

This question paper contains 3 printed pages].

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S. No. of Question Paper : 1360

Unique Paper Code : 2531502

F-7

Name of the Paper : Industrial Microbiology

Name of the Course : B.Sc. (Hons.) Microbiology (Erstwhile FYUP)

Semester : V

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all.

All questions carry equal marks.

Attempt *all* parts of a question together.

1. Differentiate between any *five* of the following : 3×5=15
- (a) Continuous and Fed Batch fermentations
 - (b) Seed fermenter and production fermenter
 - (c) Stationary and submerged fermentations
 - (d) Whey and yeast extract
 - (e) Lyophilization and Spray Drying
 - (f) Alkaline and neutral proteases.
2. (a) How are microbial strains preserved and maintained in the fermentation industry ? 5
- (b) Briefly describe Secondary screening. 5
- (c) Write a note on impellers and their functions. 5

Or

How do you measure and control temperature during a fermentation process ?

P.T.O.

3. (a) Draw a well labelled diagram of an Air-lift fermenter. 5
- (b) Describe the industrial production of the following products : 5×2=10
- (i) Vitamin B₁₂
 - (ii) Red wine.
4. (a) Give the contributions of the following scientists in industrial microbiology : 1.5×2=3
- (i) Selman A Waksman
 - (ii) Carl Scheele.
- (b) Write the microbial producer and industrial uses of the following products : 3×4=12
- (i) Lipase
 - (ii) Ethanol
 - (iii) Penicillin G
 - (iv) Amylase.
5. Write short notes on any *five* of the following : 3×5=15
- (a) Antifoam agents
 - (b) Precipitation
 - (c) Filtration
 - (d) Sulfite waste liquor
 - (e) Molasses
 - (f) Solid state fermentation.

6. (a) Give reasons for the following :

2×5=10

(i) It is necessary to have head space in a fermenter

(ii) Baffles should be present in continuous stirred tank fermenter

(iii) Biotin concentration is critical during glutamic acid production

(iv) Role of hops in brewing

(v) Synthetic fermentation media are not used for industrial production purposes.

(b) Discuss the measurement and control of pH in a fermentation process.

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