

SEAT NO. _____

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[100]

SARDAR PATEL UNIVERSITY

B.Sc. Industrial Chemistry

(Semester – III) EXAMINATION

Course No. : US03CICH21

Date: 31/12/2020

(Chemical Process Principles and Engineering Materials)

Total Marks: 70

Time: 2.00 pm to 4.00 pm

Q.1 Answer the given multiple choice questions. [10]

1. Total pressure in the system is equal to the sum of partial pressure is _____.
(a) Boyle's law (b) Dalton's law.
(c) Amagat's law. (d) None of these
2. API specific gravity scale is developed for
(a) polymer industry (b) parts per million (ppm)
(c) Petroleum industry (d) Pharmacy industry.
3. Material balance calculation is based on
(a) Law of conservation of energy (b) Law of conservation of mass
(c) Both (a) and (b) (d) None of these
4. Which of the following is a type of energy
(a) Work (b) Heat.
(c) Kinetic. (d) All of these.
5. The adsorption which is reversible is
(a) Mechanical adsorption (b) Chemical adsorption
(c) Physical adsorption (d) Electrical adsorption
6. Complete combustion of 12 gm carbon requires _____ gm of oxygen.
(a) 16. (b) 32.
(c) 24. (d) 21.
7. Ceramic obtained from china clay, feldspar and flint is
(a) Stone ware (b) White ware
(c) Brick (d) None of these
8. The elements which possess characteristics of both the metals and non metals are called
(a) Metals (b) Non-metals
(c) Metalloids (d) None of these
9. The main constituent of safety glass is
(a) CaCO₃ (b) PbO
(c) Vinyl plastic (d) Boron
10. Wrought iron is
(a) Weldable (b) Ductile
(c) Malleable (d) All of these

[1]

[P.T.O.]

Q.2. Fill in the blanks and True - False

[08]

1. The preferable unit for expressing trace amount of impurities in the system is _____.
2. In adsorption, substance on the surface of which the concentration of other substance increases is known as _____.
3. The structure of material which can be examined by naked eye is known as _____.
4. Duralumin is an alloy of _____.
5. Specific gravity of liquid is ratio of density of liquid/density of water.
6. Combustion reactions are always Endothermic.
7. Celluloid was invented by Backeland.
8. Graphite is present in the form of flakes in Grey Cast iron.

Q.3 Short Answer Questions (Attempt any 10 out of 12)

[20]

1. Write about Basis of calculation.
2. Explain the term "Recycle operation".
3. Discuss about different molal units.
4. Explain point function and path function.
5. Discuss about Gross and Net Calorific value .
6. Explain spontaneous combustion.
7. Explain the term 'Macrostructure' and Microstructure.
8. List the advantages of glazing in ceramics.
9. Discuss the classification of engineering materials according to their mode of occurrence.
10. What is the difference between grey cast iron and white cast iron?
11. What is an alloy? List any two advantages of alloy preparation.
12. Write about any two types of copper alloys.

Q.4. Long Answer Questions (Attempt any Four)

[32]

1. Prove that for gaseous mixture Pressure % = Volume % = Mole %.
2. Define density and specific gravity. Also discuss about specific gravity scales.
3. Find the minimum amount of air required for complete combustion of 1 kg of fluid which contains C kg carbon, H kg hydrogen, S kg sulphur and O kg oxygen.
4. Write a note on : Langmuir Adsorption Isotherm. Also differentiate Physical and Chemical Adsorption.
5. Write classification of engineering materials.
6. Discuss manufacturing of white wares.
7. With the help of block diagram explain manufacturing of Portland cement.
8. Write about any four types of glass in detail.

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