

SARDAR PATEL UNIVERSIT  
S.Y.B.Sc. SEMESTER – III (Industrial Chemistry)  
EXTERNAL EXAMINATION

SUB CODE: US03CICH21 (Chemical Process Principles & Engineering Materials)  
DATE: 13/6/2022  
DAY: Monday  
TIME: 12:00 To 2:00 PM  
TOTAL MARKS: 70

Q. 1 Choose the correct answer.

[10]

- Total pressure in the system is equal to the sum of partial pressure is \_\_\_\_\_  
(a) Parentage. (b) Daltons low. (c) Amagat's low. (d) Barometric pressure
- At normal boiling point atmospheric pressure is \_\_\_\_\_  
(a) 170 mm Hg. (b) 760 mm Hg. (c) 162 mm Hg. (d) 160 mm Hg.
- The average molecular weight is the weight of \_\_\_\_\_  
(a) 0.1 Mole. (b) 1 Mole. (c) 10.0 Mole (d) 0.001 Mole.
- The amount of heat require to raise temperature of one kg of substance by 1\*k is known as .....  
(a) Heat capacity. (b) Thermal conductivity. (c) Mass transfer. (d) Heat transfer.
- A mathematical relationship between the amount of substance adsorbed and its concentration at the constant temperature and different pressure is known as.  
(a) Adsorption isotherm (b) Adsorption isobar (c) Heat of Adsorption (d) None of these
- The adsorption which is reversible is  
(a) Mechanical adsorption (b) Physical adsorption  
(b) Chemical adsorption (d) Electrical adsorption
- Natural organic material is \_\_\_\_\_  
(a) Leather (b) Polyethylene (c) Ceramic (d) All of above
- The organic synthetic polymer is \_\_\_\_\_.  
(a) PVC (b) Cellulos (c) starch (d) ceramic
- Common glass, is called:  
(a) Soda glass (b) flint glass (c) hard glass (d) Pyrex glass.
- If a cement on hydration produces only very small volume changes, then it is called  
(a) Plastic cement (b) Soundness cement (c) Waterproof cement (d) none of these.

**Q.2 Fill in the Blanks and True-False.**

[08]

1. For expressing trace amount of impurities in the system ppm unit is preferable. (True/False)
2. API specific gravity scale is develop for Petroleum industry. (True/False)
3. Input= Output equation valid for material balance calculation for the Process without chemical reaction. (True/False)
4. The number that precedes the formula of the component involved in a chemical reaction is Stoichiometric coefficient. (True/False)
5. Material science refers particular to Physical science. (True/False)
6. Celluloid was invented by Hyatt and Backelite. (True/False)
7. Annealing of glass is Allowing glass articles to cool gradually. (True/False)
8. Platinite alloys contains 45 percentage nickel. (True/False)

**Q.3 Answer the following.(attempt any 10 out of 12)**

[20]

1. Write the equation of material balance calculation.
2. Explain batch process and continuous process.
3. Write about average molecular weight.
4. Discuss about combustion reaction.
5. Explain Gross calorific value.
6. List the example of Industrial adsorption.
7. Write about crystal structure.
8. Write brief about macrostructure.
9. Give the advantages of glazing ceramics.
10. What are the disadvantages of silica cements?
11. Give important application of Pyrex glass.
12. Give three advantages of alloy making.

**Q4. Long Answer Question (Attempt any 4 out of 8)**

[32]

1. Prove that for gaseous mixture Pressure % =Volume % = Mole %.
2. Write a short note on Bypass operation and Recycle operation.
3. Write the relationship between Cp and Cv.
4. Define adsorption isotherm. Also discuss Langmuir adsorption isotherm.
5. Write a note on white waves.
6. How engineering materials are classified? Explain.
7. Write about type of glass.
8. Explain use and properties of nickel.