05/05/2015 [Additional Exam]

VCD- / / BIOTECHNOLOGY-I, S.Y.B.Sc. SEM IV EXAM MARKS 75 $2^{1/2}$ HRS (70)

- **All questions are compulsory.**
- **Draw diagram wherever necessary**

Q.I (A) Explain the following terms (any two) (04)

1. Latent period
2. Capsid
3. Plus strand RNA virus
4. Protomers

Q.I (B) Fill in the blanks (any four) (04)

1. The form of virus which remains integrated into the host chromosome is called a _____.
2. Viruses that lack envelope are called _____ viruses.
3. _____Hormone is secreted by the islets of Langerhans of pancreas which catabolizes glucose in blood.
4. Hib vaccine is used for organism _____
5. HIV uses RNA as template to make DNA employing a unique enzyme called _____.
6. Bacteriophages that can follow either pathway – lytic or lysogenic are called _____ phages.
7. In_____ polio vaccine in which attenuated forms of the virus are employed.
8. In case of Influenza virus genome is segmented into _____ linear single – stranded RNA molecules.

Q.I (C) Discuss (any two) of the following. (12)

1. Preparation of TAB vaccine along with its variants.
2. Human growth hormone production with reference to application of biotechnology in medical science
3. Structure of viruses in general.
4. Methods of viral enumeration.

Q.II (A)Name the following (any two) (04)

1. Microorganisms which fix nitrogen by living in the roots of legumes and other plants.
2. Transformation of nitrates to gaseous nitrogen accomplished by microorganisms in a series of biochemical reactions.
3. Final treatment of sewage which includes usage of different chemicals and disinfectants.
4. Sewerage system which carry off domestic and industrial water.
5. Measure of oxygen consumed during the oxidation of the oxidisable organic matter by a strong oxidizing agent.
6. A dark colored amorphous substance which improves the texture and structure of soil.
7. Enzyme complex involved in nitrogen fixation which is sensitive to oxygen.
8. Film of microorganisms formed on the filtering medium of the trickling filter tank.

Q.II (B) Explain the following terms (any two) (04)

1. Commensalism
2. Rhizosphere
3. BOD
4. Nitrification

Q.II (C) Give an brief account on (any two) of the following (10)

1. Physical characteristics of soil

Contd/...2

2. Carbon cycle
3. Chemical and microbiological characteristics of wastewater.
4. Activated sludge process.

Q.III (A) Fill in the blanks (any four) **(04)**

1) In _____ phase of batch fermentation the growth rate of cells is independent of the substrate concentration as long as excess substrate is formed..
2) In _____ process substrate is added in increments as the fermentation progresses.
3) The production of vinegar utilizes various _____ species to oxidize ethanol to acetic acid.
4) _____ is a cryoprotective agent.
5) _____ screening gives the information regarding the spectrum of microorganisms which is sensitive to a newly discovered antibiotic.
6) _____ is a situation where the end product of a biochemical pathway prevents the synthesis of an enzyme.
7) Cell growth is controlled by adjusting the concentration of one subatrate in the _____.
8) _____ involves the freezing of a culture followed by its drying under vacuum which results in the sublimation of cell water.

Q.III (B) Explain (any two) of the following **(04)**

1) Diauxy
2) Subculture
3) Primary Screening
4) Co-operative feedback control

Q. III (C) Answer (any two) of the following. **(12)**

1) What do you mean by submerged fermentation? In brief explain the process of gluconic acid production?
2) Elaborate on the method used for the long term preservation of microorganisms.
3) Mention the differences between batch and continuous fermentation
4) How would you primarily screen an extracellular metabolite producing microorganisms?

Q.IV Write short notes (any three) of the following **(15)**

1. Cavitator
2. Imhoff tank.
3. Nitrogen fixation.
4. Life cycle of T4 phage.
5. Somatostatin production with reference to application of biotechnology in medical science.
6. Exponential phase

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