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16/A9

SEAT No._____ No. of Print Pages : 02

Sardar Patel University

B. Sc. (Semester – IV) Examination

Date: 5th April 2019, Friday Time: 10:00 to 01:00 pm

Industrial Chemistry

COURSE NO: US04CICH01 (Engineering Materials)

Notes: Figures to the right indicate full marks. Total marks: 70

Q.1 Answer the following Multiple Choice Questions. (All are compulsory) (10)

1. In material science mainly refers to .....
   A. Solid material
   B. Fluid only
   C. A & B both
   D. None of the above
2. Natural organic material is .....
   A. Leather
   B. Ceramic
   C. Polyethylene
   D. All of above
3. Engineering material are classification according to their major area of use as .....
   A. Structures
   B. Device
   C. Machines
   D. All of above
4. Glass containing silica and boron oxide with a small amount of alumina and alkali oxides, is called.....
   A. Pyrex glass
   B. Optical glass
   C. Vitreosil
   D. Flint glass
5. Which of the following glasses contains highest percentage of silica?
   A. Vitreosil
   B. Crookes glass
   C. Pyrex glass
   D. Flint glass
6. Mild steel contains carbon in the range of .....
   A. 0.15 to 0.30%
   B. 0.15 to 10.5%
   C. 0.30 to 0:80%
   D. 0.8 to 1.5%
7. The physical properties of metals are.....
   A. Specific gravity
   B. Specific heat
   C. Elasticity
   D. All of these
8. Conversion of metal oxide in to metal this method is.....
   A. Reduction
   B. Oxidation
   C. Redox
   D. All of them
9. During galvanic corrosion, the more noble metal acts as.....
   A. Cathode
   B. Anode
   C. Anode as well as cathode
   D. None of them
10. The process cementation with zinc powder is known as.....
    A. Sherardizing
    B. Galvanizing
    C. Zincing
    D. Tinning

Q.2 Answer the following short questions. (ANY TEN) (20)

1. Define term "Engineering material"
2. Write different classes of engineering material.
3. Write brief about "Macrostructure".
4. Give important application of Pyrex glass.
5. Give an advantages of "Glazing ceramics".
6. Define "Refractoriness".
7. How can Copper can separated from Nickel?
8. What is the effect of carbon content in steel?
9. Define the term "Flux".
10. Define term "Electrochemical corrosion"
11. Give a role of pH in electroplating.
12. Why a moderate temperature required in electroplating?

Q.3 Give a detail classes of engineering materials, also write the factors taken in account for selecting materials for engineering design and an applications. (10)

OR

Q.3 Write a factors of safety. As a Material engineer, what measures you suggest to lower the factors of safety than the conventional ones? (10)

Q.4 Write a detail note on types and manufacturing of glass. (10)

OR

Q.4 Write a classification of the cement and discuss the manufacturing of Portland cement. (10)

Q.5 Write a notes on properties of metals and cast Iron. (10)

OR

Q.5 Discuss the following: (10)

A. Heat-Treatment of steel.
B. Uses, properties and production of Nickel

Q.6 Write mechanism of wet and electronic chemical corrosion. (10)

OR

Q.6 Write a detail notes on "Concentration cell corrosion" and "Microbiological corrosion". (10)

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(2)