Total No. of Questions—**6**] [Total No. of Printed Pages—**3**

Seat No.	

[4956]-8

F.E. (Common to All Branches) (Second Semester)

EXAMINATION, 2016

APPLIED SCIENCE—II

(Chemistry)

(2008 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Answer *three* questions from Section I and *three* questions from Section II.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Use of logarithmic tables, side rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(*v*) Assume suitable data, if necessary.

1. (*a*) Give the principle of Bomb calorimeter. How gross calorific value of solid fuel is determined by Bomb calorimeter ? [7]

(*b*) Give preparation reaction of biodiesel. State merits and demerits of biodiesel. [6]

(*c*) 0.25 gm of a coal sample on burning in combustion apparatus in the current of pure oxygen was found to increase weight of U-tube with anhydrous $CaCl_2$ by 0.075 gm and of KOH U-tube by 0.52 gm. Calculate percentage of C and H in coal sample. [4]

P.T.O.

Or

2. (*a*) Explain in brief the process of distillation of crude petroleum. Give composition, boiling range and uses of any *three* fractions obtained. [7]

(*b*) What is rocket propallent ? Explain different types of propallent used in rocket. [6]

(*c*) Calculate the weight of air required for complete combustion of 100 kg of coal if it contains C = 82%, H_2 = 6%, O_2 = 2%, S = 4%, remaining ash. [4]

3. (*a*) What is principle of cathodic protection ? Discuss the various types of cathodic protection. [7]

(*b*) Explain different factors affecting rate of corrosion. [6]

(*c*) Give the names of oxide films in Mg, Cr, Ag and Mo metals. [4]

Or

4. (*a*) Define corrosion. Explain the mechanism of wet corrosion by H_2 evolution and O_2 absorption. [7]

(*b*) Explain galvanising and tinning methods for applying metallic coatings. [6]

(*c*) Write a note on electroplating of metal. [4]

5. (*a*) What is priming and foaming ? What are the disadvantages of priming and foaming ? How can they be prevented ? [6]

(*b*) How chloride quantity in water is determined by Mohr's method ? [6]

(*c*) 50 ml of an alkaline water sample requires 9.2 ml of N/50 HCl upto phenolphthalein end point and total 13.1 ml of the acid for complete neutralization. Find the types and amount of alkalinities in water. [4]

Or

6. (*a*) Draw and explain phase diagram for water system. [6]

(*b*) Explain zeolite process for water softening. [6]

(*c*) Give the differences in sludge and scale in boiler. [4]