

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 [HONOURS]

Date : 26/03/2021

Time : 11.00 am – 1.00 pm

Paper : II [CC 2]

Full Marks : 50

Group - A

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

[5×2]

1. a) What do you mean by Discontinuous Streaking? Why is it used?
b) What are Capnophiles?
c) How does cross-linking in peptidoglycan occur?
d) What is basal body of flagella made up of?
e) Define 'natural and synthetic media'. Explain with example.
f) Would you expect generation time to be a constant characteristic of a bacterial species? Explain.
g) What is resolving power? How does it differ from magnification?
h) What is numerical aperture? How is it related to resolving power?

Group - B

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

[4×10]

2. a) What do you mean by Lyophilisation?
b) Why is shaking done in culturing microbes?
c) Why is flaming done before culturing?
d) What is a Gas pack? [2+2+2+4]
3. a) In the lag phase of growth the number of bacteria remains constant. Does this mean the cells are dormant and inert? Explain.
b) Indicate the various toxic derivatives of oxygen and explain how aerobic organisms might protect themselves against these derivatives.
c) The mechanism of antimicrobial action caused by desiccation is similar to that caused by plasmolysis. Explain why?
d) Briefly discuss the mode of action and practical application of ethylene oxide for the destruction of microorganisms. [2+3+2+(2+1)]
4. a) How does sporulation in bacteria occur?
b) What is spore cortex made up of?
c) Why is sex pili named so? [5+3+2]
5. a) Calculate the mean and standard deviation from the following data:

Class interval	9-11	12-14	15-17	18-19
Frequency	0	8	8	4

- b) What is quartile deviation?
- c) What is pictogram?

[6+2+2]

6. a) Calculate correlation coefficient from the following data:

X	5	9	13	17	21
Y	12	20	25	33	35

- b) Calculate two regression equation from the following data:

X	1	2	3	4	5
Y	2	3	5	6	4

[4+6]

7. a) What do you mean by parfocal microscope? What is working distance?
 b) Why should over-heatfixing is avoidable during bacterial smear preparation?
 c) Why does Mycobacterium tuberculosis consider as acid-fast bacteria?
 d) What is mordant? State its function during staining.
 e) State the purpose of using oil-immersion in higher magnification lens?
 f) Acidic stains function well in acidic environment and basic stains works well in alkaline environment. – Justify the statement. [2+2+1+1+2+2]

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