

Microbiology (P.G.)

[CBCS]

M.Sc. Third Semester End Examination-2023

(Regular & Supplementary Paper)

PAPER-302

Full Marks: 40

Time: 02 Hrs

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Group A (MCB-302.1)

Full Marks 20

Agricultural and Industrial Microbiology

1. Answer any two questions of the following: 2x2= 4
 - a. What is denitrification?
 - b. What is protoplast culture?
 - c. Write down the nutrients value of vermicomposting.
 - d. What is rhizosphere effect? Write its importance.

2. Answer any two questions of the following: 2x4= 8
 - a. Write short notes on FYM.
 - b. Write down the ecological importance of carbon and nitrogen cycle. 2+2

(2)

c. Write down the basic mechanism of Bt-toxin . Name two fungal biopesticides. 3+1

d. Describe briefly the biogas production method.

3. Answer any one question of the following: 1x8=8

a. Classify biofertilizer and give example of each type. Write down the beneficial effect of PGPF and PGPR on plants. 2+3+3

b. What is biogeochemical cycle? Write the biochemical steps with associated microbes for sulphur cycle. 2+6

Group B (MCB- 302.2)

Full Marks 20

1. Answer any two questions of the following: 2x2= 4

a) Write down the applications of xanthan.

b) What are the advantages and disadvantages of CSTR?

c) What is KLa?

d) From where insulin is secreted in human body? What is somatostatin? 1+1

2. Answer any two questions of the following: 2x4= 8

a) *Bacillus cereus* divides in every 30 minutes. If you inoculate a culture with exactly 100 bacterial cells, then after 10 hours, how many bacteria will you get from the culture? Calculate the final

(3)

substrate concentration if initial substrate is 10 g/l of glucose and $Y_{xs}=0.55 \text{ kg kg}^{-1}$ 2+2

b) Write down the influencing physico-chemical factors for citric acid production. 4

c) What is bioprocess engineering? State the advantages of chemostat. 1+3

d) What are the advantages of fed batch over batch fermentation? 4

3. Answer any one question of the following: 1x8=8

a) Derive time of CSTR mass substrate balance. 8

b) What is the chemical name of Ajinomoto? Name the organism used for its industrial production. Write down the separation and purification techniques of Ajinomoto. What is the basic difference in grapes selection between wine and champagne product? What is the role of remueurs in champagne making? Production? (1+1+2+2+2)