

2023

M.Sc.

4th Semester Examination

MICROBIOLOGY

PAPER : MCB-402.1 & 402.2

(Advanced Microbiology)

Full Marks : 40

Time : 2 hours

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.

Answer from **both** the Sections.

SECTION—I

UNIT-402.1 (NATURAL THERAPEUTICS)

Answer from **all** the Groups as directed.

GROUP—A

Answer **any two** questions from the following :

2×2=4

1. Distinguish between primary and secondary metabolites. 2

(2)

2. What do you mean by auxotrophic and prototrophic microorganisms? 2
3. Why are mushrooms considered as highly nutritious and healthy food ingredient? 2
4. Mention the therapeutic applications of dextrans. 2

GROUP—B

Answer *any two* questions from the following :

4×2=8

5. Define probiotic and postbiotic. State the health beneficial role of probiotics. 2-2=4
6. Classify antibiotics on the basis of spectrum of activity with examples. 4
7. State the target of vancomycin and penicillin on inhibition of cell wall synthesis. Mention the fermentation conditions of production of oxy- and chlorotetracycline. 2-2=4
8. Describe the common mechanisms of antibiotic resistance. 4

GROUP—C

Answer *any one* question from the following : 8×1=8

9. Site three therapeutic enzymes with their mode of action. Write a brief note on antifungal antibiotics. 3+5=8
10. Define pharmacokinetics, pharmacodynamics and therapeutic index. How does half-life of a drug influence the drug concentration in plasma? 4½+3½=8

(3)
SECTION—II

**UNIT 402.2 (ADVANCED BIOPRODUCTS AND
NORMS)**

Answer from **all** the Groups as directed.

GROUP--A

Answer *any two* questions from the following:

2×2=4

11. What is quantum dot? 2
12. What is Patent Law Treaty? 2
13. What is DNA nanotechnology? 2
14. Why are nanoparticles used for antimicrobial activity? 2

GROUP--B

Answer *any two* questions from the following :

4×2=8

15. Write a note on quality control in medicine industry. 4
16. Differentiate between 2+2=4
- (i) Copyright and Patent
- (ii) Liposome and Dendrimer

17. What is nanotoxicology? Write a note on biological toxicity of nanomaterial. 4
18. Discuss the clinical use of nanoparticles in the field of cancer. 4

GROUP—C

Answer *any one* question from the following :

8×1=8

19. What is biosensor? Describe the characteristics of biosensor. Mention two applications of biosensor. 2+4+2=8
20. Briefly describe the application of nanotechnology in agriculture. 8

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