

Government Degree College

Tekkali



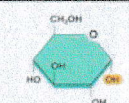
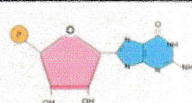
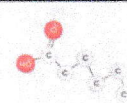
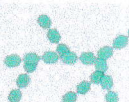
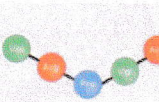
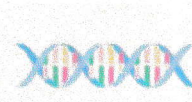
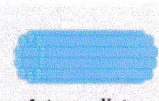
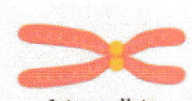
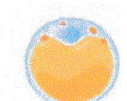
Department of Chemistry

Academic Year 2025-2026

Certificate Course

On

"Organic Polymers"

	Carbohydrate	Protein	Nucleic Acid	Lipid
Monomer	 Monosaccharide	 Amino Acid	 Nucleotide	 Fatty Acid
Polymer	 Starch	 Polypeptides	 (Double Helix) DNA	 Triglyceride
Cellular Structure	 Granule in Chloroplast	 Intermediate Filaments	 Intermediate Filaments	 Adipose Cell

Govt.Degree College Tekkali

REQUESTING FOR THE APPROVAL OF CERTIFICATE COURSE

1. Department : CHEMISTRY
2. Title of the Certificate Course : "Organic Polymers"
3. Name of the Course Coordinator : Dr B. SATEESH KUMAR
4. Course Code : CHE-OP-01
5. Objectives of the Course :

On successful completion of this course, students will be able:

1. Have the elementary understanding of the reaction mechanisms involved in organic polymer synthesis and the kinetics of these reactions.
2. Learn basic concepts of organic polymer chain architecture, structure and morphology, with particular emphasis on the relationship between chemical structure (chain architecture) and the morphology of the solid state (semi-crystalline vs. amorphous polymers).

6. Outcomes of the Course

In this course student will understand the polymer or macromolecules are giant molecules with large structures and high molecular weights. In spite of their varieties, they are governed by the same laws that apply to small molecules. Polymers form the basis for life itself and for our communication, transportation, buildings, food, etc. polymers include protein and nucleic acids in our bodies, the fibers (natural and synthetic) we use for clothing, the protein and starch we eat, the elastomers in our automotive tires, the paint, plastic wall and floor coverings, foam insulation, dishes, furniture, pipes, etc.

7. Duration of the Course : 30 Days (30hrs)
8. Date of Commencement of the Course : 15-03-2026
9. Course Fee : Nil
10. No. Of Students : 20


Signature of the Course Coordinator


Signature of the Department In-charge


Signature of the Principal

PRINCIPAL
GOVT. DEGREE COLLEGE
PALASA-532 221

Govt.Degree College Tekkali

Certificate Course on Organic Polymers (Course Code: CHE-OP-01)

Objectives & Outcomes

The Department of Chemistry has decided to offer a certificate course on "ORGANIC POLYMERS" for the II B.SC Minor Chemistry students to enhance their Skills which are essential for their Professional development.

Objectives:

On successful completion of this course, students will be able:

1. Have the elementary understanding of the reaction mechanisms involved in polymer synthesis and the kinetics of these reactions.
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PALASA-532 221

ORGANIC POLYMERS

Syllabus

Learning Outcomes:

Students after successful completion of the course will be able to:

1. To know the classification of polymers
2. Acquire a critical knowledge on the preparation of organic polymers.
3. To know the various applications of polymers in daily life

Unit-1: Organic Polymers

10 hours

Definitions of Monomer and polymer, degree of polymerization, classification of polymers- Natural and Synthetic polymers, Organic and Inorganic polymers, Thermoplastic and Thermo setting polymers, Plastics, Elastomers, Fibers and Resins, Linear, Branched and Cross-Linked polymers.

Unit-2: Synthetic mechanisms of Organic Polymers

10 hours

Types of polymerizations -Addition polymerization- cationic and anionic polymerization and Condensation polymers, Difference between Addition and condensation polymerization, mechanism of addition polymerization- Free radical, ionic and cationic and Zeigler-Natta polymerization.

