

[A-7]

Sardar Patel University
M. Sc. IGBT, Ninth Semester Examination
Monday, 24th October, 2016
10:00 a.m. – 01:00 p.m.

PS09CIGI B4: Biotechnology of Fermentation and Biotransformation-II

Total Marks: 70

Q1. Multiple Choice Questions (Attempt all questions).

[8X1=8]

- (i) Following antibiotic is used in co-formulation to enhance the antimicrobial activity
(a) Thienamycin (b) Nocardicin
(c) Clavulanic acid (d) Olivanic acid
- (ii) _____ is not part of streptomycin structure
(a) Streptividine (b) Streptidine
(c) Streptose (d) N-methyl-L-glucosamine
- (iii) What should be the concentration of iron in citric acid fermentation?
(a) 0.1-0.2 μ g/lit (b) 0.2-0.4 μ g/lit
(c) 0.1-0.2mg/lit (d) 0.2-0.4mg/lit
- (iv) Japanese Koji process uses special strain of _____ for citric acid fermentation.
(a) *A. niger* (b) *Citromyces sp.*
(c) *Penicillium sp.* (d) *Streptomyces sp.*
- (v) Excess _____ in the medium supports abundant growth but seriously inhibits L-glutamic acid formation.
(a) Oleic acid (b) Penicillin
(c) Biotin (d) C₁₆-C₁₈ fatty acids
- (vi) In Koji fermentation process for citric acid production, prior to sterilization, the pH of wheat bran is adjusted to _____.
(a) 2 (b) 4
(c) 6 (d) 8
- (vii) Urokinase is produced by
(a) Liver (b) Kidney
(c) Lungs (d) None of these
- (viii) The following enzyme directly degrades fibrin
(a) Streptokinase (b) Staphylokinase
(c) Urokinase (d) Lumbrokinase

Q2. Attempt any seven of the following:

[7X2=14]

- (i) What is reverse extraction in penicillin recovery process?
(ii) Draw the structure of Penicillin molecule and indicate the site of action of penicillinase enzyme.
(iii) What is an auxotrophic strain?
(iv) Give four industrial applications of citric acid.

- (v) Explain the structure of thienamycin?
- (vi) Comment on nattokinase.
- (vii) Enlist applications of Biosteel.
- (viii) Write a short note on packaging and stability of citric acid.
- (ix) Name two microbes used for industrial production of lipase.

Q3(A) What are biosynthetic penicillins? Explain the regulation of penicillin biosynthesis. [6]

(B) Describe various strategies for production of semi-synthetic penicillin. [6]

OR

(B) Discuss the structure of streptomycin. Explain its biosynthetic pathway. [6]

Q4 (A) Write a detailed note on microbial strains employed in L-glutamic acid production [6]

(B) Explain Submerged Culture Process for citric acid production. [6]

OR

(B) Explain product recovery of citric acid. [6]

Q5 (A) Explain the industrial applications of Cellulases. [6]

(B) Classify types of amylases produced by microbes explaining their roles in enzymatic reactions. [6]

OR

(B) Explain process parameters for microbial α -amylase production. [6]

Q6 (A) What are different types of fibrinolytic enzymes? Comment on the potential of streptokinase as a fibrinolytic enzyme. [6]

(B) Discuss the effect of raw materials on economics of a fermentation process [6]

OR

(B) Discuss the effect of recovery process on economics of a fermentation process [6]

***** BEST OF LUCK *****

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