



DZ-003-001209

Seat No. \_\_\_\_\_

First Year B. Sc. (Sem. - II) (CBCS) Examination

April / May - 2015

IC.P-201 : Industrial Chemistry

Faculty Code : 003

Subject Code : 001209

Time :  $2\frac{1}{2}$  Hours]

[Total Marks :70

- Instructions :**
- (1) All the questions are compulsory
  - (2) Figures to the right indicate maximum marks.
  - (3) Draw labeled diagram wherever necessary.
  - (4) Assume suitable data.
  - (5) Question -1 carries 20 marks MCQ & should be written in the same answer sheet.
  - (6) Question -2 & 3 carries 25 marks each.

**MCQ**

**Que: 1**

**20**

- 1 \_\_\_\_\_ Bond is responsible for physisorption.  
a. Vanderwals  
b. Covalent  
c. Ionic  
d. None
- 2 According to Le Chateleur's principle increase in pressure leads to \_\_\_\_\_ in adsorption.  
a. Increase  
b. Decrease  
c. Both  
d. None
- 3 Quaternary Ammonium hydride is used as \_\_\_\_\_  
a. Cation Exchanger  
b. Anion Exchanger  
c. Both  
d. None
- 4 The partial size range of colloidal solution is \_\_\_\_\_ m  
a.  $1 \times 10^{-9}$  to  $1 \times 10^{-6}$   
b. 1 to 100  
c.  $1 \times 10^{-9}$  to  $100 \times 10^{-10}$   
d. None
- 5 Breiding's arc method is \_\_\_\_\_ method of preparation of colloidal solution.  
a. Condensation  
b. Dispersion  
c. Both  
d. None
- 6 \_\_\_\_\_ is Driving force for simple dialysis.  
a. Temperature gradient  
b. Concentration gradient  
c. Gravitational  
d. None
- 7 Catalyst always \_\_\_\_\_ the rate of reaction.  
a. Increases  
b. Decreases  
c. Alters  
d. None
- 8 \_\_\_\_\_ increases the activity of catalyst.  
a. Poison  
b. Promoter  
c. Activator  
d. None
- 9 Rate of catalyst is maximum at \_\_\_\_\_  
a. High temperature  
b. Low temperature  
c. Optimum temperature  
d. Random temperature
- 10 Adiabatic flame temperature is also known as  
a. Practical flame temperature  
b. Flame temperature  
c. Theoretical flame temperature  
d. Adiabatic reaction temperature

- 11 Permutit Process is also known as
- Zeolite Process
  - Crude caustic Process
  - Boiling Process
  - All of the above
- 12 Versene is also called as
- EBT
  - Caustic soda
  - EDTA
  - Washing soda
- 13  $\frac{\text{Moles Reacted}}{\text{Moles Charged}} \times 100$  is called \_\_\_\_\_
- % Yield
  - % Conversion
  - % Excess
  - Selectivity
- 14 For the reaction  $A+B \rightarrow C, C+A \rightarrow D$   $\frac{\text{Moles of C}}{\text{Moles of D}} \times 100$  is called \_\_\_\_\_
- Yield
  - % Conversion
  - % Excess
  - Selectivity
- 15 In separation of varnish, vegetable oil and oil-emulsion separation which of the following filter is used?
- Tubular bowl
  - Disc bowl
  - Nutrex filter
  - Leaf filter
- 16 The shortest distance between two tubes is called \_\_\_\_\_.
- Clearance
  - Tube pitch
  - Bandwidth
  - None of the above
- 17 Paddle type impeller rotate with speed of \_\_\_\_\_.
- 400 to 800 rpm
  - 50 to 150 rpm
  - 80 to 90 rpm
  - 1000 to 1500 rpm
- 18 Which of the following driving force is responsible for nucleation and growth in crystallization?
- Temperature
  - Super saturation
  - Pressure
  - humidity
- 19 The removal of air with help of liquid from suction line & pump casing is known as \_\_\_\_\_.
- Air binding
  - Priming
  - Cavitation
  - NPSH
- 20 In flash dryer, When liquid vaporize from wet solid, pressure of system is \_\_\_\_\_.
- Decrease
  - Increase
  - Constant
  - None of the above

### Theory

**Que: 2 (a) Answer any Three**

**06**

- Define: a) Physisorption                          b) Catalyst
- Enlist: a) Output Devices of Computer   b) Input Devices of Computer.
- Differentiate Sensible and Latent heat with example.
- State the law of conversation of Energy.
- Define: (a) Unbound moisture content   (b) Cavitation
- Write a Merits and Demerits of Plate type Heat Exchanger.

**Que: 2 (b) Answer any Three**

**09**

- Explain activation energy for catalytic reaction.
- Give comparison between Physisorption & Chemisorption.
- Explain deep well water in brief.
- Explain Heat of Solution and Heat of Mixing with example.
- Discuss Tank crystallizer in brief.
- Draw the figure of Positive-displacement compressor.

**Que: 2 (c) Answer any Two**

**10**

- Derive equation of freundlich adsorption isotherm with their extreme cases.
- Explain application of adsorption in detail.
- Discuss Ion-Exchange resin method for softening of hard water with schematic diagram.
- Explain Change Can mixer in detail.
- Describe Jet Ejectors in detail.

**Que: 3 (a) Answer any Three**

**06**

- 1) Define: a) Thixotropy                      b) Negative Catalyst
- 2) Define: a) Catalyst promoter        b) Catalyst Poisoning
- 3) Explain Clerk's method with reaction.
- 4) What is Stoichiometric Coefficient?
- 5) Enlist the Merits and Demerits of Swenson-Walker Crystallizer.
- 6) Write a characteristic of Filter media.

**Que: 3 (b) Answer any Three**

**09**

- 1) Explain characteristics of catalytic reaction.
- 2) Explain auto catalysis with diagram.
- 3) In production of Sulfur trioxide, 100 Kmoles of SO<sub>2</sub> and 230 Kmoles of O<sub>2</sub> are fed to reactor. The product stream is found to contain 70 Kmoles of SO<sub>3</sub>. Find the percent of conversion of SO<sub>2</sub>.
- 4) Derive the relation between C<sub>p</sub> and C<sub>v</sub>.
- 5) Explain Tray dryer in brief.
- 6) Discuss Nutche filter in detail.

**Que: 3 (c) Answer any Two**

**10-Marks**

- 1) Explain Breiding's arc method for preparation of colloids.
  - 2) Explain Electrophoresis with diagram.
  - 3) Explain Vertical tubular boiler with neat diagram.
  - 4) Discuss the Spray dryer with schematic representation.
  - 5) Describe Permutit process for softening of hard water.
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