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

SARDAR PATEL UNIVERSITY  
EXTERNAL EXAMINATION  
B.SC. INDUSTRIAL CHEMISTRY (V)  
(SIXTH SEMESTER)

No. of Printed Pages : 02

US06CICV06: Selected Topics  
THURSDAY, 4<sup>TH</sup> April, 2019

Time: 10:00 am to 1:00 pm

Total Marks: 70

Q-1 Answer the following multiple choice question.

[10]

- Based on \_\_\_\_\_ the equipment specifications are decided and particular equipment for particular operation.
  - Calculation
  - Cost
  - Color
  - Process area
- The practical objective of process research is provide the \_\_\_\_\_ data.
  - Scientific
  - Theoretical
  - Primary
  - Experimental
- Which of the following is used to translate written description of chemical process into workable pattern?
  - Process research
  - Process estimation
  - Process equipment
  - Engineering flow diagram
- Which of the following catalyst is used for the Fischer Tropsch synthesis?
  - Iron
  - PTSA
  - Zinc chloride
  - Chromium
- Which of the following Optimal temperature can be used for enzymes?
  - 35-37<sup>o</sup>C
  - 25-27<sup>o</sup>C
  - 45-47<sup>o</sup>C
  - Above 47<sup>o</sup>C
- What is the maximum temperature acceptable limit for Reverse osmosis system?
  - 04<sup>o</sup>C
  - 44<sup>o</sup>C
  - 40<sup>o</sup>C
  - 50<sup>o</sup>C
- Which of the following material is used as cathode in elctrodialysis?
  - Stainless steel
  - Copper
  - Platinum
  - Iridium
- Electro dialysis is used to remove ionized substance from?
  - Liquid
  - Solid-liquid mixture
  - Solid
  - Gas
- Which of the following device can be used for concurrent measurement of two variables?
  - Circular recorder
  - X-Y plotter
  - PMMC devices
  - Pen recorders
- The on-off controller is a \_\_\_\_\_ system.
  - Digital
  - Non-Linear
  - Discontinuous
  - Linear

Q-2 Answer any ten of following.

[20]

- Enlist the various properties important for process development.
- Distinguish between standard equipment and special equipment.
- Write in brief for plan layout.
- What is viscosity modifier? Enlist its examples.

(1)

(P.T.O.)

5. Define the following terms:
    - a. Humectants
    - b. Surfactants
  6. Write in brief for homogeneous catalysis.
  7. Enlist the two compartments of electro dialysis process.
  8. Enlist the classification of membranes.
  9. Write the structure of polyether sulfone and polysulfone.
  10. Define the following terms:
    - a. Error detector
    - b. Dead time
  11. Enlist the various types of control actions.
  12. Give the neat sketch block diagram of feedback control system.
- Q-3            Discuss the importance of Pilot plant. Enlist the checklist for investigating pilot plant.            [10]
- OR
- Q.3            Define the various types of reactor used in the industry. Discuss the fixed bed reactor in detail.            [10]
- Q-4            Enlist and discuss the different theories of catalysis.            [10]
- OR
- Q-4            Write the explanatory note on following:            [10]
1. Surfactants
  2. Micelle formation
- Q-5    a.    Discuss the Reverse osmosis system in detail.            [05]
- b.    Write an explanatory note on ultra-filtration.            [05]
- OR
- Q-5    a.    With neat diagram discuss the electro dialysis method for separation.            [05]
- b.    Write a short note on Nano filtration.            [05]
- Q-6    a.    Discuss the controlling of batch process and continuous process.            [05]
- b.    Discuss the feedback control system expressing block diagram for temperature control of the process.            [05]
- OR
- Q-6    a.    Write a note on automatic control system in detail.            [05]
- b.    Discuss the process time lags in the system.            [05]

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