprene

(B) Stilbene

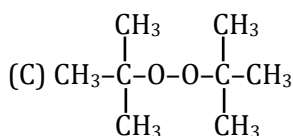
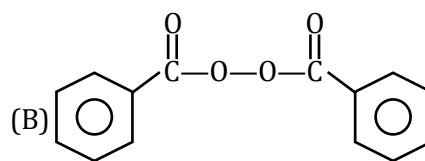
(C) Styrene

(D) Chloropirrin

CPL082

15. Which of the following is radical initiator

(A) $R-N=N-R$



(D) All

CPL083

SECTION-V

- This section contains **FIVE** questions.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (in decimal notation, truncated/rounded-off to the second decimal place; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).
- Answer to each question will be evaluated according to the following marking scheme:
 Full Marks : +3, if ONLY the correct numerical value is entered as answer.
 Zero Marks : 0, in all other cases.

16. Percentage nitrogen in a monomer unit of nylon-2,6 is

CPL084

17. How many of the following correctly matched ?

- (i) High density polythene $\longrightarrow$ Ethene
- (ii) Neoprene $\longrightarrow$ Chloroprene
- (iii) Natural rubber $\longrightarrow$ Isoprene
- (iv) Teflon $\longrightarrow$ Tetrafluoroethene
- (v) Acrilan $\longrightarrow$ Acrylonitrile

CPL085

18. How many of the following correctly matched?

- (i) Nylon 6 $\longrightarrow$ Polycaprolactum
- (ii) PVC $\longrightarrow$ Polyvinyl chloride
- (iii) Acrilan $\longrightarrow$ Polyacrylonitrile
- (iv) Natural rubber $\longrightarrow$ cis-polyisoprene
- (v) LDP $\longrightarrow$ Low density polythene

CPL086

19. How many of the following are prepared by condensation polymerisation reaction?

- (i) Dacron (ii) Nylon-6, 6 (iii) Nylon - 6 (iv) Bakelite
- (v) PMMA (vi) Neoprene

CPL087

20. How many of the following polymers contain word root Buta as one of the monomer ?

- (i) Buna-S (ii) Buna-N (iii) Natural rubber (iv) Neoprene (v) PMMA (vi) Bakelite

CPL088

ANSWER KEY

EXERCISE - O

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	A	A	A	C	C	A	D	D	B	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	D	B	C	B	A	C	A	A	A	D
Que.	21	22	23	24	25	26				
Ans.	A	D	C	ACD	ABCD	CD				

EXERCISE - S

Que.	1	2	3							
Ans.	1	2	1							

EXERCISE - JEE (Main) PYQ

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	4	1	2	1	3	2	4	3	2
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	4	2	6	1	4	2	4	2	4	2
Que.	21									
Ans.	1									

EXERCISE - JEE (Advanced) PYQ

Que.	1	2	3	4						
Ans.	6	A	BD	BC						

JEE (Main) Practice Paper

Section-A	Q.	1	2	3	4	5	6	7	8	9	10
	A.	4	1	3	3	3	1	2	1	3	1
	Q.	11	12	13	14	15	16	17	18	19	20
	A.	2	4	4	4	4	2	1	2	1	1
Section-B	Q.	1	2	3	4	5	6	7	8	9	10
	A.	104	3	6	3	8	6	38.129	2	4	5

JEE (Advanced) Practice Paper

Section-I	Q.	1	2	3	4			
	A.	C	D	D	D			
Section-II	Q.	5	6	7	8	9	10	
	A.	ABCD	ABC	C	AD	AB	ABD	
Section-III	Q.	11	12					
	A.	B	A					
Section-IV	Q.	13	14	15				
	A.	C	A	D				
Section-V	Q.	16	17	18	19	20		
	A.	16.47	5	5	4	4		

Important Notes