Name:

Enrolment No:

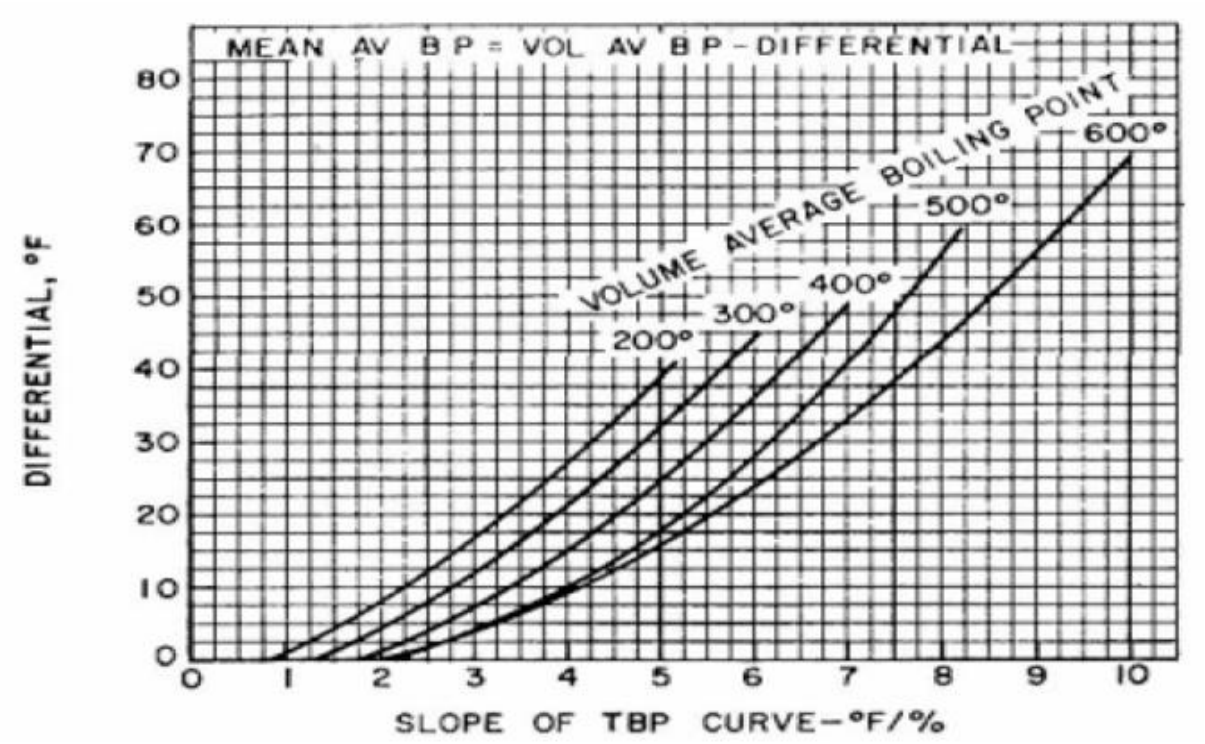
UPES
UNIVERSITY WITH A PURPOSE

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

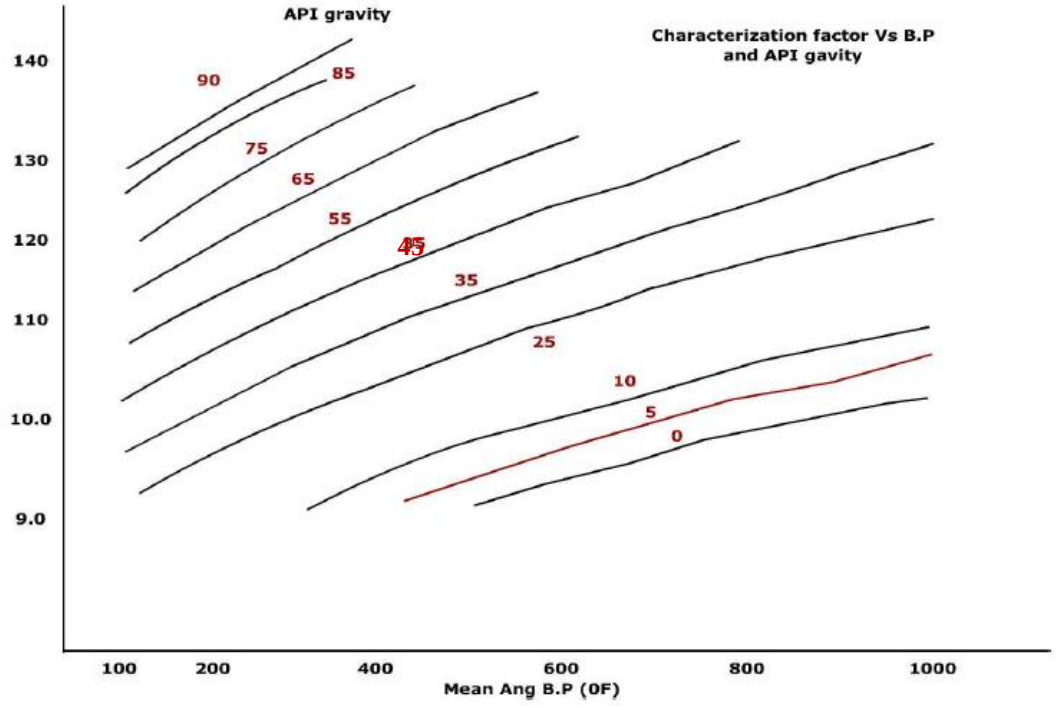
Course: Petroleum Refining & Petrochemical Technology **Semester: V**
Program: B.Tech (CE+RP)/APE Gas **Time 03 hrs.**
Course Code: CHGS 3013 **Max. Marks: 100**
Instructions: In case of data missing make necessary assumptions
Note: The graphical data is provided in Page No. 2 & 3 to solve problem no.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

