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B.TECH.
(SEM-VI) THEORY EXAMINATION 2017-18
AUTOMOTIVE FUELS AND LUBRICANTS

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a) Name the families of hydrocarbons.
b) What is the importance of lubricants in automobiles?
c) Define auto ignition temperature of fuel.
d) Explain the types of fuels.
e) Write the stages of combustion in CI engines.
f) What do you mean by Octane value of fuel?
g) Explain viscous friction and non-viscous friction.
h) What do you mean by cloud point and pour point?
i) Explain types of lubricants.
j) Explain demerits of alternative fuels.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a) Define petroleum refining process.
b) Explain the effect of flames in S I and C I engines with neat sketch.
c) What do you mean by abnormal combustion? Explain the phenomenon of knocking in SI engine.
d) What is the necessity of alternative fuel for automobile? Explain its future in India.
e) Explain the different types of fuel additives. Also explain their importance.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

a) What do you mean by cracking? How thermal cracking differ from catalytic cracking.
b) Describe the products of refining process.

4. Attempt any *one* part of the following: 10 x 1 = 10

a) What are the different fuel properties? Explain any four important properties of fuel.
b) Explain the different engine operating conditions which depend upon the volatility of fuel.

5. Attempt any *one* part of the following: 10 x 1 = 10

a) Explain Cetane rating and its significance.
b) Discuss the mechanism of combustion in SI Engine.

6. Attempt any *one* part of the following: 10 x 1 = 10

a) Describe the suitability of CNG in conventional diesel engine and its salient properties.
b) Discuss about alternate energy sources in brief.

7. Attempt any *one* part of the following: 10 x 1 = 10

a) What is a hydro-dynamic lubricating system? Discuss its advantages.

b) Explain the dry sump and wet sump lubrication system used in automotive engine