

B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING FIRST YEAR SECOND SEMESTER (Old)– 2019

MICROBIOLOGY- I

Time: Three Hours

Full Marks: 100

Use Separate Answer scripts for each part

Different parts of the same question should be answered together

Part-I

Full Marks-50

1. Answer any one from (A) and (B)

A) i) Differentiate between:

a) Simple staining and differential staining procedure.

b) gm +ve and gm –ve bacteria

ii) Composition of cell wall affect Gram staining---justify 3+3+4

B) What is mordant? Give example of mordant, acid fast bacteria, counter stain

Gm+ve bacteria and gm-ve bacteria. Explain acid fast staining technique. 2+2.5+5.5

2. Answer any two from (A) , (B) and (C)

A) a)State the differences between:

i) thermal death time and decimal reduction time

ii) F value and Z value

b) Mention the appropriate method of sterilization for each of the following: Test tubes, petridish, inoculation needle, milk. Mention the causes of destruction of microorganisms by dry heat and moist heat. 5+2+3

B) Explain the working principle of autoclave and Arnold sterilizer. 5+5

C) How do alcohols, halogens and phenolic compounds act as disinfectant? 10

[Turn over

3) A) Define disinfectant, disinfection, fungicide. Explain the characteristics of ideal antimicrobial chemical agent. 4.5+5.5

B) What is phenol coefficient? Discuss about evaluation of antimicrobial agent by phenol coefficient method. 2+8

4. Answer any one from (A) and (B)

A) What is nitrogen fixation? Explain with example symbiotic and non-symbiotic nitrogen fixation. Why are microorganisms stained? 2+6+2

B) What is "nodule"? Discuss about formation of nodule. State the essential reactants of bacterial nitrogen fixation process. 1.5+ 4 +4.5

Ex/FTBE/T/121/2019 (Old)

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Use Separate Answer Scripts for Part I and Part II

Part II (Marks-50)

1. Answer any **two** from the following: 10+10=20
- a) What is Protoplast and Spheroplast? Name and explain the structure of the organelle responsible for the motility of Bacteria. Explain the method of determining motility of a bacterium. 3+1+3+3=10
- b) How quantitatively the numbers of bacteria are measured by cell counting? How bacteria are classified on the basis of their gaseous requirement? 5+5=10
- c) What are the physical conditions required for the growth of a bacteria? If generation time of a bacteria is 20 min then what will be the number of bacteria after 2 hr if the initial number of bacteria is 100. 7+3=10
2. Answer any **two** from the following: 5+5=10
- a) What is endospore? Name two endospore former bacteria. What is the function of capsule in the structure of bacteria? 1+2+2=5
- b) How the cell wall of Gram positive bacteria differs from Gram negative bacteria? 5
- c) Draw the bacterial growth curve and explain its different phases. 5
3. Answer any **two** from the following: 10+10=20
- a) Write about the structural features of Hyphae. What are the vegetative spores of Fungi? 5+5=10
- b) How the bacterial culture are preserved and maintained? 5+5=10
- c) Write with example the difference between: 5+5=10
- i) Selective and Differential media
- ii) Simple and Complex media