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Question Paper Code: 99901

B.E./B.Tech. DEGREE EXAMINATION, DEC 2021

Elective

Chemical Engineering

19UCH901 - PETROLEUM REFINERY ENGINEERING

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Name the extraneous substances that are found in crude oil CO1- R
(a) Water and gas (b) Hydrocarbons (c) Sulphur (d) Nitrogen
- Crude oils are composed principally of CO1- R
(a) sulphur (b) sulphur and nitrogen
(c) carbon and hydrogen (d) oxygen
- Which of the following petroleum products has minimum flash point CO2- U
(a) gasoline (b) kerosene (c) high speed diesel oil (d) fuel oil
- Which of the following petroleum products has maximum viscosity at a given temperature? CO2- U
(a) Motor spirit (b) Furnace oil (c) High speed diesel oil (d) kerosene
- What is the yield percentage of the naphtha feed in SOD hydroformer? CO3- R
(a) 70 to 90% (b) 5 to 10% (c) 20 to 40% (d) 50 to 60%
- During Cracking of Natural gas, what is produced? CO2- R
(a) Carbon (b) Hydrogen (c) Both C and H₂ (d) None of the mentioned
- What is meant by Bosch process? CO4- R
(a) Hydrogen from hydrocarbon (b) Hydrogen from water
(c) Hydrogen from natural gas (d) All of the mentioned

8. Which of the following is non-petroleum source? CO4- U
 (a) CaC₂ (b) H₂S (c) Paraffin (d) Olefin
9. Which of the following end product is produced by the ethylene obtained from petroleum? CO5- R
 (a) Formaldehyde (b) Esters (c) Cellulose acetate (d) Synthetic rubber
10. Which residue of petroleum refinery process is used as electrodes? CO5- U
 (a) Petroleum coke (b) Ammonia (c) Wax (d) Fuel oil

PART – B (5 x 2= 10 Marks)

11. What is meant by inorganic theory in formation of crude oil? CO1- U
12. What are the methods by which the total sulphur concentration is determined? CO2- R
13. What do you understand from organic theory in formation of crude oil? CO3- R
14. What is meant by coking process? CO4- U
15. What are fossil fuels? Name main fossil fuel. CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Explain in detail the constituents of crude oil. CO1- U (16)
 Or
 (b) Discuss in detail the hydrocarbons present in the crude oil CO1- U (16)
17. (a) Why quality control of petroleum products is essential in petroleum industries and what are the properties are considered for analysis. CO2- U (16)
 Or
 (b) Narrate the importance of analyzing the viscosity of fuel and the role of viscosity index. CO2- U (16)
18. (a) Discuss in detail about the Electrical Desalting procedure in removing impurities from crude oil. CO3- U (16)
 Or
 (b) Explain the importance of Atmospheric distillation of crude oil with a neat flow diagram mentioning its products CO3- U (16)

19. (a) Discuss the importance of Edeleanu solvent extraction process in finishing process of crude oil. CO4- U (16)
- Or
- (b) Explain in detail the reactions, catalysts and process involved in catalytic reforming with a neat flow diagram. CO4- U (16)
20. (a) What types of accountability systems are refiners using for energy management? Who is responsible for ensuring that the units are running at their optimal energy? CO5- U (16)
- Or
- (b) How do you safely spall a multi-pass heater with a common convection section? CO5- U (16)

