Name:

Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Polymer Chemistry **Semester: III**
Program: M.Sc Chemistry **Time : 03 hrs.**
Course Code: CHEM 8013 **Max. Marks: 100**

Instructions: Attempts all questions.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Define the following: 1. Compounding 2. Cold runner 3. Hot runner 4. Gate	**4**	**CO1**
Q2	Polymer A is insoluble in water, discuss one polymerization techniques that you would suggest for its polymerization.	**4**	**CO1**
Q3	Define composites. Discuss their classification on the basis of Matrix material	**4**	**CO3**
Q4	Illustrate the importance of glass transition temperature.	**4**	**CO3**
Q5	What is Internal Plastication? How it is better than addition of plasticizer?	**4**	**CO3**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	To process PET into Bislery bottles, give the details of molding technique. **Or** A wire has to be coated with Polymer. Discuss the details of the molding technique that	**10**	**CO1**
Q7	Explain membrane Vapour Phase Osmometry, a method to determine molecular weight of a polymer.	**10**	**CO2**
Q8	Discuss polyaddition polymerization reaction taking relevant example	**10**	**CO2**
Q9	Compare solubility characteristics of NaCl and Polyvinyl alcohol	**10**	**CO2**

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<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">SECTION-C
(2Qx20M=40 Marks)</td></tr>
<tr><td>Q 10</td><td>Given the concentration and flow time data of PMMA sample in benzene solution at 30^0 C. Calculate the intrinsic viscosity of PMMA solution in benzene having flow time of 216 sec.
<table>
<tr><th>Conc (g/dl)</th><th>Flow time (sec)</th></tr>
<tr><td>0.2716</td><td>459.8</td></tr>
<tr><td>0.194</td><td>378.2</td></tr>
<tr><td>0.1509</td><td>337.9</td></tr>
<tr><td>0.1235</td><td>312.8</td></tr>
<tr><td>0.1045</td><td>296.4</td></tr>
</table>
OR

What is glass transition temperature? Explain in detail the morphology (stage involved) of polymers with temperature variation.</td><td>20</td><td>CO3</td></tr>
<tr><td>Q11</td><td>Compare transfer molding with compression molding technique

With the help of diagram, explain ,various parts of the injection molding machine</td><td>5

15</td><td>CO1</td></tr>
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