

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous), Rajkot
Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION NOVEMBER 2018

B.Sc. Biotechnology

16UBTCC18 – BIOPROCESS ENGINEERING

Duration of Exam – 3 hrs

Semester – V

Max. Marks – 70

Part A (10x1= 10 marks)

Answer **ALL** questions

1. ____ media is deficient for specific constituents required for growth of auxotroph.
2. Secondary metabolites are produced at ____ stage of microbial growth curve.
3. Which fermentation process achieve steady state condition?
4. Which fermentor possess both fermentation and biomass separation facility in single tank?
5. Name the raw material which is by-product of paper industry.
6. Write the name of any two parameter where inline sensor used in fermentation process.
7. Partition of molecules between stationary and mobile phase is known as ____
8. Which process involve mother liquor to start nucleation and end with solid substance?
9. ____ used as industrial organism for production of Citric acid.
10. ____ Algae used as SCP possesses highest amount of protein content.

Part B (5x5= 25 marks)

Answer **ALL** questions

- 11a. Illustrate the criteria for secondary screening of industrially important organism.

OR

- 11b. Discuss any 2 methods of isolation of auxotrophic mutants.

- 12a. Differentiate between batch and fed-batch culture.

OR

- 12b. Describe solid substrate fermentation process with suitable examples.

- 13a. Explain the biological importance of starter culture.

OR

- 13b. Describe the application of computer in control system.

- 14a. Explain the principle and process of distillation

OR

- 14b. Differentiate between spray drier and drum drier.

- 15a. Discuss the biochemical pathway and application of alcohol production.

OR

- 15b. Describe biochemical pathway and application of citric acid.

Part C (5X7= 35 marks)

Answer **ALL** questions

16a. Describe lyophilization and cryopreservation process in brief.

OR

16b. What is recombinant DNA technology? How to improve strain using recombinant DNA technology?

17a. Define OTR. How to determine K_{La} value during fermentation process?

OR

17b. Define fermentor. Describe any three fermentor used in industrial production.

18a. Define media optimization. Describe Plackett Burman design in brief.

OR

18b. Explain any 7 carbon source used as raw material in fermentation industry.

19a. Explain mechanical and non-mechanical process of cell disruption.

OR

19b. Define chromatography. Explain any 2 chromatography process used in separation/ purification of fermented product.

20a. Describe fermentation process, biochemical pathway and application of penicillin.

OR

20b. Describe fermentation process, biochemical pathway and application of Vitamin B12.
