

**B.E DEGREE EXAMINATIONS: NOV/DEC 2010**

Second Semester

**CHY103: APPLIED CHEMISTRY**

(Common to Aeronautical Engineering, Mechanical Engineering and Mechatronics Engineering)

**Time: Three Hours**

**Maximum Marks: 100**

**Answer ALL Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. The compound which possesses highest Octane Number is .....  
a) n-heptane      b) n-hexadecane      c) n-octane      d) iso octane
2. The most superior variety of coal is .....  
a) peat      b) anthracite      c) bituminous      d) lignite
3. The stabilizer used in the preparation of Zirconia bricks is .....  
a) ZnO      b) MgO      c) PbO<sub>2</sub>      d) Cr<sub>2</sub>O<sub>3</sub>
4. The trade name of polycarbonates is .....  
a) Perspex      b) vinol      c) merlan      d) nylon
5. Sophisticated instruments are protected from corrosion by the addition of .....  
a) cathodic inhibitor      b) vapour phase inhibitor      c) anodic inhibitor      d) neutral inhibitor
6. The powdering of the paint film on the painted surface is called .....  
a) Erosion      b) chalking      c) cracking      d) blistering
7. Foaming can be prevented by addition of coagulants like .....  
a) Synthetic polyamides      b) sodium phosphate      c) sodium aluminate      d) aluminium sulphate.
8. The main substance involved in the formation of scale in boilers is .....  
a) magnesium hydroxide      b) calcium chloride      c) magnesium carbonate      d) calcium sulphate
9. The number of phases in a water system like Ice → water → vapour is .....  
a) two      b) one      c) three      d) four
10. The first successful metal filament was made from .....  
a) tungsten      b) aluminium      c) tantalum      d) copper.

**PART B (10 x 2 = 20 Marks)**

11. Define hydrogenation of coal.
12. Define Ignition Lag.
13. What are Refractories?
14. Define Flash and Fire point..
15. State Pilling – Bedworth rule.

16. List any two characteristics of paint.
17. What is Break Point Chlorination? Explain.
18. What is meant by Calgon conditioning?
19. State phase rule.
20. What is hydrostatic pressing?

**PART C (5 x 14 = 70 Marks)**

21. a) How is Ultimate analysis of Coal determined?

**(OR)**

b) How is Flue gas analysis carried out? Explain with a neat diagram. Mention its significance.

22. a) (i) Explain the refractoriness and Thermal spalling of refractories. (7)

(ii) List out the preparation, properties and uses of Polyurethanes. (7)

**(OR)**

b) Give a detailed account on the properties of Lubricants.

23. a) (i) Discuss the mechanism of Electrochemical corrosion. (7)

(ii) List out the various environmental factors influencing the rate of corrosion. (7)

**(OR)**

(i) Write a note on the application of inhibitors in corrosion control. (7)

(ii) What are the important constituents of Paint? Explain the function of various constituents. (7)

24. a) (i) Discuss the process of Demineralization of water using Ion- Exchange Resins. (8)

(ii) Write notes on Boiler corrosion. (6)

**(OR)**

b) (i) Briefly explain the methods of treatment of water for domestic use. (7)

(ii) Write a note on Desalination of water by Reverse Osmosis. (7)

25. a) (i) Draw a neat Phase diagram and explain the Lead-Silver system. Briefly write about pattinson's process.

**(OR)**

b) (i) What is meant by Sintering in Powder metallurgy? How is it carried out? What are the changes taking place during sintering? (7)

(ii) How are metal powders produced by atomization and chemical reduction process? (7)

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