VCD- 19/10/19 (3 Hours) (100 Marks)

Instructions to the candidate:

- **All** questions are **compulsory**. Choice is **internal**
- Figures to **the right** indicate **full marks.**
- Draw flowcharts/structures/diagram wherever necessary.

Q1.A) State True or False: (04)

i) Rhizobium and Azotobacter are Nitrogen fixing microbes.
ii) *Salmonella sp.* causes enteric fever.
iii) Viruses have no genetic material.
iv) Lactobacillus is absent in some fermented foods like yogurt and in dietary supplements.

Q1.B) Write short notes on: (Any three) (09)

i) Probiotics
ii) Normal flora of Human gut
iii) Helical structure of virus
iv) Insects as viral host.
v) *Candida sp.*
vi) Cholera

Q1.C) Answer the following: (Any two) (12)

i) Explain about structure and genome of virus in brief.
ii) Write in brief about air borne microorganisms.
iii) Write a note on Hepatitis virus and *Shigella sp.*
iv) Discuss water borne and soil borne diseases.

Q2. A) State True or False: (04)

i) Mechanical isolation of single cells from callus involves the use of enzymes.
ii) Embryo culture is a component of in vitro fertilization.
iii) Aseptic conditions are necessary to eliminate contaminations.
iv) Callus is unorganized proliferative mass of cell.

Q2.B) Answer the following: (Any three) (09)

i) What is re-differentiation?
ii) Write down the composition of MS media.
iii) Briefly explain the concept of Totipotency.
iv) Discuss in detail different types of stem cells.
v) Briefly explain about effect of hormones on callus culture.
vi) Schematically explain the technique of Micropropagation

Q2.C) Answer the following: (Any two) (12)

i) With the help of diagram explain Callus culture in brief.
ii) Write in brief about production of vaccines.
iii) Explain the culture techniques used for Primary cell culture in brief.
iv) Describe in detail about Single cell culture.

Q3.A) State True or False: (04)

i) Continuous fermentation is monitored by use of turbidometric principle.
ii) Batch fermentation is described as a 'closed system'.
iii) Biosensors have no industrial application
iv) Microencapsulation is a process in which tiny particles or droplets are surrounded by a coating to give small capsules.

Q3.B) Write short notes on: (Any three) (09)

i) Bubble cap fermenter.
ii) Optical biosensor
iii) Salt and chemical modification.
iv) Applications of single cell protiens.
v) Applications of biosensors in Food Industry.
vi) Immobilized enzyme

Q3.C) Answer the following: (Any two) (12)

i) With the help of a flow sheet explain industrial wine production.
ii) What is single cell proteins? Explain Yeast and Algal proteins
iii) Describe covalent binding and entrapment as immobilization techniques.
iv) Explain solvent and substrate stabilization and enzyme stabilization by polymer.

Q4.A) Define and explain: (Any five) (10)

(i) Dysentery (ii) Normal flora (iii) Subculture (iv) Explant

(v) Hybridoma (vi) Single cell proteins (vii) Biosensors

Q4.B) Write elaborate notes on: (Any three) (15)

i) Lytic and Lysogenic cycle
ii) Entrapment
iii) Applications of both Plant and Animal tissue culture
iv) Application of Biosensor
v) History of both Plant and Animal tissue culture
vi) Food borne micro-organisms