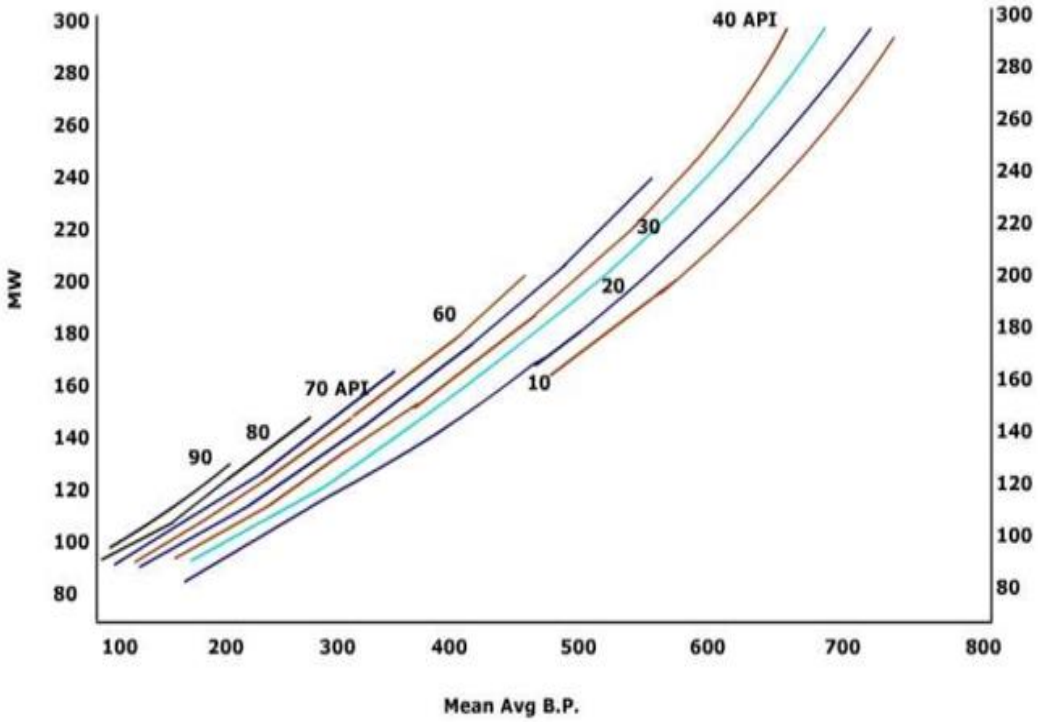
S. No.	**SECTION A (6X10=60) (**Attempt **all** questions**)**	**Marks**	**CO**
Q 1	What are the major problems faced by Indian refining industry in global market?	**10 M**	**CO1**
Q 2	Discuss the various theories on origin and formation of petroleum	**10 M**	**CO1**
Q 3	Define and discuss the importance of the following: (a) Octane number and Cetane number (b) Discuss the various methods of evaluation of petroleum	**(5+5) M**	**CO2**
Q 4	Explain the process of atmospheric distillation unit and vacuum distillation unit	**10 M**	**CO3**
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	For the given TBP distillation data, plot TBP and calculate the UOP characterization factor, average boiling point (VABP, MEABP), molecular weight and weight based on 100 barrels of whole crude. ^{o}API of crude is 25.	**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 Explain delayed coking operation with suitable flow diagram and operating conditions.	**20 M**	**CO4**

Vol. %	10	30	50	70	90
T (^{o}F)	250	370	435	490	540


MEAN AV B P = VOL AV B P - DIFFERENTIAL
DIFFERENTIAL, °F
VOLUME AVERAGE BOILING POINT
600°
500°
400°
300°
200°
0 10 20 30 40 50 60 70 80
0 1 2 3 4 5 6 7 8 9 10
SLOPE OF TBP CURVE - °F/%

K


API gravity
Characterization factor Vs B.P
and API gavity
90
85
75
65
55
45
35
25
10
5
0
140
130
120
110
10.0
9.0
100 200 400 600 800 1000
Mean Ang B.P (0F)


MW
300
280
260
240
220
200
180
160
140
120
100
80
100
200
300
400
500
600
700
800
Mean Avg B.P.
40 API
30
20
10
60
70 API
80
90