UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, April/May 2018

Course: Polymer Processing & Technology (CHEG 382)
Semester: VIII
Program: B.Tech (CE+RP)
Time: 03 hrs.   **Max. Marks: 100**

Instructions: Answer all the questions

S. No.	SECTION A	Marks	CO
1.	List out the techniques of polymerization and give any one advantage of each one of them.	4	CO1
2.	What are the two routes of manufacture of polyethylene terephthalate? Among them which is advantageous and why?	4	CO2
3.	Give the classification of surfactants with an example for each.	4	CO3
4.	Name the methods of manufacture of fibers and give one limitation of each one of them.	4	CO4
5.	What are the bases for classification of composites and how are they classified accordingly?	4	CO5
	SECTION B		
6.	What are structural plastics? Name the type of polymerization used in preparing them? Explain the initiators and various steps involved in it.	8	CO1
7.	List out the processes available for polypropylene production and explain any one of them in detail with the help of process flow diagram. **(Or)** How are elastomers classified? Give an example for each. With the help of process flow diagram, explain the process of manufacture of any one synthetic elastomer.	8	CO2
8.	How are plastics classified? Give any four differences between them. Write briefly about various molding constituents of plastics, their functions with an example each. **(Or)** List out the compounding ingredients of elastomer and explain the role of any four of them in detail with two examples for each.	8	CO4
9.	(a) List out the important advantageous and disadvantageous properties of polymer matrix composites.	4	CO5
	(b) Give the method of manufacture of any one surfactant.	4	CO3
10.	Explain the absolute method of determination of weight average molecular weight of the polymer.	8	CO1
	SECTION-C		
11.	(a) What is the major drawback of free radical addition polymerization and explain any one method of controlled radical polymerization to overcome it?	5	CO1

	(b) Explain the operation cycle of injection molding with the help of diagram and its various operation variables with their optimum values.	**10**	**CO4**
	(c) Calculate the polydispersity index of polyethylene having the following molecular weight distribution; 130 g of molecular weight 75,000 g/mol and 220 g of molecular weight 1,00,000 g/mol.	**5**	**CO1**
	(Or)		
	(a)What is living polymerization and explain the steps involved in it.	**5**	**CO1**
	(b) With the help of diagram, explain the working of extrusion molding. What is the drawback of films produced by flat film extrusion and how it can be overcome?	**10**	**CO4**
	(c) Calculate the degree of polymerization of Nylon-6,6 containing one –COOH group per molecule, when 50 g of it consumed 15 ml of millimolar NaOH solution.	**5**	**CO1**
12.	(a) Explain the steps involved in processing of elastomer into finished product.	**7**	**CO4**
	(b) List out any five important methods of fabrication of composites and explain any two of them in detail.	**7**	**CO5**
	(c) With the help of diagram explain any one method of manufacture of fibers.	**6**	**CO4**