

# 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 (HONOURS)

PAPER : I [CC1]

Date : 08/03/2022

Time : 11 am – 1 pm

Full Marks : 50

Answer **all** the following questions:

[10×1]

1. a) Write two similarities between bacteria and fungi.
- b) Decaying plant body never produce offensive odour. --- Why?
- c) “Contagium vivum fluidum”- Write it’s english meaning.
- d) Name one epiphytic alga.
- e) Name one chlorophyll containing bacterium.
- f) Name one phycobilin containing bacterium.
- g) What is glycan part of peptidoglycan made up of?
- h) Name two algal storage foods.
- i) What do you mean by taxonomical hierarchy?
- j) What are morphovars?

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

[4×10]

2. a) Name the steps described in molecular Koch's postulates to establish the relationship between a pathogen and it's host causing a disease.
- b) Write the differences between the Zygomycota and Oomycota.
- c) Do you find any relationship between the major cell wall component of green plants, fungi and bacteria?
- d) How does a dikaryotic hypha arise from a monokaryotic hypha in Basidiomycota? (3+2+2+3)
3. a) Briefly mention the steps followed during the development of asci within an ascocarp.
- b) Name the stages in the life cycle of *Puccinia graminis* var *tritici* and mention two important features for each step.
- c) Write down the importance of variolation in the context of medical microbiology.
- d) Differentiate between sterilization and Pasteurization? (3+3+2+2)
4. a) What is mixed symmetry of a virus?
- b) Why did Ivanovsky filter the crude extract of the diseased tobacco plant?
- c) Why are viruses non-living outside a host cell?
- d) Write two beneficial roles of viruses.
- e) What may happen if viral spike protein is altered? (2+2+2+2+2)
5. a) What is the core of virus made up of?
- b) What do you mean by are non-coding RNAs-explain.
- c) Justify that viroid is a ribozyme?
- d) What are prions?
- e) What do you mean by thallus? (2+2+2+2+2)

6.
  - a) What is the uniqueness in algal reproductive structure?
  - b) What do you mean by coenobium?
  - c) Why are blue green algae also called cyanobacteria?
  - d) What is stigma?
  - e) What is photosystem? (2+2+2+2+2)
7.
  - a) Explain the principle of catalase test.
  - b) What is  $C_{0t}$  value?
  - c) What are ‘‘type strain’’? Give example.
  - d) Explain the criteria for the classification of bacteria.
  - e) Give the definition of ‘‘species’’ in microbiology. (2+2+2+2+2)
8.
  - a) ‘‘Among various probable contender macromolecules, that can help in determining the relationship amongst entire living world, rRNA is the predominant one’’ - explain this.
  - b) How does hybridization technique help to determine closely related organism?
  - c) What are intergenic sequences? Give example. (4+4+2)
9.
  - a) Briefly explain the schematic procedure for metagenomics analysis.
  - b) Mention the general steps in studying molecular phylogeny.
  - c) Write down the principle of numerical taxonomy. (4+3+3)
10.
  - a) How does Archaeobacterial cell wall and cell membrane differ from Eubacteria?
  - b) Write down the general characteristic features of Alphaproteobacteria.
  - c) Mention few important features of Green Phototrophic Bacteria. (4+3+3)

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