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

Course: Petroleum Refining & Petrochemical Technology   **Semester: VI**
Program: B.Tech (CE+RP)   **Time 03 hrs.**
Course Code: CHGS 3013   **Max. Marks: 100**
Instructions: In case of data missing make necessary assumptions
Note: The graphical data is provided in Page No. 2 & 3 to solve problem no. 7

S. No.	SECTION A (6X10=60) (Attempt all questions)	Marks	CO
Q 1	Write short notes on the following: (a) Process of formation of petroleum (b) Refineries in India	(5+5) M	CO1
Q 2	Define and discuss the importance of the following: (a) Octane number and Cetane number (b) Fire point and Flash point.	(5+5) M	CO2
Q 3	Give the need for desalting of crude oil. Draw a neat labeled diagram of a single stage desalting process	10 M	CO3
Q 4	With the help of a neat labelled diagram, explain the working of a fluid catalytic cracking unit.	10 M	CO4
Q 5	Explain catalytic reforming process with reference to the following points a) Objective b) Feed stock c) Catalyst used d) Major Reactions e) Process Condition	10 M	CO4
Q 6	Give the necessity of product blending. Explain in brief about the parameters to be considered in the octane number blending process.	10 M	CO5

SECTION B (2X20=40M)

Question **No. 7** compulsory. Answer **any one** in question **No. 8**

Q 7	Whole crude TBP data (API gravity 30)		

Vol. %	0	10	30	50	70	90
T (ºF)	150	250	370	435	490	540

		Marks	CO
Q 7	(i) Plot the TBP and determine the UOP characterization factor, average boiling point (VABP, MEABP), and weight for the crude oil. (ii) For the TBP range of 25X-4YZ ºF, calculate API, M.W, Mid vol.%, Mid boiling point, and Wt based on 250 barrels of whole crude. Where **X** is the last digit of your roll number and **YZ** is the last two digits of your SAP ID.	20 M	CO2
Q 8	With neat schematic diagram, explain hydrotreating process. Write the reactions involved and explain effect of process variables on hydro treating? OR Explain flexi coking operation with suitable flow diagram and operating conditions.	20 M	CO4

API gravity

Characterization factor Vs B.P and API gavity

K

Mean Ang B.P (0F)

MW

Mean Avg B.P.