

U.G. 1st Semester Examination - 2021**MICROBIOLOGY****[HONOURS]****Course Code : MB-H-CC-L-01****(Basic Microbiology and Culture Techniques)**

Full Marks : 40

Time : $2\frac{1}{2}$ 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.*1. Answer any **five** of the following: $2 \times 5 = 10$

- i) What is a synchronous culture?
- ii) Differentiate defined and complex media.
- iii) Write the principle of streaking.
- iv) Write the different methods of determination of total count of microorganisms in a culture.
- v) Write the principle of flagella staining.
- vi) All antibiotics are antimicrobial but all antimicrobials are not antibiotic. Explain.
- vii) How heat labile soluble molecules are sterilized?
- viii) What do you mean by spontaneous generation?

2. Answer any **two** of the following: $5 \times 2 = 10$

- i) How you will sterilize packaged food? Write different chemical methods of sterilization.
 $2+3$
- ii) What is the difference between pasteurization and autoclaving? What is phosphatase test?
 $4+1$
- iii) Write the contributions of Robert Koch and Edward Jenner in the field of microbiology.
 $2\frac{1}{2}+2\frac{1}{2}$

- iv) What is antibiosis? How will you evaluate that a microorganism secretes an antimicrobial while growing in liquid medium?
 $2+3$

3. Answer any **two** of the following: $10 \times 2 = 20$

- i) According to modern theory of origin of life write briefly about the condition of primitive earth atmosphere. What is Oparin's hypothesis? What is a protobiont? Write points in favour of the hypothesis that RNA came before DNA.
 $3+2+2+3$
- ii) What is exponential phase of growth? How does it differ from lag phase in terms growth rate? What is the importance of lag phase?

What do you mean by specific growth rate of a bacterium? Write the purpose of making dilution series while counting the CFU. Write any one method of preservation of microbial culture.

2+1+1+2+2+2

iii) Write short notes: $2\frac{1}{2} \times 4$

- a) Mordant
- b) Chemolithoautotrophs
- c) Differential staining
- d) Diauxic growth

iv) Briefly discuss the different physical factors that influence growth of bacteria in batch culture? What is a chemostat? Distinguish between batch culture and fed-batch culture. What is growth rate constant?

4+2+2+2
