

Total No. of Questions : 12]

SEAT No. :

P1101

[4659]-274

[Total No. of Pages : 3

B.E. (Petroleum Engineering)

a : PETROLEUM REFINING TECHNOLOGY

(Elective - II) (Semester - I) (412385) (2008 Course)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of calculator is allowed.*
- 6) *Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) List the major refineries in India. What was the refining capacity (in MMTPA) of India in the year 2013? [4]
- b) Define: Cloud point, Pour point, Smoke point. [6]
- c) Draw a neat labelled diagram of overall refinery flow. [6]

OR

- Q2)** a) Write a note on the Nelson Complexity Factor. [8]
- b) Write a note on the methods of determining the carbon residue in crude oil. [8]

- Q3)** a) What is the need for desalting of crude oil? What are the secondary functions of desalting? Draw a neat diagram for single stage desalting of crude. [8]
- b) Describe the need for reflux in the distillation column. What are the disadvantages of top tray reflux in distillation? Explain the pump back reflux. [8]

OR

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- Q4)** a) Explain the functioning of a vacuum distillation column. [8]
b) Where is the wash water required for desalting obtained in the refinery? What are the operating conditions for desalting of crude oil? [8]

- Q5)** a) Explain with the help of a neat diagram, the role of regenerator in FCC. [6]
b) Explain the process of Flexi coking with the help of a neat labeled diagram. [8]
c) Give the uses of petroleum coke. [4]

OR

- Q6)** a) Enlist the various types of hydroprocessors. Discuss any one in detail. [9]
b) Give the composition of bitumen. Discuss the process of air blowing of bitumen. [9]

SECTION - II

- Q7)** a) Explain the semi regenerative process for catalytic reforming. [9]
b) Discuss the hydrofluoric acid process for alkylation. [9]

OR

- Q8)** a) Give the significance of isomerization process. Describe a typical isomerization process. [9]
b) Discuss the various factors affecting the alkylation process. Give two points of comparison between HF and H₂SO₄ alkylation process. [9]

- Q9)** a) List the various properties to be enhanced to obtain a good quality lubricating oil. Which processes in lube oil treatment accomplish the same? [8]
b) Explain the process of DILCHILL dewaxing of lube oil. [8]

OR

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Q10)a) With the help of a neat labeled diagram, explain the process of NMP extraction for lube oil base stock. [8]

b) Explain the need for selective hydrocracking and finishing processes for lubricating oil. Discuss the same. [8]

Q11)a) Discuss the various treatment methods of waste water in a refinery. [8]

b) Discuss the importance of blending of refinery products. Hence explain the line blending process with a neat labeled diagram. [8]

OR

Q12)a) What are the various methods of recovery of hydrogen in a refinery? Discuss any one of them. [8]

b) What is the need of recovery of sulphur in a refinery? Discuss the once through claus process. [8]