Unit -3: Applications of Organic Polymers

10 hours

Industrial applications of following polymers- Polystyrene, Poly acrylonitrile, Poly methacrylate, Poly methyl-methacrylate, poly lactic acid, poly ethylene LDPE ,HDPE, PVC, Nylon-6, Nylon 66, Poly styrene.

References:

- 1) Seymour, R.B & Carraher, C.E *Polymer Chemistry: An introduction*, Marel Dekker, Inc.NewYork, 1981.
- 2) Odian G. *Principles of Polymerization*, 4th Ed.Wiley, 2004.
- 3) Billmeyer, F.w. *Textbook of polymer science*, 2nd Ed. Wiley Interscience, 1997.
- 4) Ghosh, P.*Polymer science & Technology*, Tata McGraw-Hill Education, 1991.34

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Assessment No-1
Organic polymers

Name of the student: _____

Roll no: _____

1. Nylon threads are made of []
a. polyester polymer b. polyamide polymer c. polyethylene polymer d. polyvinyl polymer
2. Which of the following is a branched polymer? []
a. low density polymer b. polyester c. high density polymer d. Nylon
3. On the basis of mode of formation polymers can be classified: []
a. as addition polymers only b. as condensation polymers only
c. as copolymers d. as addition and condensation polymers
4. The process of heat softening, moulding and cooling to rigidity can be repeated for which plastics? []
a. thermoplastics b. thermosetting plastics c. both (a) and (b) d. neither (a) nor (b)
5. The polymer used in making hair synthetic hair wigs is made up of []
a. $\text{CH}_2=\text{CHCl}$ b. $\text{CH}_2=\text{CHCOOCH}_3$ c. $\text{C}_6\text{H}_5\text{CH}=\text{CH}_2$ d. $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$
6. 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. both a and b
7. In addition polymer, monomer used is []
a. unsaturated compounds b. saturated compounds
c. bifunctional saturated compounds d. trifunctional saturated compounds
8. Polymer formation from monomer starts by []
a. The condensation reaction between monomers b. The coordinate reaction between monomers
c. Conversion of monomer to monomer ions by protons d. Hydrolysis of monomers
9. Which of the following statements is not correct for fibres? []
a. Fibres possess high tensile strength and high modulus b. Fibres impart crystalline nature
c. Characteristic features of fibres are due to strong intermolecular forces like hydrogen bonding
d. All are correct
10. Which of the following does not undergo additional polymerization? []
a. vinyl chloride b. butadiene c. styrene d. all of the above undergoes addition polymerizations

Total Marks	
Grade	

Evolution:

Score: 90-100% – O Grade, 80-90% -A Grade, 70-80%-B Grade 60-70%-C Grade, 50-60% -D Grade

Assessment No-2

Organic polymers

Name of the student: _____

Group: _____

1. A substance that is formed of multiple repeating units of _____ is known as a polymer. []

- a. Mers b. Plastic c. Resins d. Blocks

2. Bakelite is an example of _____ polymer. []

- a. Elastomer b. fibre c. thermoplastic d. thermosetting

3. A polymer with an amide linkage is known as: []

- a. nylon-6,6 b. Teflon c. Terylene d. Bakelite

4. Which of the following is fully fluorinated polymer? []

- (a) Neoprene (b) PVC (c) Teflon (d) Thiokol

5. Nylon-6 is made from []

- (a) Butadiene (b) Chloroprene (c) Adipic acid (d) Caprolactum

6. Cellulose is a polymer of: []

- (a) Fructose (b) Ribose (c) Glucose (d) Sucrose

7. Cellulose acetate is a []

- (a) Natural polymer (b) Semi synthetic polymer (c) Synthetic polymer (d) Plasticizer

8. Ethylene-propylene rubber can be []

- (a) Vulcanized by sulphur (b) Vulcanized by peroxides
(c) Both (a) and (b) (d) Non-vulcanizable

9. Nylon threads are made of: []

- (a) Polyvinyl polymer (b) Polyester polymer (c) Polyamide polymer (d) Polyethylene polymer

10. Which of the following is an example of condensation polymers? []

- (a) Polythene (b) PVC (c) Orlon (d) Terylene

Total Marks	
Grade	

Evolution:

Score: 9-10 – O Grade, 8-9%-A Grade, 7-8%-B Grade, 6-7%-C Grade, 5-6% -D Grade

Model
Feed Back Form

Academic year: 2025-26

Name of the student:

