

Total No. of Questions : 12]

[Total No. of Printed Pages : 4

[3561]-202

F. E. (Semester - II) Examination - 2009

APPLIED SCIENCE - II

(June 2008 Course)

Time : 3 Hours]

[Max. Marks : 100

Instructions :

- (1) Answer to the *two sections* should be written in *separate answer-books*.
- (2) *Black figures to the right indicate full marks.*
- (3) *Neat diagrams must be drawn wherever necessary.*
- (4) *Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- (5) *Assume suitable data, if necessary.*

Constants : $h = 6.63 \times 10^{-34}$ J-sec.

$e = 1.6 \times 10^{-19}$ c

$m_e = 9.1 \times 10^{-31}$ kg

$\pi = 3.142$



SECTION - I : CHEMISTRY

- Q.1) (A) Explain different types of Calorific Values of fuel. How is it determined using Bomb Calorimeter ? [07]
- (B) Write note on Distillation of Petroleum. [06]
- (C) 0.25 gm of a coal sample on burning in a combustion chamber 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 0.52gm. Find C and H percentages in coal. [04]

OR

Q.2) (A) What is Rocket Propellant ? Explain different types of propellants used in rocket. [07]

(B) Explain production, properties and storage of Hydrogen gas. [06]

(C) Give merits and demerits of Power Alcohol. [04]

Q.3) (A) What is principle of Cathodic Protection ? Discuss the various types of Cathodic Protection. [07]

(B) Explain the factors affecting the Corrosion. [06]

(C) Explain corrosion due to following gases : [04]

(1) Oxygen

(2) Chlorine

OR

Q.4) (A) Define Corrosion. Explain the mechanism of Wet Corrosion. [07]

(B) Write note on : Hot Dipping. [06]

(C) Explain Blacodising. [04]

Q.5) (A) Explain zeolite process for Water Softening. [06]

(B) What are the main micro-constituents in Iron-carbon System ? State their particulars. [06]

(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 neutralisation. Find the types and amounts of alkalinities in the water sample. [04]

OR

Q.6) (A) Draw and explain phase diagram of two component system. [06]

(B) What are the causes, preventive measures and disadvantages of scale and sludge formation in the boilers. [06]

