

SEAT No. _____

No. of Printed Pages: 02

[44]

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

US06CICV24: Separation Techniques, Plant design & Control
MONDAY, 19th July, 2021

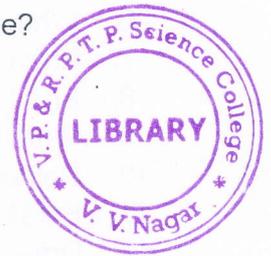
Time: 10:00 a.m. - 12:00 noon

Total Marks: 70

Q-1 Answer the following multiple choice question.

[10]

- The Research evaluation has pointed out _____.
 - Process research
 - Process
 - Process design
 - Process development
- How many shifts of operations are arranged in Five-day operation schedule?
 - 1
 - 2
 - 4
 - 3
- Which of the following is not a unit operation?
 - Distillation
 - Autoclaving
 - Drying
 - Pressing
- Decomposition of hydrogen peroxide in presence of iodine ion is the example of:
 - Enzyme catalysis
 - Homogeneous catalysis
 - Heterogeneous catalysis
 - Acid base catalysis
- Which of following method lock and key theory is used?
 - Acid base catalysis
 - Homogeneous catalysis
 - Heterogeneous catalysis
 - Enzyme catalysis
- Which of the following is emulsifying agent used for water in oil emulsion?
 - Lanolin
 - Poly acrylate
 - Poly ethylene glycol
 - Stearic acid
- Which of the following material is used as cathode in electro dialysis?
 - Iridium
 - Platinum
 - Copper
 - Stainless steel
- Electro dialysis is used to remove ionized substance from _____.
 - Gas
 - Solid
 - Liquid
 - Solid-liquid mixture
- In flowing control action undesirable features are _____.
 - Both b & c
 - Long Recovery Time
 - OFF set
 - None of these
- The control valve may be actuated using _____.
 - Electric system
 - Hydraulic system
 - Pneumatic system
 - All of these



Q-2 Fill in the blank and True/False. (All are compulsory)

[08]

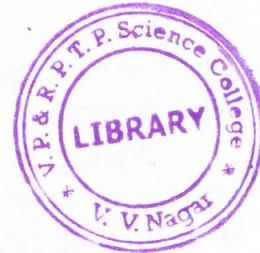
- The principle reason for preparing engineering and economic evaluation of projects at the research stage is to detect projects that are economically unsound. True/False?
- _____ is the basic step to establish a detailed commercial plant.
- Inversion of cane sugar gives _____.

4. Distribution of tiny liquid particles in liquid matrix is called as _____.
5. PVDF is used in manufacturing of Ultra membrane. True / False?
6. Electro dialysis is used to remove ionized substance from solid. True / False?
7. Property which introduced time lag due to time required to carry change in the process is termed as dead time lag. True / False?
8. Semi-commercial plant is _____ than pilot plant.

Q-3 Answer any ten of following.

[20]

1. What are the objectives of Good plant layout?
2. What is CSTR?
3. Enlist the various properties which are used in Research and Development.
4. What are surfactants? Enlist the classification of surfactant.
5. What are Promoters? Give its two example.
6. What is homogeneous catalysis? Give its two examples.
7. Enlist the techniques of phase inversion.
8. Enlist the classification of membranes.
9. Write the structure of polyether sulfone and polysulfone.
10. Define the term set point.
11. Enlist the various types of control actions.
12. Draw the block diagram of feedback control system.



Q-4 Long Answer Questions (Attempt any 4 out of 8).

[32]

1. Discuss engineering flow diagram in details.
2. Distinguish between Urban and Rural area for site selection.
3. Write a detail note on following:
 - a. Surfactant
 - b. Micelles formation.
4. Discuss about enzyme catalysis with its mechanism and characteristics.
5. Explain the electro dialysis method for separation using neat diagram.
6. What is membrane? Explain the membrane separation process with phase inversion method.
7. Write a short note on ON/OFF control system.
8. What are the various types of lags? Explain in detail.

-----X-----