

**B.Tech. Fourth Semester (Food, Pulp & Paper, Oil & Paint & Petro Chem.) (CGS)**  
**11016 : Petro Chemical Technology - I : Paper - 4 PC 02**

P. Pages : 2

Time : Three Hours



**AU - 2636**

**Max. Marks : 80**

- Notes :
1. Due credit will be given to neatness and adequate dimensions.
  2. Diagrams and chemical equations should be given wherever necessary.
  3. Illustrate your answer necessary with the help of neat sketches.
  4. Discuss the reaction, mechanism wherever necessary.
  5. Use of pen Blue/Black ink/refill only for writing the answer book.

**SECTION - A**

1. a) When Indian oil corporation was commissioned? Discuss the objectives of formation of Indian oil corporation in brief. 6  
b) Explain the Breath lot's and Mende leef's inorganic theory of petroleum formation in detail with the probable chemical reactions involved. 7

**OR**

2. a) Why inorganic theory of petroleum formation is given up in favour of organic theory? 6  
b) How many petroleum refineries are operating in our country? Name these refineries with their present capacity. 7
3. a) Though the number of carbon atoms present in paraffins, naphthenes and aromatics may be same, but they have different characteristics. Explain with suitable examples. 7  
b) What do you mean by "Wobbe number"? Discuss the classification of natural gas according to their Wobbe number. 7

**OR**

4. a) Based on modern analytical methods, how Tissot and Welte classified the crude oil? Elaborate the distribution they suggested for these classes. 7  
b) Sulfur is present in crude oil in various forms. Name these sulfur compounds with suitable example of each. 7
5. a) What do you mean by octane number? How Research octane number and motor octane number is deter mined? 6  
b) What do you understand by "Carbonium ion"? Discuss the carbonium ion mechanism in detail with the reactions involved in catalytic cracking. 7

**OR**

6. a) Name the major reactions that take place during catalytic reforming. 2
- b) Commercial cracking catalysts can be divided into three classes. Name these classes and composition of catalysts used. 4
- c) Why alkylation process is gaining importance in refining sector? Explain alkylation reactions with suitable examples. 7

**SECTION – B**

7. Name the various drilling rigs used for offshore drilling and explain each with their utility for drilling in various water depths. 14

**OR**

8. What are the disadvantages of geological and geophysical prospecting methods? How these disadvantages are overcome by direct geochemical method? 14
9. a) Swivel is positioned at the top of Kelly. What are the important functions of swivel? 3
- b) Why borehole often deviates from the vertical as we go deeper while drilling the oil well? 4
- c) Explain the advantages of turbo drilling over rotary drilling. 6

**OR**

10. a) Density of mud fluid is very important. Why? 3
- b) What are the functions of well control system? 3
- c) Casing plays an important part in oil well drilling operation. Explain in detail. 7
11. a) Mention the details of pipelines used for transporting crude oil and petroleum gases from offshore platforms of Bombay high. 6
- b) Name the various types of tankers used to transport crude Oil, LNG, LPG, etc. Along with their capacities. 7

**OR**

12. a) What are the advantages of transporting crude oil and petroleum products by pipeline? 6
- b) Discuss the importance of non- conventional energy sources today and in future amid of depleting petroleum sources and increasing environmental concerns. 7

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