2022

1st Semester Examination

MICROBIOLOGY

Paper : MCB 104

(Microbial Physiology & Metabolism)

Full Marks : 40 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

MCB 104.1

(Microbial Physiology)

Answer any ***two*** questions of the following : 2×2=4

1. What is continuous culture?
2. State the mode of action of UV-ray as microbial growth control agent.
3. Mention the role of FtsZ protein in bacterial cell division.
4. What will be your method of choice to sterilize a media which has a heat sensitive component and why?

Answer any ***two*** questions of the following : 4×2=8

5. 'Mac-Conkey media is both selective and differential in nature' explain. How do you cultivate anaerobic bacteria in laboratory? 2+2

P.T.O.

6. What is generation time of bacteria? A bacterial population is increased from 10^3 cells to 10^9 cells in a culture media in 10 hrs. Determine the generation time of the bacteria. 1+3

7. Explain the strategies adopted by bacteria for osmoregulation.

8. What is pure culture? How it can be achieved from a cultured plate having different bacterial colony? 1+3

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

9. Explain the two-component system of bacteria with suitable diagram. State the mode of action of moist heat sterilization. What is HEPA filter? 4+2+2

10. Write short note on (any *two*) : 4+4

(a) Quorum sensing in Gram negative bacteria.

(b) Methods of measurement of microbial growth.

(c) Phenol co-efficient and its significance.

MCB 104.2

(Microbial Metabolism)

Answer any ***two*** questions of the following : 2×2=4

11. Define photoautotroph. Give one example.

12. What is Pasteur Effect?

13. What are the allosteric modulator of Phosphofructo kinase-1?

14. Differentiate between alpha-amylase and beta-amylase.

Answer any ***two*** questions of the following : 4×2=8

15. 'TCA cycle is amphibolic in nature' — explain. What are anaplerotic reactions? 3+1

16. Explain substrate level phosphorylation and oxidative phosphorylation with example.

17. Explain how nitrogenase complex reduced atmospheric nitrogen into ammonia.

18. State the significance of pentose phosphate pathway. '6-phosphogluconate is a common metabolic intermediate in glycolytic pathways' — Explain. 2+2

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

19. How ammonia is assimilated into physiological system? What are the precursors of purine biosynthesis? What are the different catabolic fates of pyruvates? 4+2+2

20. Write short note on (any *two*) : 4+4

(a) PHB and its synthesis.

(b) Metabolic importane of acetyl co-A.

(c) Fatty acid synthase complex.
