

[160]



SEAT No. _____

No. of Printed Pages: 2

SARDAR PATEL UNIVERSITY
B.Sc. (SEMESTER-VI) EXTERNAL EXAMINATION
INDUSTRIAL CHEMISTRY VOCATIONAL

Course No. : US06CICV24 (Separation Techniques, Plant design & Control)

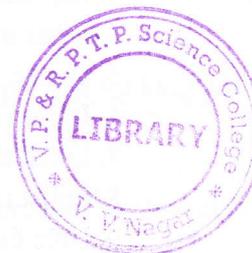
Date & Day: 07/04/2022, Thursday

Time: 3:00 P.M. To 5:00 P.M.

Total Marks: 70

Q.1 Answer the given multiple choice questions. (All are compulsory) [10]

- Which of the following is the basic step to establish a detailed commercial plant ?
(a) Process design (b) Process cost
(c) Process Research (d) Process Development
- How many shifts of operations are arranged in around the clock operation Schedule?
(a) 1 (b) 2 (c) 3 (d) 5
- Which of the following is not a unit operation?
(a) Autoclaving (b) Pressing (c) Distillation (d) Drying
- Inversion of cane sugar gives _____.
(a) Galactose (b) Glucose (c) Sucrose (d) Lactose
- Which of the following is emulsifying agent used for water in oil emulsion?
(a) Poly ethylene glycol (c) Stearic acid
(b) Poly acrylate (d) Lanolin
- In which of following method lock and key theory is used.
(a) Homogeneous catalysis (c) Acid base catalysis
(b) Heterogeneous catalysis (d) Enzyme catalysis
- Electro dialysis is used to remove ionised substance from _____.
(a) Liquid (b) Solid (c) Gas (d) Solid-liquid mixture
- pH range in nano filtration should be _____.
(a) 1-2 (b) 3-9 (c) 9-12 (d) 12-14
- Property which introduced time lag due to time required to carry change in the process is termed as _____.
(a) Time (b) Dead time lag (c) Resistance time (d) All of these
- In flowing control action undesirable features are:
(a) OFF set (b) Long Recovery Time
(c) Both a & b (d) None of these



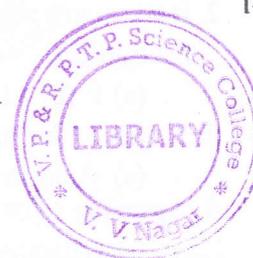
P.T.O.

Q.2 Are the following statements TRUE or FALSE? (All are compulsory) [08]

1. The Research evaluation has pointed out as process development – TRUE/ FALSE
2. There are five shifts of operations are arranged in Five-day operation Schedule – TRUE/FALSE
3. Stearic acid is emulsifying agent used for oil in water emulsion- TRUE/ FALSE
4. In homogeneous catalysis reaction if reactants are in gas phase then phase of catalyst Should be in gas phase - TRUE/ FALSE
5. Nano filtration is used for water softening - TRUE/ FALSE
6. PVDF is used in manufacturing of Ultra membrane - TRUE/ FALSE
7. Convenient and useful method for characterizing the functional relationship among various component of control system is block diagram - TRUE/ FALSE
8. Semi commercial plant is larger than pilot plant - TRUE/ FALSE

Q.3 Answer the following short questions (Attempt any TEN) [20]

1. What is Plant layout?
2. Enlist the objectives of Good plant layout.
3. Explain about Fixed bed reactor.
4. What is homogeneous catalysis? Give its two examples.
5. Define : Humectants.
6. Define the term Promoter and give its example.
7. Enlist the two components for electro dialysis process.
8. Enlist the classification of membranes.
9. Give the structure of polyether sulfone and polysulfone.
10. Define the term set point.
11. Enlist the various types control actions.
12. Define : Control valve and Dead time.



Q.4 Answer the following Long questions (Attempt any FOUR) [32]

1. Explain Pilot plant and give checklist for investigating of pilot plant.
2. Compare Urban and Rural area for site selection.
3. Write mechanism of catalytic reaction.
4. Write a note on : (a) Surfactant (b) Micelles formation
5. Discuss in detail about membrane for RO system in liquid separation.
6. Explain the membrane separation process with phase inversion method.
7. Discuss in detail about types of lags.
8. Write a short note on ON/OFF control system.