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**SARDAR PATEL UNIVERSITY**

**B.Sc. Semester VI Examination, April -2022.**

**Subject: Microbiology**

**Subject Code:US06CMIC24 (Fermentation Technology-II.)**

**Date: 07-04- 2022**

**Time: 03:00PM TO 05:00PM**

**Thursday**

**Total Marks: 70**

**Q.1 Answer all Multiple Choices Questions by Choosing the Most Appropriate One.**

**[10]**

1. Which of the following techniques PEG is used to induce recombination?
  - (a) Parasexual cycle
  - (b) Sexual cycle
  - (c) Transformation
  - (d) Protoplast fusion
2. Who isolated a biotin-requiring, *Corynebacterium glutamicum*?
  - (a) Nakayama *et al*
  - (b) Nakao *et al*
  - (c) Kinoshita *et al*
  - (d) Demain *et al*
3. \_\_\_\_\_ is used as a cryopreservative agent to protect microbial cells in liquid nitrogen preservation?
  - (a) DMSO
  - (b) Ethylene Glycol
  - (c) Glycerol
  - (d) All of them
4. Which biosafety level is implemented while dealing with a highly hazardous organism?
  - (a) BL1
  - (b) BL2
  - (c) BL3
  - (d) BL4
5. Which assay is employed when pellicle microbial growth occurs on the surface of the medium?
  - (a) Turbidimetric
  - (b) Diffusion
  - (c) Endpoint
  - (d) Enzymatic
6. \_\_\_\_\_ system high levels of active biomass are retained in the reactor by flocculation.
  - (a) Up-flow anaerobic sludge blankets (UASB)
  - (b) Anaerobic filters
  - (c) Fluidized-bed system
  - (d) Trickling filters
7. Which of the following main gases evolve from an anaerobic sludge digestion tank include?
  - (a) Ammonia & Carbon dioxide
  - (b) Methane & Carbon dioxide
  - (c) Methane & Hydrogen sulfide
  - (d) Ammonia & Methane
8. For glutamic acid production, the medium should contain \_\_\_\_\_.
  - (a) Limited amount of biotin
  - (b) Penicillin
  - (c) Detergents
  - (d) All of the above
9. Which of the following production is an example of mixed culture fermentation?
  - (a) Insulin
  - (b) Yoghurt
  - (c) Ethanol
  - (d) Vitamin B<sub>12</sub>
10. Insulin is secreted by groups of cells within the pancreases called
  - (a) Islet cell
  - (b) Helper cell
  - (c) Red blood cell
  - (d) None of these



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(P.T.O.)

**Q.2 Do as directed. (one mark each)**

[08]

1. Mutants which do not recognize feedback inhibitors or repressors can be selected by isolating \_\_\_\_\_ mutants.
2. In generalized transduction, only the loci which are adjacent to the attachment site of the phage in the bacterial chromosome are transferred. (True/ False)
3. \_\_\_\_\_ medium is used for growth of fungi and bacteria both in sterility testing.
4. A patent provides protection for almost two decades. (True/ False)
5. Solid contents collected during liquid waste known as \_\_\_\_\_.
6. In Britain as a standard of Royal Commission for effluent disposal in river, the maximum standard of BOD required is 30:20 standard. (True/ False)
7. Ethanol and other petrochemicals can be used as raw material to produce \_\_\_\_\_.
8. Cobalt (Co) is an important ingredient of production medium to achieve maximum yield of cobalamin product. (True/ False)

**Q.3 Answer any ten (10) questions in brief.**

[20]

1. Define feedback repression.
2. Enlist methods for preservation of industrially important microbial strain.
3. What is electrofusion?
4. Write the ideal characteristics of a test organism in bioassay.
5. Explain the importance of positive and negative control in sterility testing.
6. Discuss the principles of Quality assurance.
7. Define the term BOD and its importance in effluent treatment.
8. Enlist factors to investigate site survey.
9. What is landfilling?
10. Write the advantages of dried yeast.
11. Enlist name of microorganisms used in vitamin B<sub>12</sub> production.
12. Write uses of  $\alpha$ -amylase.



**Q.4 Answer any four (04) questions of the questions given below.**

[32]

1. Discuss the mechanism of Physical and Chemical Mutagens for strain improvement with an example.
2. Define auxotroph. Explain the use of auxotrophic mutants in the selection of primary metabolite producers.
3. Explain the various methods of Immobilization of microbial cells.
4. Write in a detailed note on Endotoxin testing by LAL test.
5. Explain in detail about Trickling processes as a part of aerobic processes for effluent treatment.
6. Write a short note on Activated sludge processes.
7. Describe in detail about biosynthesis and fermentative production of penicillin by *P. chrysogenum*.
8. What is biotransformation? write a detail note on biotransformation of steroid.

\*\*X\*\*

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