

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIRST SEMESTER EXAMINATION, DECEMBER 2019

FIRST YEAR [BATCH 2019-22]

MICROBIOLOGY (Honours)

Paper : II [CC 2]

Date : 13/12/2019

Time : 11 am – 1pm

Full Marks : 50

1. Answer any ten questions of the following :

[10×2]

- What are hopanoids?
- What is periplasm?
- What do you mean by amphitrichous flagella?
- What do you mean by  $F^+$  cell?
- How might a selective media be used to isolate gram –ve bacteria like *E.coli*?
- What is fastidious bacteria? Give example.
- What do you mean by cardinal temperature?
- What are capnophiles?
- Mention the different types of bar diagram.
- What is a frequency polygon?
- Mention the relationship between mean, median and mode.
- What do mean by serial dilution? Give example.
- If a specimen is viewed using a 5X objective in a microscope with a 15X eye piece, how many times has the image been magnified?
- What is a phase object?
- What do you mean by teichoic acid?

Answer any three questions from question nos. 2 to 6 :

[3×10]

- "Oxygen is both beneficial and harmful for living organism" Explain. [4]
  - Briefly discuss the adaptation mechanism of acidophiles. [3]
  - Mention some biotechnological application of compounds obtained from halophiles. [3]
- Why do you think dehydration of the protoplast is an important factor in the ability of endospores to resist environmental stress? [3]
  - How the effectiveness of any antimicrobial agent varies with (i) population composition and (ii) concentration of the antimicrobial agent? [2+2]
  - What is viable but non culturable bacteria? Give example. [2+1]
- Compute mean, median, mode, S.D. and coefficient of variance from the following data. [2×5]

Class interval	51-55	56-60	61-65	66-70	71-75	76-80
Frequency	7	15	30	25	14	9

5. a) What is the function of small acid-soluble spore protein (SASP) in a bacterial endospore? [2]  
b) What would be the effect of sodium-dodecyl sulphate (SDS) on cell membrane? [3]  
c) Peptidoglycan is a complex polymer – Explain. [3]  
d) What is the basic difference between protoplast and sphaeroplast? [2]
6. a) Write down the principle of a phase contrast microscope. [4]  
b) What do you mean by lyophilisation? [3]  
c) What do you mean by membrane filter sterilization? [3]

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