(2064)

14660

B. Tech 4th Semester Examination

Auto Fuels and Lubrication (O.S.)

AU-4001

Time : 3 Hours   Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt one question each from A, B, C and D sections. Section E is compulsory.

SECTION - A

1. (a) Describe the structure of petroleum refining process.

    (b) Classify petroleum fuels.   (15)

2. Write short notes on:

    (a) Fire point and flash point.

    (b) Diesel Index

    (c) API gravity.   (15)

SECTION - B

3. (a) What do you mean by Octane and Cetane rating of fuel?

    (b) What is the requirement of additives in diesel and petrol car?   (15)

4. Discuss the combustion of fuel in SI engine. How do you reduce knocking in SI engine?   (15)

SECTION - C

5. (a) What are merits and demerits of alternative fuels such as CNG and LPG?

 (b) Discuss the availability and properties of hydrogen and biogas fuel. (15)

6. Write short notes on;

 (i) Synthetic lubricants

 (ii) Properties of lubricating oil

 (iii) Degradation of lubricants. (15)

SECTION - D

7. What do you mean by bearing lubrication? Discuss the design of lubrication system of a car with a neat sketch. (15)

8. What do you mean by total engine friction? Discuss the effect of engine variables on friction. (15)

SECTION - E

9. (i) Describe briefly elasto-hydrodynamic lubrication.

 (ii) Describe solid, semi-solid and liquid lubricant applications.

 (iii) Discuss fuel cells and their drawback.

 (iv) What are advantages and disadvantages of solar cars?

 (v) Discuss various products of refining process with a neat sketch.

 (vi) Discuss knocking phenomenon in diesel engine.

 (vii) Define viscosity index.

 (viii) Discuss two important properties of lubricants.

 (ix) What are units of viscosity in MKS and CGS systems?

 (x) Discuss the process of catalytic cracking. (10×4=40)