

[114/A24]

SEAT No. \_\_\_\_\_

No. of Printed Pages: 2

Sardar Patel University  
B.Sc. First Semester Examination  
(Old Course 2010-11 batch onwards)

23-10-2018, Tuesday

Time: 02:00pm to 04:00pm

Industrial Chemistry Vocational  
US01CICV02 (Process Calculation)

Notes: Figures to the right indicate full marks.

Total marks: 70

Q.1 Answer the following MCQs (All are compulsory) (10)

- Unit of density is expressed by \_\_\_\_\_  
A. gm/c.c  
B. W/c.c  
C. KJ/c.c  
D. None of the above
- The average atmospheric pressure of mercury is \_\_\_\_\_  
A. 29.92 psi  
B. 17.40 psi  
C. 15.90 psi  
D. 14.70psi
- Which of the following is the equation of Charles law  
A.  $P/T = \text{Constant}$   
B.  $V/T = \text{Constant}$   
C.  $T/V = \text{Constant}$   
D.  $V \times T = P$
- Any conversion in the reaction is decided by \_\_\_\_\_  
A. Excess component  
B. Stoichiometrically Excess component  
C. Limiting component  
D. None of the above.
- The reactant which disappears first upon completion of reaction is known as \_\_\_\_\_  
A. Excess Reactant  
B. Limiting Reactant  
C. Relative Reactant  
D. All of the above
- The basis of material balancing is \_\_\_\_\_  
A. Law of Conservation of Mass  
B. Law of Conservation of energy  
C. Law of thermodynamics  
D. Both a & b
- 1 calorie = \_\_\_\_\_ joules.  
A. 4.184  
B. 4.181  
C. 4.841  
D. 4.418
- The energy associated with system due to its motion is known as \_\_\_\_\_  
A. Kinetic energy  
B. Internal energy  
C. Renewable energy  
D. Solar Energy
- The rapid reaction of fuel with oxygen is known as \_\_\_\_\_  
A. Combustion  
B. Distillation  
C. Humidification  
D. All of them.
- Air contains \_\_\_\_\_ % of oxygen.  
A. 22.4  
B. 20  
C. 21  
D. 22

(1)

(P.T.O.)

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

1. Define the terms weight percentage.
2. Define the terms Formality and Molarity.
3. Give the calculations for preparing 0.1 N, 1000ml HCl solution.
4. Define term Unit Process.
5. Write the Law of Conservation of Mass.
6. Draw a block diagram for Filtration.
7. Enlist forms of energy.
8. Define term Standard Heat Capacity.
9. Explain first law of thermodynamics states.
10. What is Theoretical Oxygen.
11. Define the term Dew Point.
12. What is Humidification Process?

Q.3 Write note on "Effect of temperature on Vapor pressure". (10)

OR

Q.3 Write notes on Vapor pressure of solids & Ideal gas equation. (10)

Q.4 Discuss the outline of a procedure for material balance calculation. (10)

OR

Q.4 Differentiate between Unit operation and Unit Process with suitable examples, also draw the block diagrams of the Distillation & Evaporation unit operations. (10)

Q.5 Write a note on Hess law of constant heat summation and Latent heat of phase change. (10)

OR

Q.5 Write notes on Effect of pressure on Heat of Reaction and Heat capacity. (10)

Q.6 Write short notes on Humidification and Partial and complete combustion. (10)

OR

Q.6 Give the formula to calculate theoretical air and excess air and discuss the ORSAT analyzer. (10)

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(2)