Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Semester Examination, May 2021

Course: Petrochemical Process Technology — **Semester: VIII**
Program: B.Tech (CE+RP) — **Time 03 hrs.**
Course Code: CHCE 3012P — **Max. Marks: 100**

Instructions: Question Paper contains 2 Pages

SECTION A **6 X5 = 30 Marks**
Type the answer

S. No.		Marks	CO
Q 1	Give any one advantage and disadvantage each of natural gas and naphtha as feedstock for petrochemical industries.	5	CO1
Q 2	Name the steps of mechanism of steam cracking and of them which steps result in olefins.	5	CO2
Q 3	What is autothermal reforming?	5	CO3
Q 4	What are engineering resins? Give any two examples.	5	CO4
Q 5	Give any two important drivers for integration of petroleum refining with petrochemical production.	5	CO5
Q 6	Name the methods of separation of para and meta xylene mixture and of them which is more economical?	5	CO3

SECTION B **5 X 10 = 50 Marks**
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Q 7	Vinyl acetate is polymerized by anionic addition polymerization using n-butyl lithium as initiator which ionizes to 100%. The propagation rate constant is 1.98 X 10^{-6} $L.mol^{-1}s^{-1}$. Calculate the initial concentration of initiator to achieve 90% completion of polymerization in 45 minutes.	10	CO2
Q 8	With the help of flow diagram, describe the process of manufacture of any one aromatic derivative.	10	CO3
Q 9	Draw and explain the hot section of the naphtha cracker plant.	10	CO3
Q 10	Name any two important elastoners and explain the manufacture of any one of them with the help of process flow diagram.	10	CO4
Q11	Draw the integration of petroleum refining to polyester fibers production, capturing all the intermittent involved	10	CO5

SECTION C **1 X 20 = 20 Marks**
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Q 12	(a) Draw the process flow diagram of steam reformer with post reformer and explain the process in detail. (b) What are the sources of Sulphur in NG and petroleum? How is it converted to elemental Sulphur?	12 8	CO3 CO5

	(Or) (a) Draw the process flow diagram of catalytic reforming and explain the conversion of naphtha to aromatics. (b) How is nitric acid traced to petrochemical origin? How is nitric acid produced?	**12** **8**	**CO3** **CO5**