

M.Sc. 4th Semester Examination, 2024

MICROBIOLOGY

PAPER – MCB-402.1 & 402.2

Full Marks : 50

Time : 2 hours

Answer all questions

The figures in the right hand margin indicate marks

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

PAPER – MCB-402.1

(Natural Therapeutics)

[Marks : 20]

GROUP – A

Answer any two questions : 2 × 2

1. Characterize antibiotics and antimicrobial compounds.
2. Distinguish between Nutraceuticals and Pharmaceuticals.
3. What are the advantages of peptide antibiotics ?
4. Describe the mechanism of action of anti-fungal antibiotics.

GROUP-B

Answer any **two** questions : 4 × 2

5. Why mushrooms are considered as nutraceuticals rich food ingredient ?
6. Define synbiotics. Describe the uses of a biological iron chelating agent. 1 + 3

7. State the advantage and disadvantage of *E. coli* as expression system for therapeutic proteins.
8. Distinguish between pharmacokinetics and pharmacodynamics.

GROUP—C

Answer any **one** question : 8 × 1

9. Name two non-lactic acid probiotic micro-organism. Describe the ideal characteristics of a probiotic organism. 2 + 6
10. Define MIC and MCB. Schematically describe the production and extraction of penicillin. 2 + 6

PAPER – MCB-402.2

(Advanced Products and Biosafety Norms)

[Marks : 20]

GROUP – A

Answer any **two** questions : 2×2

11. Define quality and quality cost. 2

12. What is meant by laboratory precision ? 2

13. Define nanomaterials and classify them on the basis of their dimension. 1 + 1

14. What is 'Kubo gap' ? How does it vary with the size (i.e. bulk of nano) of material ? 1 + 1

GROUP-B

Answer any **two** questions : 4×2

15. Discuss briefly the patterns of antibiotic resistance. 4
16. How does 5Q network helpful in a pharmaceutical industry for proper execution of PDCA cycle ? 4
17. Describe the method of synthesis of silver nanoparticles using plant extract. 4
18. What do you mean by microbial biosensor ? Differentiate between GMP and GLP. 2 + 2

GROUP-C

Answer any **one** question : 8×1

19. A pharmaceutical company produces control sample for glucose (true value is 120 mg/dl). The quality control checking involves 10 consecutive days of testing by a laboratory with following results (mg/dl): 122, 125, 127, 118, 120, 121, 129, 110, 115, 120. Calculate CV and interpret your result and plot a Levey jennning chart using mm graph paper. 5 + 3
20. Describe one microbial method of synthesis of gold nanoparticles. State its advantages and disadvantages. 4 + 4

[Internal Assessment – 10 Marks]
