UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2020

Course: Petroleum Refining Technology   Semester: VII
Program: B.Tech (CE+RP)   Time 03 hrs.
Course Code: CHCE3010   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	What are the major problems faced by Indian refining industry in global market?	10 M	CO1
Q 2	Write short notes on the following: (a) Process of formation of petroleum (b) Refineries in India	(5+5) M	CO1
Q 3	Define and discuss the importance of the following: (a) Flash point and Fire point (b) API gravity and Characterization factor	(5+5) M	CO2
Q 4	Explain desalting of crude. Describe about two stage desalting process with neat sketch	10 M	CO3
Q 5	What is the importance of cracking in refinery? Describe the process of hydrocracking in detail with suitable diagram?	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 33)**		

Volume %	0	10	30	50	70	90	100
TBP temperature (^{o}F)	270	310	420	450	490	540	630

Plot TBP and determine UOP characterization factor, average boiling point (VABP, MEABP), molecular weight and weight based on 100 barrels of whole crude

(Q 7 — 20 M — CO2)

| Q 8 | With a neat flow diagram, explain the fluid catalytic cracking process. And explain the effect of process variables on catalytic cracking?

 OR

 What are the different types of coking? Explain any one method of coking with a suitable diagram? | 20 M | CO4 |

MEAN AV B P = VOL AV B P - DIFFERENTIAL

VOLUME AVERAGE BOILING POINT

200° 300° 400° 500° 600°

DIFFERENTIAL, °F

SLOPE OF TBP CURVE—°F/%

API gravity

Characterization factor Vs B.P and API gavity

90 85 75 65 55 45 35 25 10 5 0

K

Mean Ang B.P (0F)