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C20-CHPC–403

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BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DCHPC – FOURTH SEMESTER EXAMINATION

PETROLEUM REFINING

Time : 3 Hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Write about the chemistry of formation of crude oil through inorganic theory.

2. List any three grades of gasoline.

3. Summarize the reasons for gum formation during the storage of gasoline.

4. Write about the boiling range and composition of aviation turbine fuel.

5. Describe the significance of flash and fire point test method.

6. List any three physical properties of lubricating oil.

7. List the problems caused due to the presence of salt in crude oil.

8. Write about the temperature to be maintained in a fractionating column.

9. List the methods of catalytic cracking.

10. Discuss the mechanism of thermal cracking.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Demonstrate the ASTM distillation test method for gasoline with the help of a neat diagram.

(OR)

(b) Interpret the ignition quality of diesel fuel by aniline point test method with the help of a neat diagram.

12. *(a)* Apply the rams-bottom carbon residue test method to lube oil in order to assess the feasibility of carbon deposit formation tendency with the help of a neat diagram.

(OR)

(b) Interpret the different types of petroleum wax by mentioning their boiling range.

13. *(a)* Apply the electric desalting method to desalt crude oil with the help of a neat flow diagram.

(OR)

(b) Apply solvent extraction method to treat kerosene from impurities with the help of a neat flow diagram.

14. *(a)* Use the operating conditions to illustrate the functioning of a fractionating column with the help of a neat flow diagram.

(OR)

(b) Apply the concept of vacuum distillation to produce various heavy distillates with the help of a neat diagram.

15. *(a)* Demonstrate the ISOMAX hydrocracking process with the help of a neat flow diagram.

(OR)

(b) Explain briefly about naphtha cracking process with a neat sketch.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Distinguish between cracking process and hydrocracking process in a refinery operation.

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