



B.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2013)

Second Semester

U13CHT202 : APPLIED CHEMISTRY

(Common to AE/AUE/ME/MCE)

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

- Which of the following fuel gases possess the higher calorific value?
 - Water gas
 - Coal gas
 - Producer gas
 - Natural gas
- Higher the Octane rating of a gasoline,.....is the tendency for knocking.
- Good thermal conductivity of a refractory material is desirable , if it is to be used in the construction of walls of
 - Blast furnace
 - Muffle furnace
 - Reverberatory furnace
 - All of these
- Hardness of an abrasive is measured roughly on.....scale.
- The deciding factor in atmospheric corrosion is
 - Presence of oxygen in air
 - Humidity of the air
 - Presence of SO₂ in the air
 - Frequency of rain fall
- When Zinc-Copper alloy is placed in moist air, thenundergo corrosion.
- Potable water treatment does not involve
 - Sedimentation
 - Coagulation
 - Disinfection
 - softening
- As the temperature increases, the solubility of calcium sulphate.....
- When lead is progressively added to molten silver, the melting point of the resultant is
 - Raised
 - Lowered
 - Remain same
 - Unpredictable
- Condensed phase rule is.....

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. Distinguish the Gross and Net calorific values of a fuel.
12. Give the significance of Octane number.
13. How is thermal conductivity of a refractory related to its porosity?
14. Which abrasive is used in drilling bits?
15. What is Pilling-Bedworth rule?
16. Why does corrosion of water filled steel tanks occur below the waterline?
17. Distinguish between scale and sludge.
18. List advantages of reverse osmosis process over ion-exchange process.
19. Give an example to invariant system.
20. State few applications of powder metallurgy process.

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. (i) Draw the diagram of pb-Ag system forming eutectic alloy and explain the areas, lines and points. (8)
- (ii) Write short notes on the important steps involved in power metallurgy process. (7)
22. a) (i) How is hydrogen and carbon content in coal determined? What is their significance? (8)
- (ii) Catalytic cracking of heavy oil is superior method to thermal cracking process? How? (7)

(OR)

- b) (i) Write short note on Orsat's method of flue gas analysis and its significance. (8)
- (ii) Give the constituents and uses of producer gas. (7)
23. a) Explain the significance of the following properties of the refractory materials.
a) Porosity b) dimensional stability c) Refractoriness d) Thermal spalling.

(OR)

- b) Enumerate the significance of the following factors in selecting lubricating oil for a particular uses a) Refractive index b) Flash-point c) Carbon residue d) Aniline point.
24. a) (i) Describe briefly: a) Pitting corrosion b) Stress corrosion. (8)

(ii) How corrosion can be prevented by cathodic protection method? (7)

(OR)

b) (i) Mention the constituents of paint and their functions. (8)

(ii) Discuss the various factors which influence corrosion. (7)

25. a) (i) Explain briefly a) Caustic embrittlement b) Priming and foaming (8)

(ii) Describe in detail various methods of potable water treatment (7)

(OR)

b) (i) With neat sketch explain demineralization process of treating water. (8)

Mention the advantages of this method.

(ii) What is reverse osmosis? Give its advantages over ion exchange methods. (7)
