

PARUL UNIVERSITY
PARUL INSTITUTE OF APPLIED SCIENCES
MID SEMESTER INTERNAL EXAMINATION, APRIL 2017
B. Sc. Semester IV
Subject: Microbiology

Paper Code: 11101252

Title of the paper: Microbial Biotechnology

Date: 18 /04/2017

Time: 12.30 p.m. to 02.00 p.m.

Maximum Marks: 40

Instructions:

- 1. All questions are compulsory and options are given in first and second question only.**
 - 2. Numbers to the right of question indicate the marks of respective question.**
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- Q. 1** Attempt any one question of the following. **(08)**
(i) How can we isolate mutants that do not recognize the presence of inhibitors and repressors? Describe isolation of analogue resistant mutants and revertants both
(ii) Describe the equipment and techniques used for filtration in Industry? Also mention the use of filter aids wherever necessary
- Q. 2** Attempt any three questions of the following. **(12)**
(i) What is liquid-liquid extraction? Describe single stage, co-current and counter current flow extraction systems?
(ii) Differentiate between Drum Drier and Spray Drier
(iii) How can Streptomycin be extracted with the help of Ion Exchange Chromatography? Mention the equations involved
(iv) Differentiate between Ion Exchange and Adsorption Chromatography?
(v) How can modification of permeability help in strain improvement? Describe with example
- Q. 3** Do as directed. Attempt all five questions. Define the following: **(05)**
(i) Feedback repression
(ii) Enrichment Culture Technique
(iii) Isoenzyme Feedback Control
(iv) Reverse Osmosis
(v) Chromatography
- Q. 4** Write correct option in your answer sheet for following 15 multiple choice questions. **(15)**
- MCQ 1** Increased production of glutamic acid by *Corynebacterium glutamicum* modified by Biotin is an example of:
(A) Abnormality of permeability of cell membrane (B) Modification of end products which control key enzymes of pathway
(C) Modification such that microbe doesn't recognize the presence of inhibiting control mechanisms (D) All of the above
- MCQ 2** What do you call a substance which mimics the control properties but fails to be incorporated in biological reaction

- (A) Revertant (B) Analogue
(C) Antibiotic (D) None of the above
- MCQ 3 Mutations can be induced by:
(A) UV Light (B) Chemical mutagens
(C) None of the above (D) Both of the above
- MCQ 4 Which of the following is NOT the example of antifoam agent
(A) Long chain fatty acids (B) Amines
(C) Silicones (D) Water
- MCQ 5 We can precipitate the product by:
(A) Changing the pH (B) Salting in
(C) By adding organic solvents (D) All of the above
- MCQ 6 In what circumstances is Centrifugation preferred over filtration?
(A) When filtration is slow and difficult (B) When cells are required to be free of filter aids
(C) Where high standard of hygiene is required (D) All of the above
- MCQ 7 What is the most efficient method of solvent utilization in Solvent Extraction?
(A) Batch Process (B) Co-Current System
(C) Counter Current System (D) All of the above
- MCQ 8 In Reverse Osmosis, Pressure applied should be:
(A) Greater than osmotic pressure (B) Lesser than osmotic pressure
(C) Equal to osmotic pressure (D) Can't say
- MCQ 9 Which one the driers uses an atomizer?
(A) Drum Drier (B) Spray Drier
(C) Fluidized Bed Drier (D) All of the above
- MCQ 10 Citric acid can be extracted by
(A) RO (B) Drying
(C) Crystallization (D) Ultra filtration
- MCQ 11 Kinoshita's strain of *C. glutamicum* was also deficient in one of the following enzymes which helped it to accumulate large amounts of α keto glutarate
(A) Glucose oxidase (B) α keto glutarate dehydrogenase
(C) Succinate dehydrogenase (D) β galactosidase
- MCQ 12 Which of the antibiotics is used in enrichment culture technique widely for selection auxotrophic mutants
(A) Tetracycline (B) Amikacin
(C) Penicillin (D) Nalidixic acid
- MCQ 13 Analogue resistant mutants can be isolated by:
(A) Pour plate method (B) Spread plate method
(C) Streaking (D) Gradient plate method
- MCQ 14 Removal of microbial cells and other solid matter can be accomplished by :
(A) Filtration (B) Centrifugation
(C) Both (D) None
- MCQ 15 How can cell disruption be done?
(A) Liquid shear (B) Freeze thawing
(C) Osmotic Shock (D) All of the above