

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIRST SEMESTER EXAMINATION, MARCH 2022

FIRST YEAR [BATCH 2021-24]

MICROBIOLOGY (GENERAL)

PAPER : I

Date : 12/03/2022

Time : 11 am – 1 pm

Full Marks : 50

1. Answer **any five** questions of the following: [5×10]
 - a) Write down the contribution of Edward Jenner in the field of Microbiology.
 - b) Explain Koch's postulates.
 - c) Who discovers Penicillin?
 - d) Who was the founder of chemotherapy?
 - e) What are IMViC test? (4+3+1+1+1)
2.
 - a) Write the major differences between Archaeobacterial cell membrane structure and Eubacterial cell membrane structure.
 - b) What do you mean by morphological diversity among prokaryotes? Give examples.
 - c) Write down the principle of Indole test. Why this test is important in bacteriology? [3+2+(3+2)]
3.
 - a) Why are bacteria stained for microscopic observation?
 - b) What are acidic dye and basic dye? Give examples.
 - c) Write down the function of iodine solution in Gram staining technique?
 - d) What is mycolic acid? What is its role in acid fast staining?
 - e) Name the primary stain and counter stain used in staining bacterial endospore? Why heat is required to stain the endospore? [2+2+2+2+(1+1)]
4.
 - a) What do you mean by resolving power of a microscope
 - b) What are the differences between phase contrast microscopy and bright field microscopy?
 - c) What is chromatic aberration?
 - d) Why two filters are used in fluorescence microscope?
 - e) Define numerical aperture of a microscope. (2+2+2+2+2)
5.
 - a) Would you expect generation time to be a constant characteristic of a bacterial species? Explain.
 - b) Draw a typical bacterial growth curve and label the various phases. Discuss those factors which determine the beginning and end of each phase.
 - c) What is enrichment media? Give example. [2+(2+4)+2]

6.
 - 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)]
7.
 - a) What are the different types of membrane proteins in bacteria? How do they differ?
 - b) How do gram positive bacteria differ from gram negative ones? [(2+3)+5]
8.
 - a) Write down the differences between fimbriae and pili.
 - b) How do fimbriae confer virulence to bacteria?
 - c) What is gas vesicle in bacteria? Discuss about its shell. [3+3+(2+2)]
9.
 - a) Write a short note on teichoic acid of bacteria
 - b) Write short notes on mechanism of Gram staining
 - c) What are 'lithotrophs' and 'organotrophs'? (5+3+2)
10.
 - a) Differentiate between light microscope and electron microscope.
 - b) Indicate the various toxic derivatives of oxygen and explain how aerobic organisms might protect themselves against these derivatives.
 - c) What were the demerits of Five kingdom classification?
 - d) What are eukaryotic microorganisms?
 - e) What are chemolithotrophs? (2+3+3+1+1)

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