

EKS-311

**B.E. I Semester (CGPA) Civil Engg.
Examination 2017**

ENGINEERING CHEMISTRY

Paper : CE-102

Time Allowed : Three Hours

Maximum Marks : 60

Note: Attempt all questions. All questions carry equal marks.

- Q.1. a) What is soap chemically?
b) What is gasoline?
c) What is thermosetting resin?
d) Write about steam emulsion number.
e) Define Acid rain.

5x2=10

- Q.2. a) 0.005 gr of CaCO_3 dissolve in water to which HCl was added required 11ml of EDTA 200 ml of hard water required 13ml of EDTA. 200 ml of the same sample of water after boiling and filtering required 09ml of EDTA find out the carbonate and non carbonate hardness of water. 5
b) How water is purified from municipal supply? 5

OR

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P.T.O.

(2)

- a) What are the boiler problem discuss in detail. 5
b) Calculate the amount of lime and soda required for softing 10,000 liters of water containing- mg $\text{CO}_3 = 144$ ppm, $\text{CaCO}_3 = 125$ mg/L, $\text{MgCl}_2 = 195$ ppm, $\text{CaCl}_2 = 111$ ppm, $\text{Fe}_2\text{O}_3 = 212$ ppm, $\text{Na}_2\text{SO}_4 = 150$ ppm. 5

- Q.3. a) Define gross and net calorific value of fuel describe bomb calorimeter method of determining calorific value of fuel. 5
b) The % composition of a sample of coal by mass was found to be 76% C, 5.6% H, 12.8% O, 12% S, 2.7% N and 2.2% ash calculate the minimum amount of air necessary for the complete combustion of 2 kg of coal. 5

OR

- a) What is octane number give it relation with structure of hydrocarbon? 5
b) Calculate the weight and volume of air required for the combustion of 5 kg of carbon. 5

- Q.4. a) Write Engineering properties of Brass. 5
b) How is the study of Ag-pb phase diagram useful in the desilicization of argentiferous lead? 5

OR

- a) Explain Refractoriness. Give account of any four characteristics of a good refractory. 5
b) Discuss the uses of polymer as engineering material. 5

- Q.5. a) What are various mechanism of lubrication? Explain it. 5

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Contd.....

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- b) How is electroplating performed write the factors which influence the thickness of electroplated coating? 5

OR

- a) Name two example for each of the following Inorganic pigments in white, yellow, blue, red black and green colours. 5
- b) Explain the following properties of lubricants used and discuss their significance 5
- i) Viscosity and viscosity Index
- ii) Cloud and pour-points

- Q.6. a) How does the atmospheric ozone depletion occur-what are its effects. 5
- b) What are the conditions for the absorption of IR radiation by a molecule explain the various applications of IR spectroscopy? 5

OR

- a) What are the causes of the environment pollution discuss treatment of radiochemical wastes? 5
- b) How would you test the validity of the beer Lambert law? What are the limitations of the law? 5

