

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Course: B.Sc.(H) Chemistry
Program: Polymer Chemistry
Course Code: CHEM 3006D

Semester: V
Time: 03 hrs.
Max. Marks: 100

Instructions: Read the instructions given below carefully:
All questions are compulsory.

SECTION A

Instructions:

- 1. Each Question will carry 4 Marks**
- 2. Complete the statement /select the correct answer(s)**
- 3. Answer should be short, fill in blank, true or false.**
- 4. You have to very careful to write the answer.**

S. No.		Marks	CO
Q 1	Write one equation for the preparation of : a) HDPE b) Acrylonitrile c) PMMA d) Vinyl chloride	4	CO2
Q 2	Give reasons: a) Why PPE kit is made of PP b) PP is not preferred for outdoor application c) PU is used for making mattress d) PMMA is used for making contact lenses	4	CO3
Q 3	Give reason for difference in viscosity of low molecular weight compound and high molecular weight compound.	4	CO3
Q 4	What is Crystallisability? Mentions the factors affecting it.	4	CO1
Q 5	Compare LDPE with HDPE.	4	CO1

SECTION B

Instructions:

- 1. Each question will carry 10 marks**

<p>2. There is an internal choice in question 4. 3. Write short/brief notes of 1-2 page answer. 4. Write suitable reactions, to justify your answer as well as to score higher marks.</p>			
Q 1	Explain, End Group Analysis for the determination of molecular weight of Polymer.	10	CO3
Q 2	Discuss preparation, property and application of Phenol Formaldehyde Resin.	10	CO2
Q 3	Compare the dissolution process of Polyvinyl Alcohol and NaCl in water.	10	CO2
Q 4	<p>Taking example, explain how to determine Number average molecular weight and Weight average molecular weight.</p> <p style="text-align: center;">OR</p> <p>In a polymer, there are 100 molecules of molecular weight 100, 200, molecules of molecular weight 1000 and 300 molecules of molecular weight 10,000. Find number average molecular weight, weight average molecular weight and PDI.</p>	10	CO1
SECTION C			
<p>Instructions:</p> <p>1. Each Question is of 20 marks 2. Write long answer. 3. Draw the neat diagram, to justify your answer as well as to score higher marks. 4. <u>Internal choices is there attempt any one of them in question 2</u></p>			
Q 1	<p>Giving reason, explain why Polyaddition polymerization is placed in step growth polymerization instead of chain growth polymerization.</p> <p>A polymer is insoluble in water, Explain, in detail the polymerization technique that you would suggest and why?</p>	10+10	CO1
Q 2	<p>Discuss in detail, different methods to cause the termination of growing polymer chain in the reactor.</p> <p style="text-align: center;">OR</p> <p>Explain the effect of temperature variation from (low to high) on a polymeric material with emphasis on IBM, EBM and rubbery state.</p>	20	CO3