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Total Number of Pages : 01

B.Tech
PCE7J002

7th Semester Regular / Back Examination 2019-20

PETROLEUM REFINERY ENGINEERING

BRANCH : CHEM

Max Marks : 100

Time : 3 Hours

Q.CODE : HRB017

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- Define petroleum geology?
- Discuss about the different theories involved in the formation of petroleum.
- What are the different methods used to detect the petroleum deposits?
- Why pretreatment of crude is required?
- What are the impurities present in the crude oil.
- Write down the reactions involved in thermal cracking process.
- Differentiate between ASTM gap and ASTM overlap?
- Why additives are added to gasoline?
- Differentiate between octane number and cetane number.
- What is diesel index?

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- Explain in detail about the different theories on origin of petroleum.
- Distinguish between Electrical Desalting process and Stabilization process of crude oil.
- How the crude petroleum oil is classified based on the nature of hydrocarbons present?
- Differentiate between high pressure distillation, atmospheric distillation and vacuum distillation of crude oil.
- Explain Dubbs Thermal cracking process with a flow sheet.
- Describe the Thermofer catalytic cracking moving bed process with a neat flow sheet.
- Differentiate between thermal and catalytic polymerization.
- Define alkylation? Discuss its type and reactions involved.
- Distinguish between low temperature and high temperature isomerisation process.
- With a labeled diagram explain Fluid coking process?
- Write short notes on various thermal properties of petroleum fractions.
- Compare the hydrofluoric acid process and sulfuric acid process for alkylation.

Part-III

Q3 Only Long Answer Type Questions (Answer Any Two out of Four) (16)

With a neat labeled diagram, explain the working of a fluid catalytic cracking (FCC) unit. Explain the variation of all parameters inside the riser.

Q4 Write a short note on hydro cracking and visbreaking. (16)

Q5 What is polymer gasoline? What are the feed stock and common catalyst used for the production of polymer gasoline? With a neat flow sheet, describe the production of polymer gasoline with operating conditions. (16)

Q6 Explain the Merox sweetening process with a neat flow sheet. (16)