



Seat No.- \_\_\_\_\_

No. of printed pages: 02

[ 23 ]

SARDAR PATEL UNIVERSITY  
T.Y.B.Sc EXAMINATION - SEMESTER-VI

MICROBIOLOGY – US06CMIC24

Fermentation Technology-II

Date: 27/6/2022

Time: 10:00 am to 12:00 pm

Day: Monday

Total marks: 70

N.B: Figures on the right indicate marks.

- Q.1 Multiple Choice Questions. 10**
- 1 Double stranded break in DNA occurs due to \_\_\_\_\_ in the strain improvement programme.  
(a) Short wavelength UV rays (b) Long wavelength UV rays  
(c) X-rays (d) All of the above
  - 2 In bacteria, conjugation happens between \_\_\_\_\_.  
(a) F<sup>+</sup> & F<sup>-</sup> (b) F' & F<sup>-</sup>  
(c) Hfr & F<sup>-</sup> (d) All of the above
  - 3 Changes in genotype can be brought about by \_\_\_\_\_.  
(a) Spontaneous mutation (b) Induced mutation  
(c) Genetic recombination (d) All of the above
  - 4 Glutaraldehyde is used in \_\_\_\_\_ method of immobilization.  
(a) Covalent bonding (b) Entrapment  
(c) Microencapsulation (d) Adsorption
  - 5 In bioassay, \_\_\_\_\_ assay is used to detect minute amount of the fermentation product.  
(a) Turbidometric (b) Metabolic response  
(c) Enzymatic (d) None of the above
  - 6 \_\_\_\_\_ may be present in industrial wastes.  
(a) Unused medium components (b) Filter aids  
(c) Microbial cells (d) All of the above
  - 7 Physical & chemical methods like sedimentation & coagulation are employed in \_\_\_\_\_ of waste treatment & disposal.  
(a) Primary treatment (b) Secondary treatment  
(c) Tertiary treatment (d) Quaternary treatment
  - 8 In \_\_\_\_\_, aeration & agitation of effluent is carried out in presence of flocculating suspension of microorganisms.  
(a) Trickling filters (b) Rotating biological contractors  
(c) Activated sludge process (d) All of the above
  - 9 Which of the following characteristic(s) do a semisynthetic penicillin have?  
(a) Resistance to  $\beta$ -lactamase (b) Expanded antimicrobial spectrum  
(c) Acid stability (d) All of the above
  - 10 The strain used for commercial production of glutamic acid has a block in \_\_\_\_\_.  
(a) Malate dehydrogenase (b)  $\alpha$ -ketoglutarate dehydrogenase  
(c) Succinate dehydrogenase (d) Pyruvate dehydrogenase

- Q.2 A State whether the given statements are true or false. 04**
- 1 Chemical like NTG is used as mutagen in strain improvement.
  - 2 BL4 is applicable for highly hazardous organisms.
  - 3 Waste disposal by incineration is a cost effective & cheaper method than landfilling.
  - 4 Amylases are enzymes which hydrolyze  $\beta$ -1,4 glycosidic bonds of the glucose polymer.

- B Fill in the blanks with appropriate answer. 04**
- 1 \_\_\_\_\_ are used with long wavelength UV rays in mutagenesis.
  - 2 LAL test is used for the detection of \_\_\_\_\_.
  - 3 UNOX & VITOX are the types of system developed to increase the rate of oxygen transfer in \_\_\_\_\_.
  - 4 Vitamin B<sub>12</sub> is also called \_\_\_\_\_.

- Q.3 Give SHORT answers to the following questions. (Attempt Any ten) 20**
- 1 How does acridine dye cause mutation?
  - 2 What is the use of base analogue in strain improvement?
  - 3 What is cooperative feedback control?
  - 4 Write the advantages & disadvantages of cell immobilization by adsorption.
  - 5 Enlist the properties of microorganisms considered for biosafety.
  - 6 Write on the ideal characteristics of a test organism in bioassay.
  - 7 Briefly describe spray irrigation of waste disposal.
  - 8 What is landfilling?
  - 9 What is the role of ferrous/ferric sulphate in effluent treatment?
  - 10 Why biotine deficient medium is used for glutamic acid production.
  - 11 List the advantages of active dry yeast over bakers' yeast.
  - 12 Why phenyl acetic acid is used in the production medium for penicillin?

- Q.4 Answer the following LONG Question:- (Attempt any four) 32**
- 1 Differentiate between spontaneous & induced mutation. Explain the role of nitrous acid & hydroxylamine in mutagenesis.
  - 2 Write notes on:
    - (a) Parasexual cycle.
    - (b) Justify, with suitable examples, selection of a strain resistant to medium component is economically beneficial
  - 3 Write in detail on sterility testing.
  - 4 Write notes on:
    - (a) Advantages of cell immobilization over enzyme immobilization.
    - (b) Immobilization of cells by entrapment & crosslinking.
  - 5 List the aerobic processes for waste treatment. Explain trickling filters & fluidized bed system in detail.
  - 6 Write in detail on anaerobic treatment of wastes.
  - 7 Write notes on:
    - (a) Production of bakers' yeast.
    - (b) Nutritive value of yoghurt.
  - 8 Write in detail on ethanol production

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