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Total number of pages : 02

B.Tech
PCE7J002

7th Semester Regular Examination 2018–19

PETROLEUM REFINERY ENGINEERING

BRANCH : CHEM

Time : 3 Hours

Max Marks : 100

Q.CODE : E031

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

The figures in the right-hand margin indicate marks.

Answer all parts of a question at a place.

Part – I

Short Answer Type Questions (Answer All TEN)

Q1 Answer the following questions :

(10 x 2)

- What is the elemental composition of crude oil?
- Discuss about general properties of paraffins.
- State two points against the carbide theory.
- What is knocking? Give an example of anti-knocking agent.
- Define Degree API.
- Discuss the different grades of LPG.
- Mention the different types of gasoline which is blended with straight run gasoline.
- Define Octane Number.
- Define Cetane Number.
- Why additives are required?

Part – II

Focused-Short Answer Type Questions (Answer Any EIGHT out of TWELVE)

Q2 Answer the following questions :

(6 x 8)

- Discuss the three stage distillation units for processing of crude oil.
- Mention the pre-treatment processes for crude petroleum before refining.
- Discuss about the different types of additives that are blended into gasoline.
- Discuss in detail about Edeleanu process.
- How sulphuric acid alkylation process is carried out to get alkylate?
- Give a brief description on box type still heater.
- Discuss about the general properties of paraffin, unsaturates, and aromatics.
- Discuss about TBP apparatus.
- Why acid, alkali, and clay treatments are necessary for petroleum products?
- How low temperature isomerisation processes is carried out for butane?
- How furfural extraction is carried out for upgrading the Lube oil?
- Discuss about the Duo-sol extraction process with a neat flow sheet.

Part – III

Long Answer Type Questions (Answer Any TWO out of FOUR)

Q3 Discuss in detail about the origin and formation of crude mentioning elaborately about its composition, constituent, and classification based on nature of hydrocarbon. **(16)**

Q4 Why purification of petroleum products is necessary? Discuss in detail about one commercial purification process for removal of sulphur, wax, and asphalt. **(16)**

Q5 Discuss in detail about the properties of petroleum products which makes suitable for specific uses. **(16)**

Q6 What is cracking mentioning about its types and necessity? Elaborate about the catalytic cracking, feed, catalyst, reactions, and commercial processes involved in this. **(16)**