

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIRST SEMESTER EXAMINATION, MARCH 2021

FIRST YEAR [BATCH 2020-23]

MICROBIOLOGY (GENERAL)

Date : 30/03/2021

Time : 11.00 am – 1.00 pm

Paper : I

Full Marks : 50

1. Answer **any ten** from the following questions: [10×1]

- What is Mordant?
- Name the primary stain and counter stain used for Gram staining.
- Write two applications of fluorescence microscopy.
- What is magnification?
- Name one Gram positive rod shaped bacterium.
- Name one cell organelle found in both eukaryotic and prokaryotic cell.
- Name one bacterium having outer membrane.
- Name one endospore-forming bacterium.
- Who is considered as the Father of modern Microbiology?
- What is the full form of ICN?
- Who proposed five kingdom classification?
- Who is father of modern antisepsis?
- What is enrichment media? Give example.
- How does the term growth as used in microbiology differ from the same term as applied to higher plants and animals?
- What are autotrophs and heterotrophs?

Answer **any four** questions from question nos. 2 to 9: [4×10]

- Picric acid is a dye but Benzene is not---explain.
 - Write down the principle of flagella staining.
 - Give example of one acid fast and one non acid fast bacteria.
 - Write down the differences between simple staining and differential staining. [3+2+2+3]
- What is chromatic aberration? How can it be resolved?
 - How does resolution depend on the wavelength of light, refractive index and numerical aperture?
 - What is the function of a condenser in a microscope?
 - Write down the differences between SEM and TEM. [3+3+2+2]
- How does cross-linking in peptidoglycan occur? What is teichoic acid made up of? Write down its function. [4+3+3]

5. How do fimbriae act as virulence factor? What is basal body of flagella made up of? Why is sex pili named so? [4+3+3]
6. a) What were the demerits of Five kingdom classification system?
b) What is T_m ?
c) How does nucleic acid hybridization process help to identify any bacterial strain?
d) What is metagenomics? [2.5+1.5+4+2]
7. a) Write down the contribution of Edward Jenner in the field of Microbiology.
b) Why does 16sS rRNA is useful for identification of bacteria?
c) Write down the common characteristic features of Archaeobacteria. [4+2+4]
8. a) Draw a typical bacterial growth curve and label the various phases. Discuss those factors which determine the beginning and end of each phase. [2+4]
b) Classify bacteria on the basis of their temperature requirements. Explain with proper example. [4]
9. a) Write a short note on selective media and differential media.
b) Compare the advantages and disadvantages of pour plate method and spread plate method for the isolation of microorganisms in pure culture. [(2+2)+(3+3)]

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