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SARDAR PATEL UNIVERSITY  
EXTERNAL EXAMINATION  
B.SC. INDUSTRIAL CHEMISTRY VOCATIONAL  
(SIXTH SEMESTER)  
US06CICV06: SELECTED TOPICS  
FRIDAY, 6<sup>TH</sup> APRIL, 2018

Time: 10:00 am to 1:00 pm

Total Marks: 70

**Q-1** Select right option from given in the following questions. (10)

- How many shifts are arranged in five-day operation schedule?  
(a) 1 (b) 4 (c) 5 (d) None of these
- Which of the following is not a unit operation?  
(a) Autoclaving (b) Pressing (c) Distillation (d) Drying
- Which of the following is emulsifying agent used for water in oil emulsion?  
(a) Poly ethylene glycol (c) Stearic acid  
(b) Lanolin (d) Poly acrylate
- Distribution of tiny liquid particles in liquid matrix is called:  
(a) Suspension (c) Surface tension  
(b) Emulsion (d) Humectants
- Inversion of cane sugar gives:  
(a) Galactose (c) Sucrose  
(b) Glucose (d) Lactose
- $P^H$  range in cellulose acetate membrane should be:  
(a) 3-7 (b) 1-3 (c) 7-10 (d) 10-12
- PVDF is used in manufacturing of:  
(a) Ultra membrane (c) Nano membrane  
(b) Electro membrane (d) Semi Permeable membrane
- The mathematical statement of proportional action is:  
(a)  $dv/dt = -k\Theta$  (b)  $V = -k \cdot d\Theta/dv$  (c)  $V = -k \Theta$  (d) None of these
- The parts of process that resist transfer of energy/material between capacities is term as:  
(a) Capacitance lag (b) Time lag (c) Resistance lag (d) None of these
- Convenient and useful method for characterizing the functional relationship among various component of control system is:  
(a) Block diagram (c) Process flow diagram  
(b) Layout diagram (d) None of these

**Q-2** Answer any ten of the following: (20)

- Explain the continuous stirred tank reactor (CSTR)
- Enlist the objectives of good plant layout.
- Define semi commercial plant.
- What is homogeneous catalysis? Give its two examples.
- Define the term humectants with suitable example.
- Define term auto catalysis.
- Enlist the various materials which are used as cathode and anode in electro dialysis.
- What are the types of membranes?
- Enlist the two compartments for electro dialysis process.
- Enlist the advantages of automatic control system.
- What is automatic control system?

①

[P.T.O.]

12. Define the term set point. (10)
- Q-3 Discuss the pilot plant in detail. (10)
- OR**
- Q-3 Discuss the comparison for urban and rural area for the selection of site. (10)
- Q-4 (a) Write short note on surfactants. (05)  
(b) Discuss acid base catalysis in detail. (05)
- OR**
- Q-4 (a) What is enzyme catalysis? Discuss its mechanism and its characteristics. (05)  
(b) Discuss industrially important catalytic processes and applications. (05)
- Q-5 (a) Explain the membrane for ultra filtration. (05)  
(b) Explain the membrane for Nano filtration (05)
- OR**
- Q-5 (a) Discuss the membrane separation process with phase inversion method. (05)  
(b) Write a note on RO system in liquid separation. (05)
- Q-6 (a) Explain the concept of manual control and automatic control. (05)  
(b) Write a brief note on control valve. (05)
- OR**
- Q-6 (a) Explain the types of variables which associated with process. (05)  
(b) Discuss the elements of automatic control system in detail. (05)