Code :9ABS103

B.Tech I Year (R09) Regular & Supplementary Examinations, May/June 2011
ENGINEERING CHEMISTRY
(Common to all branches)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Define ppm? What is degree of hardness of water?
   (b) What are boiler troubles? How are they caused? Give suggestions to minimize the troubles.
   (c) What is break point chlorination? State its significance.
2. Explain various factors influence the corrosion of metals?
3. Explain Chain polymerization and Step polymerization with examples.
4. (a) How are lubricant classified? Give example.
   (b) Explain the Boundary film lubrication theory and the mechanism of the lubricants.
5. (a) Define the Cell Constant of a Conductivity Cell? Explain how it is measured? What are its Units.
   (b) The resistance of N/2 solution of an electrolyte in a well was found to be 50 ohm. Calculate the equivalent conductance of the solution, if the electrode in cell are 2.2 cm apart and with an area of 3.8 Sq cm.
6. (a) Draw and explain the phase diagram of one component system, three phase system.
   (b) Explain reason that the fusion curve of ice has negative slope whereas the sublimation curve has a positive slope in the phase diagram.
7. (a) With a neat diagram describe the orsats gas analysis method. What are the special precaution to be taken in the measurement.
   (b) Define calorific values of a fuel. Distinguish gross and net calorific value of fuel.
8. What are Refractories? Explain Thermal spalling, strength and porosity of the refractories.

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1. Describe the estimation of dissolved oxygen present in water with principle and chemical equations.
2. (a) Differentiate between Cathodic and Anodic protection.
   (b) Write a note on Inhibitors.
3. Differentiate Thermosetting and Thermoplastic plastics with suitable examples.
4. (a) Distinguish between fluid film and boundary film lubrications.
   (b) Explain the classification of lubricants and give example for each.
5. (a) What is meant by Conductometric titrations? What is the basic principle involved in it .
   (b) What are the advantages of conductometric titrations?
6. Discuss the phase diagram of two-component system by taking suitable example.
7. (a) An oil on analysis gave the following results. C=85%, H=12% and O=3%. Find the weight of minimum air required for burning of 1kg of the fuel .
   (b) Write a note on synthetic petrol.
8. (a) Give an account of the functions and significance of the ingredients of cement.
   (b) How is Portland cement manufactured by dry process?

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Code :9ABS103 **3**

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ENGINEERING CHEMISTRY
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Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. Describe the basic principle involved in the estimation of alkalinity of water and give detailed procedure for the estimation of alkalinity of water.
2. Explain the theory and mechanisms of Corrosion.
3. Explain any two moulding methods with neat labeled diagrams.
4. (a) Discuss the function of lubricants.
   (b) Describe the mechanism of extreme pressure lubricant.
5. (a) Discuss the titration curve obtain in conductometric titration of weak acid and strong base?
   (b) What are the limitations of conductometric titrations?
6. (a) What is condensed system? Write the reduced phase rule equation.
   (b) Write short notes on Freezing mixtures.
7. What are the characteristics of metallurgical coke? Describe the manufacture of metallurgical coke by Ott-Hoffman's method.
8. (a) What is meant by setting and hardening of cement.
   (b) With the help of sequence of chemical reactions explain the setting and hardening of cement.

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1. (a) Explain the principle involved in the estimation of dissolved oxygen in water. samples.
   (b) Give detailed procedure for the determination of dissolved oxygen in water.
2. (a) Explain the mechanism of Dry corrosion.
   (b) Write a note on galvanic corrosion.
3. (a) Write short notes on compounding of rubber.
   (b) Discuss about vulcanization of rubber.
4. (a) What are viscosity and viscosity index of lubricating oil?
   (b) Discuss the functions of lubricants.
5. (a) Discuss the titration curve obtain in conductometric titration of strong acid and weak base?
   (b) Discuss the titration curve obtain in conductometric redox titration?
6. (a) What is meant by degree of freedom? Explain the significance of degree of freedom with suitable example.
   (b) Define the term triple point? Discuss the significance of triple point in the phase diagram of water system.
7. (a) What is meant by Synthetic petrol? How do you synthesis petrol by Fisher-Tropsch process.
   (b) What is a coal? Explain the significance of Anthracite coal.
8. (a) Explain the differences between the acidic basic and neutral refractories with suitable examples.
   (b) What is meant by pyrometric cone equivalent of a cone? Explain.

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