Class:

Group:

S.NO	STATEMENT	STRONGLY AGREE	AGREE	DISAGREE
1	The course I pursue is useful for my goal attainment	✓		
2	The course is useful for getting job opportunities relevant		✓	
3	The syllabus would help me to improve laboratory space		✓	
4	The course is useful for pursuing higher studies	✓		
5	Syllabus is in accordance with modern technology	✓		
6	Syllabus of the course is up-to-date and satisfactory	✓		
7	Changes are required to the syllabus	✓		
8	The course would increase my confidence	✓		
9	I suggest continuous of the course.	✓		
10	Suggestions if any: <i>gain knowledge of this course</i>			

Borom
(incharge)

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GOVERNMENT-DEGREE COLLEGE, TEKKALI

DEPARTMENT OF CHEMISTRY

STUDENT FEED BACK ON CERTIFICATE COURSE

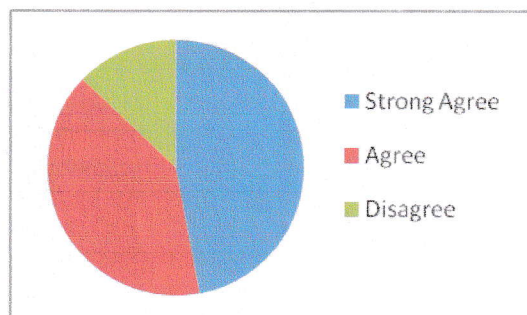
We are collecting feedback from our students personally. We have designed special feedback on certificate course of “Organic Polymers” from the academic year 2025-26. The analysis of student feedback on this certificate course is represented below.

ACADEMIC YEAR	GROUP	NO. OF STUDENTS
2025-2026	II BSc Chemistry Minor	20

ANALYSIS OF FEEDBACK (2024-25)

QUESTIONARIES	STRONGLY AGREE	AGREE	DISAGREE
1	✓		
2		✓	
3		✓	
4	✓		
5	✓		
6	✓		
7	✓		
8	✓		
9	✓		
AVERAGE	✓		
PERCENTAGE	100%		

The Graphical Representation:



Government Degree College-Tekkali

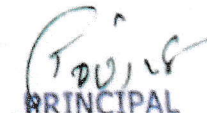
Department of Chemistry

Certificate Course on "Organic Polymers"

Academic Year 2025-26

Students List

S.No	Regd.No	Name of the Student	Signature of the Student
1	2024400021079	A. Ganesh	A. Ganesh
2	2024400061852	A. Ekambaram	A. Ekambaram
3	2024400038232	B. Gowthami	B. Gowthami
4	2024400158804	B. Haribabu	B. Haribabu
5	2024400029653	B. Rohith	B. Rohith
6	202440110098	B. Santhosh	B. Santhosh
7	2024400036156	B. Jaswanth	B. Jaswanth
8	2024400026856	Ch. Bhuvan	Ch. Bhuvan
9	2024400043606	G. Ashik	G. Ashik
10	2024400037499	G. Vamsi	G. Vamsi
11	2024400034700	K. Mohan Rao	K. Mohan Rao
12	2024400008723	K. Tejeswara Rao	K. Tejeswara Rao
13	2024400022609	K. Hemalatha	K. Hemalatha
14	202400038301	N. Yathish	N. Yathish
15	202400023170	P. Sujatha	P. Sujatha
16	202400002277	P. Raghu	P. Raghu
17	202400030282	R. Karthik	R. Karthik
18	202400038301	P. Likhitha	P. Likhitha
19	202400023608	S. Vamsikrishna	S. Vamsikrishna
20	202400029100	S. Shanmukha Rao	S. Shanmukha Rao


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TEKKALI-532 203

Model Certificate

GOVERNMENT DEGREE COLLEGE, TEKKALI

(Accredited with NAAC 'B' Grade)



DEPARTMENT OF CHEMISTRY

Course Certificate

Certified that Mr./Ms. _____ of
_____ Successfully completed 1 month certificate
course on "**Organic Polymers**" and scored ____ Grade during the
academic year **2025-2026**

Course Coordinator

IQAC Co-Ordinator

Principal