M.TECH/BT/1ST SEM /BIOT 5102/2015
2015

28

Advanced Enzyme Technology
(BIOT 5102)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following: **10 x 1=10**

(i) Raffinose is a
(a) monosaccharide (b) disaccharide (c) trisaccharide (d) none of these

(ii) Xylanase is
(a) hemicellulase (b) cellulase (c) both a and b (d) none of these

(iii) Lipolase is used in
(a) detergent industry (b) leather industry
(c) paper industry (d)textile industry.

(iv) The potential use of Ribonuclease enzyme is as
(a) antibiotic (b) antimicrobial
(c) antiviral (d) none.

(v) The enzyme that can potentially be used to treat heart attack is
(a) insulin (b) hyaluronidase
(c) beta-lactamase (d) ribonuclease.

(vi) Dilute enzyme solution is concentrated by
(a) vacuum distillation (b) evaporation
(c) ultra filtration (d) dialysis.

(vii) Efficiency of a large scale centrifuge is known by
(a) Delta Factor (b) Sigma Factor
(c) volume of centrifuge (d) speed of centrifuge.

(viii) Specific activity of an enzyme is
(a) total units of enzyme (b) units/mg protein
(c) units/ gm solid (d) units / microgram solid.

(ix) Breaking of fungal mycelia is best done by
(a) sonication (b) enzyme treatment
(c) X-press (d) ball mill.

(x) Purity of an enzyme is assessed by
(a) specific activity (b) IU/gm solid
(c) IU/ml of liquid (d) none.

Group – B

2.(a) What are different types of reversible enzyme inhibition?

(b) Write Michaelis & Menten equation for enzyme reaction. What is Km and V_{max}?

(c) How values are affected differently under different types of inhibitions?

3 + 3 + 6 = 12

3.(a) Name the different sources used for enzyme production.

(b) Justify why microbes are best commercial enzyme producers?

(c) Write a flow sheet for general methods of the preparation of commercial enzyme from any biological source

2 +3 + 7 = 12

Group – C

4.(a) What do you mean by Affinity Chromatography?

(b) What are the different types of elution of sample fractions?

(c) State the characteristics of an Ideal Adsorbent.

5 +3 +4 = 12

5.(a) What are the advantages and limitations of Immobilized Enzymes?

(b) Briefly describe the immobilization of enzymes by cross-linking method.

6 + 6 = 12

Group – D

6.(a) Mention the functions of different enzymes in leather industry.

(b) What is the difference between alpha and beta galactosidases?

(c) How L-amino acids are prepared?

6 +3 + 3 = 12

7.(a) Describe the enzymes used in detergent Industry.

(b) What are the differences between Biopulping and Bioprocessing?

6 + 6 = 12

Group – E

8.(a) What are biosensors?

(b) Discuss the beneficial features of a successful biosensor.

(c) Draw a schematic diagram showing the main components of a biosensor.

2 + 5 + 5 = 12

9.(a) Define artificial enzyme.

(b) How enzymes can be used in the treatment of cancer?

(c) Genetic engineering has a huge potential for economic enzyme production — discuss.

2 + 4 + 6 = 12