2019

Part – II

MICROBIOLOGY

(Honours)

Paper – IV

(New Syllabus)

Full Marks – 90

Time : 4 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 any **two** questions, taking at least ***one*** from each subgroup. 15×2=30

Sub-Group – A(a)

1. a) Write down characteristic features of adaptive immunity.
   b) What is opsonization?
   c) What should be the criteria to establish a substance as immunogen?
   d) Distinguish between primary and secondary antibody responses.
   e) Write a note on antibody class switching. 3+1+3+4+4

P.T.O.

2. a) Differentiate between exotoxin and endotoxin.
   b) Write down the structure of human immuno-deficiency virus. Mention the genes and their functions present in HIV.
   c) Briefly write the life cycle of HIV.

3+(3+4)+5

Sub-Group – A(b)

3. a) How do the bacteria acquire resistance power against drugs?
   b) Write down the mode of action of tetracycline, penicillin, cycloheximide and zidovudine.
   c) Write a short note on dermatophytes.

3+8+4

4. a) How do the cytotoxic T lymphocytes kill the target cell?
   b) Write short note on Type I hypersensitivity.
   c) Distinguish between attenuated and inactivated vaccine.
   d) Describe the role of TH cell in B-cell acivation.

4+5+2+4

Group – B

Answer any **five** questions, taking at least **two** from each sub-group : 8×5=40

Sub-Group – B(a)

5. a) Define batch, submerged and solid state fermentation.

b) Write down the steps of sauerkraut fermentation. 3+5

6. a) Define probiotic and give example of a probiotic bacteria and yeast.

b) What should be the criteria of a bacterium to become a probiotic. 3+5

7. a) Draw and describe a fermenter.

b) Write a note on down stream processing. 5+3

8. Briefly explain the intrinsic and extrinsic factors for microbial growth in food material. 4+4

Sub-Group – B(b)

9. What is canning? Name two bacteria responsible for canned food spoilage. How do the canned food get spoiled? (2+2)+4

10. a) What is bacteriocin? Write down the mode of action of bacteriocin.

b) What is food perservative? What are the ideal characteristics of preservative? (2+2)+(1+3)

11. Write short notes on IgM and IgA. 4+4

12. a) Describe the factors affecting antigen and antibody reaction.

b) Distinguish between Class I and Class II MHC. 4+4

Group – C

Answer any **five** questions, taking at least **two** from each sub-group : 4×5=20

Group – C(a)

13. How the exogenous antigen process? 4

14. Write down the role of lactic acid bacteria in dairy fermentation. 4

15. Give a brief description of mycotoxins. 4

16. Explain clonal selection theory of B cells leading to antibody synthesis. 4

Group – C(b)

17. Define hapten and adjuvant. Give example. 2+2

18. Why milk is considered as a perishable food. Give justification behind it. 4

19. Write down the principles of high pressure technology employed for food preservation. 4

20. Describe different methods of enzyme immobilization. 4