Reg. No. : | | | | | | | | | | |

Question Paper Code: 59903

B.E./B.Tech. DEGREE EXAMINATION, DEC 2020

Elective

Chemical Engineering

15UCH903 - PETROLEUM REFINERY ENGINEERING

(Regulation 2015)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Name the extraneous substances that are found in crude oil CO1-R

   (a) Water and gas (b) Hydrocarbons (c) Sulphur (d) Nitrogen

2. The specific gravities of crude oil range from CO1- R

   (a) 2.0-5.0 (b) 0.73- 1.02 (c) 0.1-0.2 (d) 0.2-0.3

3. Which of the following products contains minimum sulphur? CO2- R

   (a) naphtha (b) kerosene (c) high speed diesel oil (d) furnace oil

4. Which of the following petroleum products has minimum flash point CO2- R

   (a) gasoline (b) kerosene

   (c) high speed diesel oil (d) fuel oil

5. Heavy vacuum gas oil obtained from vacuum distillation unit is mainly used as CO3-R

   (a) Blending component for gasoline

   (b) Blending component for kerosine

   (c) Feedstock for fluid catalytic cracking unit

   (d) Blending component for aviation turbine fuel

6. For middle distillate production ,FCC reactors are usually operated between CO3- R

(a) 175 ^{o}C and 185^{o}C (b) 900 ^{o}C and 950 ^{o}C

(c) 100 ^{o}C and 110 ^{o}C (d) 470 ^{o}C and 490 ^{o}C

7. Sulfolane is CO4- R

(a) Ethyl mercaptan (b) thiophene

(c) tetrahydrothiophene dioxide (d) methyl mercapten

8. In alkylation processes, olefins react with CO4- R

(a) Normal paraffins (b) isoparaffins

(c) naphthenes (d) aromatics

9. Fuel containing 4 wt% sulphur is burned in a furnace to heat the crude oil before introducing it to the crude distillation unit. Calculate the amount of SO2 emitted from the furnace stack per 100 kg of fuel burned. Calculate the amount of air required for combustion. CO5- R

(a) 17.28 kg (b) 10 kg (c) 15kg (d) 20 kg

10. Specific gravity of a petroleum product gives an indication of its CO5- R

(a) Degree of refinement (b) hydrocarbon content

(c) ease of atomisation (d) sulfur content

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11.	Discuss in detail the origin and formation of crude oil.	CO1-U	(8)
12.	Why quality control of petroleum products is essential in petroleum industries and what are the properties are considered for analysis.	CO2-U	(8)
13.	Discuss in detail about the Electrical Desalting procedure in removing impurities from crude oil.	CO3- U	(8)
14.	Discuss the importance of Edeleanu solvent extraction process in finishing process of crude oil	CO4- U	(8)
15.	Discuss a case study on design based problem in petroleum refinery	CO5- U	(8)