



Roll No																			
---------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING**

**MAKE UP EXAMINATION – JAN 2023**

**Course Code:** CHE 1002

**Course Name:** Industrial Chemistry

**Program & Sem:** B. Tech

**Date:** 30 – JAN - 2023

**Time:** 9:30 AM to 12:30 PM

**Max Marks:** 100

**Weightage:** 50 %

**Instructions:**

- (i) Read the all questions carefully and answer accordingly.  
(ii) Use of Non-Programmable calculators is permitted

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries TWO marks.**

**(15Qx 2M= 30M)**

**Q.NO. 1.** Gold coated copper is an example of \_\_\_\_\_

- (a) Electroless plating                      (b) Cathodic coating  
(c) Anodic coating                            (d) None of these

**(C.O.No.4) [Knowledge]**

**Q.NO. 2.** Which of these is a primary factor that can influence the rate of corrosion?

- (a) Hydrogen Over potential              (b) pH  
(c) Temperature                              (d) None of these

**(C.O.No.4) [Knowledge]**

**Q.NO. 3.** . In Differential aeration corrosion, the reaction occurs at the \_\_\_\_\_

- (a) part of the metal exposed to higher concentration of oxygen  
(b) part of the metal exposed to lower concentration of oxygen  
(c) part of the metal exposed to higher concentration of electrolyte  
(d) part of the metal exposed to lower concentration of electrolyte

**(C.O.No.4) [Knowledge]**

**Q.NO. 4.** Which of these have highest octane number?

- (a) Aromatics (b) Cycloalkanes    (c) Olefins    (d) Branched Hydrocarbons

**(C.O.No.3) [Knowledge]**

**Q.NO. 5.** The fuel used in Compression Ignition Engines is \_\_\_\_\_

- (a) Petrol    (b) Diesel    (c) LPG    (d) CNG

**(C.O.No.3) [Knowledge]**

**Q.NO. 6.** Which of the following is not a reaction under catalytic reforming?

- (a) Isomerization (b) Cyclization (c) Dehydrogenation (d) Displacement

**(C.O.No.3) [Knowledge]**

**Q.NO. 7.** Micelles' action depends on \_\_\_\_\_

- (a) Structure (b) shape (c) Both a and b (d) pH only

**(C.O.No.2) [Knowledge]**

**Q.NO. 8.** Tg gives an idea about \_\_\_\_\_

- (a) thermal expansion (b) processing temperature (c) workability (d) Only a

**(C.O.No.1) [Knowledge]**

**Q.NO. 9.** Which of the following is not an importance of CMC?

- (a) Micelles make soluble material insoluble in water  
(b) The structure of the micelles can affect the viscosity of the solution  
(c) Micelles are reservoirs of surfactants  
(d) If not above CMC, the cleaning solution gets depleted of surfactants and cleaning power is lost

**(C.O.No.2) [Knowledge]**

**Q.NO. 10.** Which of these is a secondary factor that can influence the rate of corrosion?

- (a) Nature of the metal (b) Electrode potential difference  
(c) Polarization of electrodes (d) Formation of protective films

**(C.O.No.4) [Knowledge]**

**Q.NO. 11.** An organic polymer having with highly \_\_\_\_\_ system having the electrical conductance of the order of conductors are called conducting polymers

- (a) Delocalised Pi-electrons (b) localized sigma-electron  
(c) Delocalized sigma-electron (d) Localised Pi-electrons

**(C.O.No.1) [Knowledge]**

**Q.NO. 12.** Biodiesel is a fuel obtained from renewable sources of plant origin by trans esterification of vegetable oils such as \_\_\_\_\_

- (a) Coconut oil (b) sunflower oil (c) furnace oil (d) Methanol

**(C.O.No.3) [Knowledge]**

**Q.NO. 13.** Which of the following is not a characteristic of a good fuel?

- (a) High calorific value (b) Low moisture content  
(c) Low ignition temperature (d) High non-combustible mater content

**(C.O.No.3) [Knowledge]**

**Q.NO. 14.** water soluble initiator is used in \_\_\_\_\_ polymerisation

- (a) solution (b) emulsion (c) Both a and b (d) Neither a nor b

**(C.O.No.1) [Knowledge]**

**Q.NO. 15.** Which of the following is not a property of Surfactants

- (a) Wetting effect (b) Foaming effect (c) Dispersing effect (d) pH

**(C.O.No.2) [Knowledge]**

### **Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries EIGHT marks.**

**(5Qx8M=40M)**

**Q.NO. 16.** Give the principle and procedure involved in a fluidized bed process of breaking down of high molecular weight compounds to low molecular weight compounds

**(C.O.No.3) [Comprehension]**

**Q.NO. 17.** Explain the mechanism involved in the Zeigler-Natta Catalysis for the synthesis of a polymer

**(C.O.No.1) [Comprehension]**

**Q.NO. 18.** Elaborate on the behavior of surfactant and its relation to their structure

**(C.O.No.2) [Comprehension]**

**Q.NO. 19.** Describe a process of depositing a Nickel (from its salt solution) on a catalytically active surface of a less noble metal by employing a suitable reducing agent.

**(C.O.No.4) [Comprehension]**

**Q.NO. 20.** Factors like polarization of electrodes and Hydrogen overvoltage influence the rate of corrosion. Give reasons

**(C.O.No.4) [Comprehension]**

### **Part C [Problem Solving Questions]**

**Answer all the Questions. Each question carries TEN marks.**

**(3Qx10M=30M)**

**Q.NO. 21.** 0.7 g of chemical fuel containing 6% hydrogen, when burnt in a bomb calorimeter raises the temperature of water from 291 K to 295.2 K. The mass of water is 1.3 kg and water equivalent of calorimeter is 350 g. The specific heat of water is 1 kcal/kg/°C, latent heat of steam is 538.5 cal/g. Mention the parameters that can be found and calculate the same.

**(CO.No.3) [Application]**

**Q.NO. 22.** Explain the different types of corrosion by direct chemical attack

**(CO.No.4) [Application]**

**Q.NO. 23.** Explain any two types of reactions which modifies the structure of hydrocarbons in the petrol in order to increase its octane value

**(CO.No.3) [Application]**