

Total No. of Questions : 6]

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[4061]-108

F. E. Examination - 2011

APPLIED SCIENCE - II

(CHEMISTRY)

(2008 Pattern)



Time : 2 Hours]

[Max. Marks : 50

Instructions :

- (1) All questions are compulsory.
- (2) Black figures to the right indicate full marks.
- (3) Neat diagrams must be drawn wherever necessary.
- (4) Assume suitable data, if necessary.
- (5) Use of logarithmic tables, slide rule, mollier charts, electronic pocket calculator and steam tables is allowed.

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- Q.1) (A) What is Ultimate Analysis ? Explain determination of percentage of Carbon and Hydrogen with principle, chemical reaction and formulae. [07]
- (B) Define Rocket Propellant ? Give characteristics of a good Propellant. Classify the Propellants with explanation and examples. [06]
- (C) 0.072 gm of a fuel containing 80% carbon when burnt in a Bomb Calorimeter, increased temperature of water from 27.3°C to 29.1°C. If the calorimeter contains 250 gm of water and its water equivalent is 150 gm, calculate GCV of the Fuel. [04]

OR

- Q.2) (A) Write a note on Refining of Petroleum with principle of Refining, diagram of Refining and various fractions which are used as fuel with their B.P., composition and applications. [07]
- (B) Write a note on Bio-diesel. [06]
- (C) A petrol sample contains 14% H and 86% C, calculate the quantity of air required for complete combustion of 1 kg petrol. [04]

- Q.3) (A) Explain various Cathodic Protection Methods to control corrosion with principle, figures and applications. [07]
- (B) Write a note on Electroplating with principle, diagram and applications. [06]
- (C) Differentiate between Anodic Coatings and Cathodic Coatings. [04]

OR

- Q.4) (A) What is Electro-chemical Corrosion ? Explain Electro-chemical Corrosion by evolution of Hydrogen Gas and absorption of Oxygen Gas. [07]
- (B) Explain various factors affecting Rate of Corrosion. [06]
- (C) Explain Atmospheric Corrosion of Na and Cr with chemical reactions and nature of oxide film. [04]
- Q.5) (A) How alkalinity of water sample is determined ? Explain it with procedure, formulae and table of determination. [06]
- (B) What are the Scales ? Give their formation, disadvantages and preventive measures in Boiler. [06]
- (C) 50 ml of a water sample requires 12.7 ml of 0.02 M EDTA during titration. Calculate total hardness of the water sample. [04]

OR

- Q.6) (A) Draw and explain phase diagram of Sulphur System with respect to areas, curves and triple points. [06]
- (B) Explain Corrosion of Boiler by dissolved gases and dissolved salts with chemical reactions and its preventions. [06]
- (C) An Exhausted Zeolite Softener was regenerated by passing 150 litres of Sodium Chloride Solution having strength 150 gm/litre of NaCl. How many litres of hard water sample having hardness 400 ppm can be softened by using this softener ? [04]