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- (b) What is hydrogenation of oils? Differentiate between partial and complete hydrogenation,
- (c) Discuss the importance of alternative fuels in energy security. (5×3=15)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 3077

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Unique Paper Code : 2172551201

Name of the Paper : Fossil Fuels and Cleansing Agents (DSC)

Name of the Course : **B.Sc. (Prog.) Industrial Chemistry**

Semester : II

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. There are **six** questions and each question carries **15** marks.
3. Attempt any **Four** Questions in all.

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1. (a) What is the difference between primary and secondary fuels? Give examples.

(b) What is the saponification value of an oil? How is it determined?

(c) Explain composition, production and industrial uses of water gas. (5×3=15)
2. (a) What are the desired properties of a good metallurgical coke? How is it different from ordinary coke? Explain the working of a coke oven.

(b) Discuss the impact of cis fats, trans fats and omega-3 fatty acids on human health. Give one example of cis and trans fats.

(c) What are the various fractions obtained from the petroleum and discuss their importance. (5×3=15)
3. (a) What is solar energy? Explain the working principle of a solar panel.

(b) What do you understand from the calorific value of fuels? Differentiate between higher calorific value (HCV) and lower calorific value (LCV).

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- (c) Differentiate between renewable and non-renewable sources of energy. (5×3=15)
4. (a) Differentiate between CNG, LPG, and LNG in terms of composition, storage, and applications.

(b) Describe coal gas and its formation. Also, write the chemical reactions involved.

(c) Differentiate between oils and fats based on origin and chemical structure. (5×3=15)
5. (a) What is “coal gas”? What are the advantages and limitations of using coal gas as a fuel?

(b) What are the chemicals required for the preparation of soap. Describe soap action.

(c) What is cracking? Why is it important? Explain the thermal and catalytic cracking in detail. (5×3=15)
6. (a) Explain carbonization of coal. Differentiate between low-temperature and high-temperature carbonization.

P.T.O.