

KATHMANDU UNIVERSITY
End Semester Examination [C]
July, 2017

Marks Scored: _____

Level : B. Tech.
Year : III

Course : BIOT 301
Semester : I

Exam Roll No. : _____ Time: 30 mins.

F. M. : 20

Registration No. : _____

Date JUL 07 2017

SECTION "A"
[20Q × 0.5 = 10 marks]

1. The separation method based on diffusivity is
 Membrane separation Electrophoresis
 Precipitation Chromatography
2. The friction factor is independent of
 Shape of the molecule The degree of hydration
 Temperature P^h
3. The Stokes-Einstein radius is inversely proportion to all except
 Diffusivity Viscosity
 Avogadro's number Temperature
4. Size of macromolecules can be determined by
 Molecular formula Hydrodynamic chromatography
 Filtration Precipitation
5. For cell disruption which equation is valid
 Kicks law Ritingers law Empirical model All of the above
6. Typical G values employed in laboratory centrifuges range from
 1000 - 20000 500-1000 1000-15000 1000-30000
7. Swing out rotors are preferred for centrifuging substances with
 High sedimentation coefficient High viscosity
 Low sedimentation coefficient Low viscosity
8. Chaotropic salts are used for the purification of
 Nucleic acids Proteins Lipids Carbohydrates
9. Which of the following salt is not used for downstream processing of enzymes?
 Ammoniumsulphate Sodium chloride
 Sodium sulphate Guanidine hydrochloride
10. Aqueous two phase extraction is mainly carried out for
 Protein Carbohydrate Lipid Alkaloids
11. The antibiotic penicillin partitions favorably in an organic solvent from an aqueous fermentation media at
 Acidic conditions Basic conditions
 Neutral conditions Acidic and neutral conditions
12. Organic solvents precipitate by reducing
 Dielectric constant Temperature P^h Viscosity
13. Ultra filtration separates solutes in the molecular weight range of
 1 kDa to 10 kDa 1 kDa to 500 kDa
 5 kDa to 100 kDa 5 kDa to 500 kDa

Level : B. Tech.
Year : III
Time : 2 hrs. 30 mins.

Course : BIOT 301
Semester : I
F. M. : 55

SECTION "C"

Attempt *ANY FOUR* questions.

1. Explain the different factors utilized for precipitation of biological materials. [3+4]
2. Explain the principle of cell disruption using French press. Explain Ritinger's law of grinding. [3+4]
3. What are the advantages and disadvantages of adsorption process? Explain the different types of adsorption isotherms. [3+4]
4. List the variety of affinity ligands used for purification of biological molecules. Explain any two such ligands. [3+4]
5. Explain in brief the extraction theory. Explain the methods of extraction of penicillin from fermentation broth. [3+4]

SECTION "D"

Attempt ALL questions.

6. Explain the principle of cell disruption using bead mill [4]
7. What are the different ways for the improvement of filtration efficiency? [4]
8. Define dialysis. List the application of dialysis in bio separation. [4]
9. Explain the principle of disk stack centrifuge with diagram. [4]
10. Explain the properties of biological molecules with respect to size. [4]
11. Explain the use of antichaotropic salt in precipitation. [4]
12. Write short note on any one [3]
 - i. Salting out effect
 - ii. Filter aids

