

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 154701

Roll No.

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B. TECH.

(SEM. VII) THEORY EXAMINATION, 2015-16

DOWN STREAM PROCESSING

[Time:3 hours]

[Total Marks:100]

Section-A

Q.1 Attempt **all** parts. All parts carry equal marks. Write answer of each part in short. (2 x 10 = 20)

(a) Indicate True (T) or False (F) :

- (i) Rectified spirit contains 50% Ethyl alcohol.
- (ii) Continuous process operates at unsteady state.
- (iii) Sterilization is a unit of operation.
- (iv) Thermodynamically batch process is an open system.
- (v) Washout is an undesirable phenomenon.

(b) Fill in the gap(s) with suitable one word :

(i) Substrate is a acted by

(ii) $Y \frac{P}{X} = \frac{\Delta P}{-}$

(iii) Penicillin is an process

(iv) of liquids that have boiling points is carried out by distillation.

(v) Ethyl alcohol has many uses such as and

Section-B

Note: Attempt **any five** questions from this section :

(10 x 5 = 50)

- Q2. Give a brief outline of bioprocess with process flow diagram.
- Q3. How do you recover glutamic acid from the fermented mash ?
- Q4. Mention any two solid-liquid separation operations with a simple figure of each, showing inlet stream (mixed feed) and outlet streams (solid and liquid).
- Q5. Discuss the principle of chromatography for product purification.

(2)

Q6. Differentiate between Stoke's law and Dairey's law.

Q7. What are the advantages of membrane technologies over other methods.

Q8. A binary system (alcohol and H₂O) has following volumetric composition. Convert it into molar composition.

$$C_2H_5OH = 7.0\%$$

$$H_2O = 93.0\%$$

Q.9 Give the salient points of adsorption in connection with product isolation.

Section-C

Note : Attempt **any two** questions from this section. (15x2=30)

- Q10. Describe the recovery of citric acid from the fermented work with a neat flow diagram.
- Q11. Discuss the working of rotary drum vacuum filter as solid-liquid separation operation. Give the mathematic expression for overall batch cycle time.
- Q12. Explain the following :
- (a) Problems and requirements of bioproduct purification.
 - (b) Design aspects of sedimentation tank.

—x—

(3)

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