

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

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

SECOND YEAR [BATCH 2020-23]

MICROBIOLOGY (GENERAL)

PAPER : III

Date : 09/03/2022

Time : 11 am – 1 pm

Full Marks : 50

Answer **any five** questions of the following:

[5×10]

1.
  - a) Write down the contribution of Edward Jenner in the field of Microbiology.
  - b) Why 16sS rRNA is useful for identification of bacteria?
  - c) Write down the common characteristics features of Archaeobacteria. (4+2+4)
2.
  - a) Explain Koch's postulates.
  - b) What were the contributions of Louis Pasteur in Microbiology?
  - c) Write down the principle of indole test. (4+3+3)
3.
  - a) Schematically describe the procedure of Gram staining. Who discovered it?
  - b) Differentiate between simple staining and differential staining.
  - c) What is Mordant? Give an example.
  - d) Name one flagella stain. [(4+1)+2+(1+1)+1]
4.
  - a) State the relation between wavelength of light and resolution of a microscope.
  - b) What is numerical aperture?
  - c) What is chromatic aberration? How it can be corrected?
  - d) What are flurochromes? [3+2+(2+1)+2]
5.
  - a) How can synchronous growth of a bacterial culture be obtained? In what way could a synchronously growing culture be useful for the electron microscopist who is trying to determine the cytological changes associated with bacterial growth?
  - b) What are 'photolithoautotrophs' and 'photoorganoheterotrophs'? Explain with example.
  - c) "Oxygen is both beneficial and toxic for the living organisms." Explain. [(2+2)+3+(1.5+1.5)]
6.
  - a) Classify bacteria on the basis of their oxygen requirements. Explain with proper example.
  - b) Define natural and synthetic media. Explain with example.
  - c) Would you expect generation time to be a constant characteristic of a bacterial species? Explain. [4+(1.5+1.5)+3]
7.
  - a) Cite examples of different types of coccus bacteria? How do they form?
  - b) How do gram positive bacteria differ from gram negative ones? [(2+3)+5]

8. a) Write down the differences between slime layer and capsule.  
b) How does capsule confer virulence to bacteria?  
c) What do you mean by 'inclusion body' of bacteria? Discuss about any one of them. [3+3+(2+2)]
9. a) Write a short note on outer membrane of bacteria.  
b) Write short notes on : Acid fast staining (5+5)
10. a) In the lag phase of growth the number of bacteria remains constant. Does this mean the cells are dormant and inert? Explain.  
b) Define enrichment media. Give example.  
c) What are seroverters?  
d) Who is father of modern antisepsis?  
e) What are lithotrophs?  
f) Who proposed three kingdom classifications?  
g) What type of lipids is present in Archaeobacterial cell membrane? (3+2+1+1+1+1+1)

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