Sl-No· of Q·p : 6089

Unique Paper Code: 2531502

Name of the paper: Industrial Microbiology

Name of the Course: B.Sc. (Hons) Microbiology, Erstwhile DWEP   F-9

Semester: V

Duration: 3 Hours

Maximum Marks: 75 marks

Instructions for candidates

Attempt five questions in all. All questions carry equal marks. Attempt all parts of a question together.

Q1.a.) Give the contributions of the following scientists: 2 x 3 = 6

    i) Carl Scheele

    ii) Alexander Fleming

    iii) Casmir Funk

  b.) Why is it necessary to prevent vortex formation in a fermentor? 2

  c.) How is malting done during brewing? 3

  d.) With the help of a flow chart, explain how white wine is produced. 4

Q2.a) Differentiate **any three** of the following: 4 x 3 = 12

    i) Continuous fermentation and Fed batch fermentation

    ii) Sulfite waste liquor and Whey

    iii) Seed fermentor and Production fermentor

    iv) Spray drying and Centrifugation

  b) Under what conditions does *Aspergillus niger* produce citric acid in large quantities. 3

Q3. Write short notes on **any three** of the following: 5 x 3 = 15

    a) Secondary screening

    b) Continuous stirred tank reactor

    c) Cell disruption methods

    d) Protein hydrolysates

Q4.a.) Outline the process of production of the following metabolites (any two): 6 x 2 = 12

    i) Glutamic acid

ii) Vitamin B12

iii) Penicillin

b) What is Aspect ratio? 1

c) Why is foaming undesirable during a fermentation process? 2

Q5. a.) Give the industrial uses and producing microorganisms of the following: 3 x 2 = 6

i) Ethanol

ii) Alkaline protease

b.) Discuss how Strain improvement is done? 6

c.) How is temperature controlled during a fermentation process? 3

Q6. a.) Explain the following techniques and their use in downstream processing: 4 x 2=8

i) Solvent extraction

ii) Filtration

b.) Draw a well labeled diagram of an air-lift fermentor. 3

c.) How would you measure and control pH during a fermentation process? 4