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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Seventh Semester)

**BCHPE 7041 – PETROLEUM REFINERY ENGINEERING**

(Chemical Engineering)

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.

**PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)**

<u>Q.1. Answer ALL questions</u>	[CO#]	[PO#]
a. Crude petroleum consists of	1	1
(i) 70-72% C and 5-7% H		
(ii) 11-14% C and 84-87% H		
(iii) 54% C and 25% H		
(iv) 84-87% C and 11-14% H		
b. Which of the following is a sulphur compound?	1	1
(i) Ethylmercaptan		
(ii) Napthenic acid		
(iii) Pyridine		
(iv) Cumene		
c. Naphthenes are	1	1
(i) Paraffins ( $C_nH_{2n+2}$ )		
(ii) Saturated cyclic compound		
(iii) Unsaturated cyclic compounds		
(iv) Straightchain saturated compound		
d. Antioxidant are added in gasoline engines to/for	1	1
(i) prevent icing of the carburetter		
(ii) prevent build-up of lead		
(iii) identification		
(iv) minimize gum formation		
e. Aromatics are desirable in	1	1
(i) High speed diesel oil to improve Cetane number		
(ii) Gasoline to improve Octane number		
(iii) Kerosene to improve smoke		
(iv) None of these		
f. Mercaptans are low boiling	1	1
(i) Oxygen compound		
(ii) Organometallic compounds		
(iii) Nitrogen compounds		
(iv) Sulphur compounds		
g. Clay treatment is generally employed for	1	1
(i) removal of olefins and diolefins from cracked gases/liquid stream		
(ii) oxidation stability of lube base stock		
(iii) improving of color and odor		
(iv) All of the above		
h. Pressure & temperature maintained in catalytic cracking is about	2	1
(i) 2 atm & 500°C		
(ii) 10 atm & 500°C		
(iii) 30 atm & 200°C		
(iv) 50 atm & 750°C		
i. Which of the following petroleum products has maximum flash point?	1	1
(i) Kerosene		
(ii) HSD oil		
(iii) Furnace oil		
(iv) Naptha		
j. Which of the following hydrocarbons has maximum octane number?	1	1
(i) Hexane		
(ii) Benzene		
(iii) Iso-hexane		
(iv) Cyclohexane		

**PART – B: (Short Answer Questions)****(2 x 5 = 10 Marks)**

<u>Q.2. Answer ALL questions</u>	[CO#]	[PO#]
a. How inorganic carbides are formed and in turn to give hydrocarbon?	2	1
b. Differentiate between origin of petroleum oil and coal.	3	1
c. What is stabilization process of petroleum oil?	2	1
d. What are the feed stocks normally employed for catalytic cracking?	1	1
e. What is delayed coking?	2	1

**PART – C: (Long Answer Questions)****(6 x 5 = 30 Marks)**

<u>Answer ANY FIVE questions</u>	Marks	[CO#]	[PO#]
3. Discuss in detail about the petroleum crude mentioning elaborately about its compositions, constituents, and classification based on nature of hydrocarbons.	(6)	1	1
4. Discuss in detail about properties of petroleum products which makes suitable for specific uses.	(6)	3	1
5. Mention the pre-treatment processes for crude petroleum before refining.	(6)	3	1
6. Appraise the different additives for Gasoline which is blended with straight run gasoline in order to increase the quality. Discuss in detail.	(6)	4	1
7. Discuss in detail about one each of the commercial purification processes for removal of sulphur, wax, and, asphalt.	(6)	4	2
8. Explain about the treatment of kerosene (Edeleanu Process) with a neat flow sheet.	(6)	2	1
9. How low temperature isomerisation process is carried out for butane?	(6)	2	1
10. Elaborate about catalytic cracking, feed, catalyst, reactions, and commercial processes involved in this.	(6)	4	1

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