

<b>Name:</b>	 <b>UPES</b> UNIVERSITY WITH A PURPOSE
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**End Semester Examination, May 2019**

**Course: Petroleum Refining and Petrochemical Technology**

**Semester: VI & VIII**

**Program: B.Tech (APE GAS)**

**Time 03 hrs.**

**Course Code: CHEG 341**

**Max. Marks: 100**

**Instructions:**

**SECTION A**

S. No.	Question	Marks	CO
Q 1	How do the shale gas and oil impact the petroleum refining and petrochemical industries?	4	CO1
Q 2	Give the quantitative difference between the following; (i) Dry and Wet natural gas (ii) Sweet and Sour natural gas	4	CO2
Q 3	Name any two distillates obtained in atmospheric distillation and their boiling range, hydrocarbon range and any one use each.	4	CO3
Q 4	Give the classification of petrochemicals with two examples for each.	4	CO4
Q 5	Give the four necessities or benefits of integrating the petroleum refinery with petrochemical operations	4	CO5

**SECTION B**

Q 6	(i) What are the drivers of energy consumption? What is the share of oil and gas to the current energy basket globally and how is it expected to change in next 25 years.	4	CO1
	(ii) Name any two properties each pertaining to volatility and flow characteristics of petroleum and give the definition of any one of them each.	4	CO2
Q 7	What is the necessity of cracking. Name the methods of catalytic cracking and explain any one of them in detail with the help of flow diagram. (Or) What is hydroprocessing? With the help of flow diagram, explain the hydrotreating of straight run gasoline.	8	CO3
Q 8	With the help of flow diagram explain the sweetening of natural gas and separation of NGL.	8	CO4
Q 9	Draw the integration of petroleum refining processes with petrochemical processes to produce polyethylene terephthalate from petroleum. (Or) Draw the integration of petroleum refining processes with petrochemical processes to produce styrene-butadiene rubber from petroleum.	8	CO5
Q 10	Explain the different types of storage tanks used in the petroleum refinery and	8	CO5

	products stored in them.		
<b>SECTION-C</b>			
Q 11	(i) With the help of diagrams, explain the steam naphtha cracking and separation of cracked products into pure olefins. (ii) Name any four Bharath IV specifications of gasoline and explain the determination of any one of them.	<b>13</b>	<b>CO4</b>
	(Or)		
	(i) With the help of diagrams, explain the naphtha reforming and separation of reformato into pure aromatics. (ii) Name any four Bharath IV specifications of diesel and explain the determination of any one of them.	<b>7</b>	<b>CO3</b>
		<b>13</b>	<b>CO4</b>
		<b>7</b>	<b>CO3</b>
Q 12	(i) Explain the various methods by which the pretreated lignocellulose is converted to bioethanol. (ii) Explain any one method of the conversion of biomass to bio-oil and its upgradation to drop in fuel.	<b>12</b>	<b>CO5</b>
		<b>8</b>	<b>CO5</b>