

(21&A9)

SEAT No. _____

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Sardar Patel University

B. Sc. (Semester – IV) Examination

07-04-2018, Saturday. TIME: 10:00 TO 01:00PM

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. Material science mainly deals with engineering science like.....
 - A. Metallurgy
 - B. Polymer science
 - C. Ceramic
 - D. All of the above
2. Material science refers particular to.....
 - A. Physical Science
 - B. Polymer Science
 - C. Chemical Science
 - D. All of above
3. Natural organic material is.....
 - A. Leather
 - B. Ceramic
 - C. Polyethylene
 - D. All of above
4. Which of the following is neutral refractory?
 - A. Graphite
 - B. Dolomite
 - C. Silica
 - D. Magnesia.
5. Porosity in a refractory brick, generally, increases....
 - A. Resistant to Spalling
 - B. Density
 - C. Strength
 - D. Melting point.
6. Which one of the following refractories cannot be used in oxidizing condition?
 - A. Carbon bricks
 - B. Dolomite bricks
 - C. Silica bricks
 - D. None of them.
7. Which of following alloys contains highest percentage nickel?
 - A. Platinite
 - B. Invar
 - C. Stainles steel
 - D. Alnico.
8. Purest form of iron is.....
 - A. Wrought iron
 - B. Steel
 - C. Pig iron
 - D. Cast iron
9. White lead in paints acts as.....
 - A. Pigment
 - B. Drier
 - C. Thinner
 - D. Drying oil
10. A paint contains.....
 - A. Pigment only
 - B. drying oil only
 - C. pigment + drier only
 - D. All of above.

[P.T.O]

(1)

Q.2 Answer the following short questions. (Any TEN)

(20)

1. Enlist various classes of engineering materials based on major use.
2. Write in brief about metal used to their mode of occurrence.
3. Write brief about Macrostructure.
4. Enlist various advantages of glazing ceramics.
5. Define Refractoriness.
6. What are the disadvantages of silica cements?
7. Define the term slag.
8. Mention the composition of most commonly used stainless steel.
9. How can copper be removed from nickel?
10. Rusting of iron is quicker in saline water than ordinary water. Why?
11. What is an enamel?
12. Mention three function of thinner in a paint.

Q.3

- A. How engineering materials are classified? Explain.
- B. Discuss the factors taken in account for selecting materials for engineering design.

(05)

(05)

OR

Q.3

- A. Define factor of safety and its significance. As a Material engineer, what measures you suggest to lower the factors of safety than the conventional ones?
- B. Write a note on "Thermal insulating materials".

(06)

(04)

Q.4 Write a note on Manufacturing of glass and types of glasses.

(10)

OR

Q.4 Write a notes on following:

(10)

- A. Manufacturing of Portland cement.
- B. Manufacturing of Refractory.

Q.5 Write a notes on following:

(10)

- A. Physical properties of metals.
- B. Cast Iron.

OR

Q.5 Write a notes on following:

(10)

- A. Effect of Impurities in steels.
- B. Metallurgy.

Q.6 Write a notes on following:

(10)

- A. Mechanism of wet chemical corrosion.
- B. Stress corrosion.

OR

Q.6 Write a notes on following:

(10)

- A. Galvanic corrosion.
- B. Microbiological corrosion.