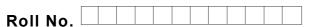
www.FirstRanker.com

www.FirstRanker.com



Total No. of Pages : 02

Total No. of Questions : 09

FirstRanker.com

B.Tech.(BT) (2012 to 2017) (Sem.-7) DOWNSTREAM PROCESSING Subject Code : BTBT-702 M.Code : 71844

Time: 3 Hrs.

Max. Marks:60

INSTRUCTION TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt ANY FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt ANY TWO questions.

SECTION-A

1. Write briefly :

- a. Selection criteria for downstream processing of a fermentation product.
- b. Sedimentation coefficient of biological macromolecules.
- c. Define 'Selectivity Factor'.
- d. Enlist various methods used for precipitation of proteins.
- e. Name any two flocculating agents.
- f. Salting-in and salting-out phenomenon for protein purification.
- g. Isoelectric focusing.
- h. Ultrafiltration.
- i. Define the term 'Partition Coefficient'.
- j. Principle of capillary electrophoresis.



www.FirstRanker.com

SECTION-B

- 2. Describe the process design criteria for various classes of bio-products.
- 3. Explain the effect of pressure drop on cake resistance in a batch filtration. What is the effect of compressible cake formation on filtration process?
- 4. Explain the principle of centrifugal separation. Mention the important features of tubular bowl centrifuge along with a neat sketch.
- 5. What are adsorption isotherms? Explain the adsorption in fixed beds.
- 6. A colloidal suspension of clay became clear upon being allowed to stand undisturbed for 5 minutes in ethanol at 20°C. The height of the suspension in the vessel was 45 cm and the specific gravity of montmorillonite is known to be 1.92 g/cm³. The viscosity of ethanol at 20°C was calculated to be 1.2 centipoises. Estimate the average diameter of clay particles.

SECTION-C

- 7. Define "*crystallization*". Explain various phases of a crystallization process. Derive the relationship between size and population density of crystals formed during continuous crystallization.
- 8. a. Write a complete note on working principle, instrumentation and characteristics of a chromatographic techniques exclusive for protein separation. Also mention some matrices used for large-scale chromatography.
 - b. Define ion-exchange and Principle of ion-exchange chromatography. Mention the applications of ion- exchangers.
- 9. Comment on following (also provide the necessary sketch) :
 - a. Two phase extraction process
 - b. Dialysis

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.