2018

BOTANY

BOT 301

MICROBIOLOGY AND PLANT PATHOLOGY

Full Marks: 80

Time: 3 hours.

The figures in the margin indicates full marks for the questions

I. ***Answer the following multiple choice questions: (Any three)*** **3x1=3**

a. Archaea is considered as a separate group from bacteria and eukaryotes, based on
   i. Genome sequence
   ii. 16S rRNA gene sequence
   iii. 23S rRNA gene sequence
   iv. EFTu sequence

b. Examples for Actinomycetes
   i. *Streptomyces*
   ii. *Spirillospora*
   iii. *Frankia*
   iv. *Dermatophillia*
   v. All of the above

c. Bacterial resistance to antibiotics is transmitted by
   i. Transduction
   ii. Transformation

iii. Mutation
iv. Plasmids

d. The purification and recovery of the production after fermentation is called
   i. Upstream process
   ii. Downstream process
   iii. Surface fermentation
   iv. None of these

II. ***Answer the following questions (Any three) :*** **3x1=3**

1. What is lopotrichous? (1)
2. State the difference between pili and fimbriae. (1)
3. The causal organism of Bovine spongiform encelopathy is ..... (1)
4. What are the carbon and electron source of Chemolithoautotrophs? (1)

III. ***Answer the following questions (Any four) :*** **3x4=12**

1. Write in brief about the chemical constituent of peptidoglycan. (3)
2. State two functions of complement proteins. (3)
3. Give definition of enriched media and selective media with suitable example, (3)
4. State the properties that indicator organism of contaminated water should have. (3)
5. What type of storage inclusions are found in bacterial cell? (3)
6. What is rhizosphere? (3)

IV. ***Write short notes (Any two) :*** **2x5=10**

1. Functions encoded by different types of plasmids.
2. Soil micro-organisms
3. Waste water treatment
4. Food preservation techniques

V. ***Answer (any two):*** **2x10=20**

1. Explain why the genetic recombination is called Horizontal gene transfer in bacteria. Write in brief about the different mechanism of Horizontal gene transfer. (3+6=10)
2. What is the region of antibody that binds with compatible epitopes of antigen called? Discuss the basic structure and functions of antibody molecule. Enumerate and discuss in brief about different classes of immunoglobins. (1+5+4=10)
3. Discuss about the various steps involved in industrial production of alcohol. (10)

VI. ***Write short notes on (any four):*** **4x5=20**

1. Histological defense structure present in plants
2. Effect of pathogen on translation and transcription of host plant
3. R-Genes
4. Phenolic compounds in plant defense mechanism
5. Integrated pest management

VII. ***Answer (any one) :*** **1x12=12**

1. What is gene for gene concept? Explain the molecular basis of this concept. What is the role of Salicylic acid in disease resistance in plants? (2+5+5=12)
2. Discuss in detail about the process of disease development in plants. What role does the environment play in disease development? (8+4=12)

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