



RN-003-1015033

Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

February - 2019

BT - 501 : Biotechnology

(Bioprocess & Biochemical Engineering)

(New Course)

Faculty Code : 003

Subject Code : 1015033

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instruction : All questions are compulsory.

- 1 (A) Objective type questions : 4×1
- (1) A mutant organism that requires a particular additional nutrient which the normal strain does not is called auxotrophs (True/False)
 - (2) Mutagenesis occurs at a specific site of DNA is called _____
 - (3) What is enrichment culture?
 - (4) _____ is used for cryopreservation whose temperature is -196°C
- (B) Answer in brief : (Any **One** out of Two) 1×2
- (1) What is feedback control?
 - (2) What are primary metabolites?
- (C) Answer in detail : (Any **One** out of Two) 1×3
- (1) Explain lyophilization process in brief.
 - (2) Differentiate between primary and secondary screening
- (D) Write a note on : (Any **One** out of Two) 1×5
- (1) What is recombinant DNA technology? How to improve strain using recombinant DNA technology?
 - (2) Write down the various methods for primary screening of microorganism.

- 2 (A) Objective type questions : 4×1
- (1) Which phase is associated with production of primary metabolites in batch culture?
 - (2) Which system is incorporated in fermentor to provide air?
 - (3) _____ is applicable to prevent vortex mixing in fermentor.
 - (4) During _____ culture operation, steady state condition can be achieved.
- (B) Answer in brief : (Any **One** out of Two) 1×2
- (1) Differentiate between fermentor and bioreactor.
 - (2) Differentiate between continuous and fed batch culture.
- (C) Answer in detail : (Any **One** out of Two) 1×3
- (1) What is oxygen transfer rate (OTR)? Write down the mechanism of OTR during fermentation process.
 - (2) Write down the importance of starter culture.
- (D) Write a note on : (Any **One** out of Two) 1×5
- (1) With the help of diagram explain any two fermentor.
 - (2) Give a brief account of growth kinetics of microbial cell in a batch system.
- 3 (A) Objective type questions : 4×1
- (1) What is defined media?
 - (2) _____ design is used for selection of variable during statistical media optimization process.
 - (3) Which carbon source is derived from industrial effluent of paper industry?
 - (4) Autoclave is the example of batch sterilization process (True/False).
- (B) Answer in brief : (Any **One** out of Two) 1×2
- (1) Write name of any two antifoaming agents.
 - (2) What is control loop strategy in automation control?

- (C) Answer in detail : (Any **One** out of Two) 1×3
- (1) Differentiate between continuous and batch sterilization.
 - (2) Write down the application of computer in fermentation industry.
- (D) Write a note on : (Any **One** out of Two) 1×5
- (1) Describe any 5 carbon sources utilized as raw material in fermentation industry.
 - (2) What is media optimization? Explain statistical media optimization process in brief.
- 4 (A) Objective type questions : 4×1
- (1) Estimation of compound using Physico-chemical method is called bioassay (True/False).
 - (2) The process of separating the component from a liquid mixture by selective evaporation and condensation is known as _____.
 - (3) Which chromatography process separate compounds on the basis of molecular weight?
 - (4) What is crystallization?
- (B) Answer in brief : (Any **One** out of Two) 1×2
- (1) Write down the principle of dialysis
 - (2) What is flocculation?
- (C) Answer in detail : (Any **One** out of Two) 1×3
- (1) Write down the working procedure of drum drier.
 - (2) Write down the mechanical methods of cell disruption.
- (D) Write a note on : (Any **One** out of Two) 1×5
- (1) Write down the strategy to make fermentation process economical.
 - (2) Write down the procedure of quality control in Industry.

- 5 (A) Objective type questions : 4×1
- (1) Which fermentation process used substrate but do not involve submerge condition?
 - (2) Write down the name of any one gluconic acid producing fungi.
 - (3) _____, an alga that acts as single cell protein produces highest amount of protein.
 - (4) Alcohol production occurs under aerobic condition by yeast (True/False).
- (B) Answer in brief : (Any **One** out of Two) 1×2
- (1) Write down the biochemical pathway of alcohol production during fermentation process.
 - (2) Write short notes on Sauerkraut.
- (C) Answer in detail : (Any **One** out of Two) 1×3
- (1) Write short note on Solid state fermentation.
 - (2) Briefly describe the biochemical pathway of Lysine production.
- (D) Write a note on : (Any **One** out of Two) 1×5
- (1) Write down the fermentation condition and application of Vitamin B₁₂.
 - (2) Briefly describe the various techniques of cell immobilization.
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