

Q.P. Code : 20791

[Time: Three Hours]

[Marks:100]

Please check whether you have got the right question paper.

- N.B:
1. All questions are compulsory. Choice is internal.
 2. Figures to the right indicate full marks.
 3. All questions carry equal marks.
 4. Draw flowcharts / diagrams wherever necessary.

Q.1

- A) State true or false: 04
- i) Sucrose is the most preferred carbon source for culture medium.
 - ii) Dry heat is more effective than moist heat.
 - iii) Primary explant is useful for disaggregation of large quantities of cells.
 - iv) A vaccine triggers body's immune system to produce antigen.
- B) Answer the following: (any three) 09
- i) Write in brief on monoclonal antibodies.
 - ii) What is the composition of growth media used for plant tissue culture?
 - iii) Giving suitable examples, discuss the properties of a good disinfectant.
 - iv) What is nitrification? Mention the microorganisms involved in the process.
 - v) Write in short about the types of viruses based on its genome.
 - vi) Comment on protoplast culture.
- C) Answer the following: (any two) 12
- i) What are vaccines? Give a detailed account of the types of the vaccines.
 - ii) Elaborate on sterilization giving emphasis on its importance and different agents used for it.
 - iii) Give detailed account of the callus culture and factors affecting it.
 - iv) Enlisting the advantages and limitations, write in detail about the somatic hybridization technique.

Q.2

- A) Match the column. 04

Column A

- a) Feeding nozzle
- b) Impeller
- c) Baffles
- d) Sampling valve

Column B

- i) Avoid vortex formation
- ii) Addition of media component
- iii) Withdrawing water sample for lab tests
- iv) Agitating device
- v) Aerating device
- vi) Removal of fermented broth

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B) Answer the following: (any three)

- i) Write in brief on aeration in fermentation.
- ii) Discuss about primary screening and state its significance.
- iii) Explain the fluidized bed fermenter and its use.
- iv) Describe the preparation of inoculum.
- v) Discuss the different starchy materials used for fermentation.
- vi) Write on centrifugation used for downstream processing.

C) Answer the following: (any two)

- i) Agricultural wastes are preferred raw material in most of the fermentation processes. Justify.
- ii) Elaborate on the sterilization of the fermenter and medium.
- iii) Give a detailed account of the cell disruption methods used in downstream processing.
- iv) With a neat labeled diagram describe the salient features of an ideal fermenter and its ancillary equipments.

Q.3

A) Match the column:

Column A	Column B
a) Penicillin	i) <i>Saccharomyces carlbergensis</i>
b) Ethanol	ii) <i>Penicillium chrysogenum</i>
c) Vitamin B ₁₂	iii) <i>Mucor pusillus</i>
d) α -amylase	iv) <i>Serratia marsecense</i>
	v) <i>Streptomyces olivaceus</i>
	vi) <i>Bacillus licheniformis</i>

B) Answer the following: (any three)

- i) Enlist the microorganisms used for protease production and state the advantages of fermentation method used for the same.
- ii) Describe in brief biosensor used for detection of blood glucose.
- iii) What is immobilization? State its disadvantages.
- iv) Write about the production of single cell protein by yeast.
- v) Mention the principle of biosensor. State its components.
- vi) Differentiate between the crude and synthetic media.

C) Answer the following: (any two)

- i) With the help of a flow chart explain the production of penicillin.
- ii) Elaborate on the techniques used for immobilization of enzymes.
- iii) Write in detail about applications of biosensors in various fields.
- iv) Give detailed account of advantages and limitations of single cell protein.

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Q.4 A) Define the following: (any five)

- i) Dedifferentiation
- ii) Sterilization
- iii) Finite cell line
- iv) Antifoam agents
- v) Substrate stabilization
- vi) Formulation
- vii) Super critical fluid extraction

B) Answer the following:(any three)

- i) Elaborate on various techniques used for primary screening.
- ii) Compare continuous and batch fermentation. Add a note on its advantages and disadvantages.
- iii) Discuss advantages of immobilization in detail
- iv) Write in detail about immunobiosensors with the help of schematic representation.
- v) Write an informative note on advantages of animal tissue culture.
- vi) Elaborate on applications of plant tissue culture.
