D 50838 (Pages : 3) Name.....

Reg. No.....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION NOVEMBER 2013

(UG–CCSS)

Biotechnology [Core Course]

BT 5B 03 – BIOPROCESS TECHNOLOGY

Time : Three Hours Maximum : 30 Weightage

I. Objective Type Questions. Answer all *twelve* questions :

1. Advantages of trickling filters is :

(a) Ponding occurs.

(b) Bio-coenoses develops within the reactor.

(c) Specific area of voidage is less.

(d) The action is not filtration.

2. One of the following is used in waste water treatment :

(a) Air lift reactors. (b) Membrane bioreactors.

(c) Hollow fiber reactors. (d) Continuously stirred tank reactor.

3. In glycerol production, the inhibitor effect is :

(a) Glycerol-3-phosphate production is repressed.

(b) Conversion of glycerol-3-phosphate to glycerol is repressed.

(c) Conversion of glycerol-3-phosphate to DHAP is repressed.

(d) Acetaldehyde production is repressed.

4. In an enzyme assay, when [S] is much less than the Km, the rate :

(a) Approaches Vm. (b) Is independent of [S]

(c) Is independent of [E]. (d) Is proportional to [S].

5. The mannitol supplied in the incubation mixture of protoplast isolation functions primarily as :

(a) Source of energy. (b) Buffer.

(c) Osmotic stabilizer. (d) N-source.

Turn over

6. In fluidized bed reactors :

(a) Temperature gradients are very high.

(b) Temperature is more or less uniform.

(c) Hotspots are formed.

(d) Segregation of solids occurs.

7. The rheological property of the medium grown with *Aspergillus oryzae* after 5 days is

(a) Newtonian. (b) Pseudoplastic.

(c) Casson plastic. (d) Bingham plastic.

8. Biologically aerated filters are used for :

(a) Primary treatment for nitrification.

(b) Secondary treatment for denitrification.

(c) All the above.

(d) None of the above.

9. The function of penicillin in production of glutamic acid by *Micrococcus glutaricus* is :

(a) Increase glutamic acid production.

(b) Increase the purity of glutamic acid.

(c) Act as inducer.

(d) Increase cell wall permeability for glutamic acid release.

10. The kinetics of microbial cell death is :

(a) Arithmetic. (b) Exponential.

(c) Logarithmic. (d) None of the above.

11. Oxygen demand increases when :

(a) When the carbon source concentration is more reduced.

(b) When the carbon source is more reduced.

(c) The carbon source concentration is less reduced.

(d) Carbon source is less reduced.

12. SWL contains :

(a) 1% sugar. (b) 1.5% sugar.

(c) 2% sugar. (d) 2.5% sugar.

(12 x = 3 weightage)

II. Short Answer Type Questions. Answer all *nine* questions :

13. SSF.
14. Antifoam agents.
15. SCP.
16. Auxotrophic mutants.
17. RBC.
18. Interferon.
19. Vanilline production.
20. Crosslinking.
21. Trickling filters.

(9 x 1 = 9 weightage)

III. Short Essay *or* Paragraph Questions. Answer any *five* questions. :

22. Discuss the various methods of cell disruption.
23. Explain the principle of Affinity chromatography and its applications.
24. What is secondary screening? Discuss the various methods of secondary screening.
25. Differentiate between Batch, Fed batch and Continuous culture systems.
26. With a neat diagram, explain the various parts of the bioreactor and their functions.
27. Discuss hairy root culture.
28. Differentiate between a CSTR and packed bed reactor.

(5 x 2 = 10 weightage)

IV. Essay questions. Answer any *two* questions out of three :

29. Explain the various methods of strain improvement. Discuss each with specific examples.
30. Discuss in detail the various methods of enzyme immobilization. What are the advantages?
31. Explain the use of microbes in liquid waste disposal.

(2 x 4 = 8 weightage)