

- NB : 1) All Questions are Compulsory.
2) All questions carry equal marks.
3) Draw labelled diagrams wherever necessary.

1. (A) Do as directed (Any Three)

03

- (i) Name a fermentor used for production of vinegar.
- (ii) What do you mean by height to diameter ratio ?
- (ii) Explain the term "in line sensor"
- (iv) Define perfusion cultures
- (v) Fill in the blank -

_____ are semiconductors made from specific mixtures of pure oxides of iron, nickel and other metals.

- (vi) Name any one gauge used to measure pressure.

(B) Attempt the following (Any Two)

12

- (i) State any two devices used to measure pressure in a fermentation process.
- (ii) How can you measure and control inlet and exit gas ?
- (iii) Explain structure and working of an outer loop airlift fermentor.
- (iv) Elaborate on the construction principle and working of a deep jet fermentor.

2. (A) Explain the following terms (Any Three)

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- (i) Primary Screening
- (ii) Seed culture
- (iii) Brewing
- (iv) Diffusion assay
- (v) Scale-down
- (vi) Inoculum development

(B) Answer the following (Any Two)

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- (i) Elaborate on secondary screening
- (ii) Explain inoculum development programme for the vitamin B₁₂ producer *Pseudomonas*.
- (iii) Discuss major factors involved in scale-up.
- (iv) Give an account of the methods used for screening of antibiotic producers from soil.

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3. (A) Give significance of / importance of (Any Three) 03
- (i) Mashing
 - (ii) Malolactic fermentation
 - (iii) Beechwood shavings
 - (iv) Corn steep liquor
 - (v) Hops
 - (vi) Spawn
- (B) Discuss the following (Any Two) 12
- (i) Red wine fermentation protocol.
 - (ii) The production of Vinegar schematically.
 - (iii) The fermentation and recovery of Citric acid.
 - (iv) The production of Penicillin G.
4. (A) State the role / function of the following in product recovery (Any Three) 03
- (i) Crystallization
 - (ii) Filter aids
 - (iii) Solvent extraction
 - (iv) Flocculating agents
 - (v) Ultrafiltration
 - (vi) Collectors
- (B) Give an account of the following with respect to downstream processing 12
(Any Two)
- (i) Two types of centrifugation techniques
 - (ii) Drying
 - (iii) Rotary vacuum filters
 - (iv) Any two chemical cell disruption methods
5. Write short notes on following (Any Three) 15
- (i) Working of a tower fermentor
 - (ii) Measurement of biomass
 - (iii) Criteria for the transfer of inoculum
 - (iv) Spoilage in Beer
 - (v) Chromatography in product recovery
 - (vi) Foam separation in downstream processing
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