

B.E DEGREE EXAMINATIONS: MAY/JUNE 2014

(Regulation 2013)

Second Semester

U13CHT202: APPLIED CHEMISTRY

(Common to AERO, AUTO, MCT & MECH)

Time: Three Hours**Maximum Marks: 100****Answer all the Questions:-****PART A (10 x 1 = 10 Marks)**

- The lowest temperature at which the fuel and starts to burn smoothly is called -----
- Premature instantaneous ignition of fuel-air mixture in an I.C. engine, leading to production of an explosive violence, is
 - Octane number
 - Cetane number
 - Knocking
 - Cracking
- is the lowest temperature at which the oil gives off enough vapors that must burn continuously for at least 5 seconds when a small flame is brought near to it.
 - Fire point
 - Flash point
 - Pour point
 - Cloud point
- is an approximate chemical composition of fireclay.
- A steel screw in a brass marine hardware corrodes because of
 - Galvanic corrosion
 - Pitting corrosion
 - Microbial corrosion
 - Anti corrosion
- A pure metal rod half- immersed vertically in water starts to corrode at the bottom due to -----
---corrosion
- In high pressure boilers, scale formation can be avoided by adding-----
- is a type of boiler corrosion, caused by using highly alkaline water in the boiler.
 - Foaming
 - Priming
 - Caustic embrittlement
 - Sludge
- The Condensed phase rule is-----
 - $F=C-P+2$
 - $F=C-P+1$
 - $P=F-C+1$
 - $C=F-P+2$
- The process of converting loose metal powder into an accurately defined dimension is -----

PART B (10 x 2 = 20 Marks)**(Not more than 40 words)**

- Why should leaded petrol not to be used?
- Water gas is superior to producer gas how?
- Define Viscosity index.
- Mention the causes of thermal spalling.
- Point out four factors which affect corrosion.
- What are the functions of plasticizers in paint?
- Write any four disadvantages of hard water.
- Distinguish priming and foaming
- Define the terms phase and component.
- What is meant by atomization?

PART C (5 x 14 = 70 Marks)**(Not more than 400 words)****Q.No. 21 is Compulsory**

- Explain the various processes in domestic water treatment for drinking purpose.
- How is the flue gas analysis carried out? Explain with neat diagram. (7)
 - Explain ultimate analysis of coal. How is it carried out? (7)

(OR)

 - Describe the manufacture of gasoline by fisher-Tropsch method. (7)
 - How will you determine the calorific value of solid fuel by bomb calorimeter? (7)
- What are refractories? Explain the types of refractories. (7)
 - Compare the structure of graphite and molybdenum disulphide and their use (7)

(OR)

 - What are abrasives? How are they classified? Explain with examples. (7)
 - Illustrate the significance of the PCE test & RUL test used in evaluation of refractory bricks. (7)
- What are the objectives of electroplating? Give an account of method used in Electroplating of Copper (7)
 - Explain the mechanism of electrochemical corrosion. (7)

(OR)

- b) (i) Explain sacrificial anodic method. (7)
(ii) Write short note on Pitting corrosion and Differential aeration corrosion

25. a) (i) How phase diagram is constructed from thermal analysis data? (7)
(ii) Discuss the advantages and limitations of powder metallurgy (7)

(OR)

- b) (i) Explain the lead silver system with a neat phase diagram (8)
(ii) Discuss any two methods to explain. How metal powder prepared? (6)
