KADI SARVA VISHWAVIDHYALAYA
B.E MECHANICAL Semester–V

Subject: Automobile fuels and lubricants

Subject Code: AE (503)

Date: 15/11/2016

Time: 10:30a.m. – 1:3p.m.

Total Marks: 70

Instructions:

1. Answer each section in separate Answer sheet.
2. Use of Scientific calculator is permitted.
3. All questions are **Compulsory**.
4. Indicate **clearly**, the options you attempt along with its respective question number.
5. Use the last page of main supplementary of **rough work**.

SECTION-I

Que:1(A)   How the fuels are classified? Enlist advantage & disadvantage of Gaseous fuel.   [5]

(B)   Enumerate desirable properties of a fuel for IC engine.   [5]

(C)   Explain the construction & Working of Bomb calorimeter with neat sketch.   [5]

OR

(C)   Explain Boys gas calorimeter with neat sketch.   [5]

Que:2(A)   Explain crank case ventilation.   [5]

(B)   Enumerate desirable properties of a fuel for CI engine.   [5]

OR

(A)   Explain Deterioration in lubricating oils.   [5]

(B)   Explain following Refining Process: [5]

(1) Thermal Cracking	(2) Catalytic cracking	(3) Polymerization
(4)Alkylation	(5) Isomerization.	

Que:3(A)   Explain lubrication in chassis.   [5]

(B)   List out different additive in SI engine fuel   [5]

OR

(A)   List out properties of Good additives.   [5]

(B)   Explain terms :(1)HCV and (2)LCV of fuels.

SECTION-II

Que:4(A)	Explain hydrodynamic lubrication theory and Elasto-Hydrodynamic lubrication theory.	[5]
(B)	Explain Boundary lubrication theory and hydrostatic theory.	[5]
(C)	Explain types of lubricants in detail.	[5]

OR

(C)	Explain types of greases and characteristics of gases.	[5]
Que:5(A)	Define terms(1)chemical stability (2)cloud point (3)oiliness (4)viscosity(5)Emulsion number	[5]
(B)	Define terms:(1)fire point and mechanical impurities (2) Pour point	[5]

OR

(A)	Define terms(1)corrosion properties and Ash content (2) Flash point	[5]
(B)	Explain viscosity and measuring viscosity of lubricating oil.	[5]
Que:6(A)	Explain factor affecting viscosity and viscosity index.	[5]
(B)	Explain oil filters.	[5]

OR

(A)	Explain oil strainer and Gear type oil pump in detail.	[5]
(B)	Explain semi pressurized lubrication system.	[5]

Best of luck

KADI SARVA VISHWAVIDHYALAYA
B.E MECHANICAL Semester–V

Subject: Automobile fuels and lubricants
Subject Code: AE (503)

Date: 23/11/2015
Time: 10:30a.m.–1:30 p.m.
Total Marks: 70

Instructions:
1. Answer each section in separate Answer sheet.
2. Use of Scientific calculator is permitted.
3. All questions are **Compulsory**.
4. Indicate **clearly**, the options you attempt along with its respective question number.
5. Use the last page of main supplementary of **rough work**.

SECTION-I

Marks

Que:1(A) Discuss the fractional distillation process for obtaining various petroleum products from crude petroleum. [5]

(B) How the fuels are classified? Enlist advantage & disadvantage of Gaseous fuel. [5]

(C) Explain following tests: (1)ASTM Vapour Test (2) Reid Vapour Test [5]

OR

(C) Explain following Refining Process: [5]

(1) Thermal Cracking   (2) Catalytic cracking   (3) Polymerization
(4)Alkylation   (5) Isomerization.

Que:2(A) Write short not on Cetane number. [5]

(B) Define terms: (1)Cloud point   (2) Pour point [5]
                     (3)Flash point   (4)Fire point

OR

(A) Explain the importance of Octane number in SI Engine fuels. [5]

(B) What is HUCR? Explain in brief. [5]

Que:3(A) Explain the effect of anti-knock agent in SI engine fuels. [5]

(B) Discuss the effect of the Volatility on:(1)Acceleration (2) Starting (3) Warm-up [5]

OR

(A) List out properties of Good additives. [5]

(B) Explain in brief on chemical structure of petroleum and its basic hydrocarbon groups. [5]

SECTION-II

Que:4 (A) Define fuel. Explain the minimum air requirement for complete combustion of following fuel by mass. (1)Hydrogen (2)Carbon (3) Sulphur (4) Methane   **[5]**

(B) Define HCV & LCV and explain Bomb calorimeter with neat sketch.   **[5]**

(C) State the function of Orsat apparatus. Explain its working with neat sketch.   **[5]**

OR

(C) A fuel has the following percentage composition by mass: C=85%,H2=15%.Determine :   **[5]**

    (1) The stoichiometric mass of air required for complete combustion of air.

    (2) The percentage composition by mass of dry products of combustion. Air contains 23.2% oxygen by mass.

Que:5 (A) Define Lubricant. Explain the objective of Lubrication in brief.   **[5]**

(B) What is CNG? Discuss the use of CNG as alternative as a fuel for SI Engine.   **[5]**

OR

(A) Discuss the factors which are essential in selection of fuels as an alternative to conventional fuels.   **[5]**

(B) A gas consists of 22% CO_2, 70 % N_2 and 8% O_2 by volume. Calculate the percentage analysis of the gas by mass.   **[5]**

Que:6 (A) Write short note on different methods of production of Biodiesel as fuel for IC engine.   **[5]**

(B) Explain Splash Lubrication system.   **[5]**

OR

(A) Explain dry sump lubrication.   **[5]**

(B) Discuss the advantage & disadvantage of CNG as alternative fuel for SI Engine.   **[5]**

Best of luck