

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, MARCH 2022

THIRD YEAR [BATCH 2019-22]

INDUSTRIAL CHEMISTRY (HONOURS)

Date : 03/03/2022

Time : 11 am – 1 pm

Paper : DSE1

Full Marks : 50

Answer **any five** questions of the following:

[5×10]

1. How do you evaluate the following properties of petroleum empirically?

[2×5]

- Thermal conductivity
- Latent heat of vaporisation
- Heat of combustion
- Specific heat
- API gravity

2. a) What are the different steps involved in the refining of crude oil.?

b) What are the various fractions obtained in the distillation of crude oil?

Give in a tabular form mentioning the different temperatures of the various fractions obtained and state their industrial uses.

[6+4]

3. a) What is meant by catalytic cracking of petroleum? Explain with examples.

b) Explain fluidized-bed catalytic method of obtaining Gasoline. Give its mechanism.

[4+6]

4. a) What is reforming of petrol? How does reforming process increase Octane number?

Give two reforming reactions.

b) What is Isomerisation? How is Isobutane prepared from normal Butane?

[5+5]

5. a) What is meant by Octane number of a Gasoline and Cetane number of diesel fuel?

b) What is meant by Knocking of an IC engine? How is it related to chemical constitution?

c) What is the function of TEL? Why ethyl bromide is added when TEL is added to Gasoline fuel?

6. a) Define/explain

[2×5]

- Dewaxing
- Viscosity Index. How is it calculated?
- Cloud point and pour point.
- What is the function of lubricating oil?
- How are greases prepared? Name four solid greases.

7. a) Explain the following;

[2×3]

- Hydro processing, Hydrotreating & Hydrocracking
- How is desulfurization of gasoline made?
- What is meant by sweet petrol and sour petrol?

b) Give the Clausius sulphur recovery process. Give a sketch of the process.

[4]

8. a) What is meant by Coking? Name the different methods adopted for the manufacture of petroleum coke.

- How are raw cokes and calcined cokes produced?
- Give the composition of raw pet coke and calcined pet coke.
- Give the uses of pet coke.

b) Why India has banned the import of pet coke to be used as fuel?

[3+3+2+1+1]

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