

SHREE SHIVAJI MARATHA SOCIETY'S
S. B. B. Alias AppasahebJedheArts, Commerce and Science College,
Shukrawar Peth, Pune
Subject: MB 501 (2016-2017)

Total marks: 50

Class: M.Sc. I

Answer the following

1. Explain the concept of evolutionary r & k selection.
2. Write short note on 5 kingdom classification of bacteria
3. What is molecular clock? Enlist various molecules used as molecular clocks in bacterial taxonomy.
4. Describe in brief the various approaches to access the total number of bacterial species.
5. Write a note on evolution of species.
6. What is phylogenetic tree? Construct phylogenetic tree considering a suitable example.
7. Discuss in brief 3 domain classification system.
8. Describe TGGE.
9. From the given data find Simpson's index.

Sr.	Type	Number.
1	Pale, pinpointed	73
2	Pigmented , 1mm	50
3	White, less than 1mm	61

10. Justify giving example why Shannon's index is better than the Simpson's index for expression bacterial diversity is an ecological sample.

SHREE SHIVAJI MARATHA SOCIETY'S
S. B. B. Alias AppasahebJedheArts, Commerce and Science College,
Shukrawar Peth, Pune
Third semester OCTOBER 2015-2016

Subject: MB503 Cell Organization and Biochemistry
50
Class: M.Sc. I

Total marks:

Date: 15-10-2015

Answer any 10 of the following.

- 1) Give quorum sensing in Gram positive and Gram negative bacteria.
 - 2) Explain formation of biofilm.
 - 3) Give any 5 applications of biofilm.
 - 4) Explain the mechanism of social cooperation in *Dictyostellium discoideum*.
 - 5) Give comparative account of Actin filaments, Intermediate filaments and tubules.
 - 6) Define the following terms.
 - a. Isometric growth
 - b. Allometric growth
 - c. Homologous structure
 - d. Gastrulation
 - e. Gametogenesis
 - 7) Explain Morphogen gradient in details.
 - 8) Explain Determination and Differentiation.
 - 9) Differentiate between 'A' and 'B' form of DNA.
 - 10) Write a note on Watson and Crick model of DNA double helix.
 - 11) Explain types of RNAs with the help of suitable diagram.
 - 12) Draw the structures of all Purines and Pyrimidines
-

Shri Shivaji Maratha Society's
S.B.B Alias Appasaheb Jedhe College of Arts, Commerce and Science
Shukrawar Peth Pune- 02
M.Sc. Part I - Internal examination April -2017
MB: 602 Virology

Time: 2.30 hrs

Max. Marks – 50

Q. Attempt any 10 of the following questions

1. Write a note on Bacteriophage therapy for controlling bacterial poultry diseases.
2. Comment on: Western blotting as a diagnostic technique for detection of viruses.
3. Explain Baltimore classification system for viruses.
4. Explain the use of primary and secondary cell lines in the cultivation of viruses.
5. Justify: Specific sites are used to cultivate viruses in embryonated chicken egg.
6. How does Bacteriophage λ shifts from lysogenic to lytic phase?
7. Describe morphology and genome organization of phage M13 OR explain life cycle of Bacteriophage T4 with suitable diagram.
8. State ICTV rules for naming viruses and their groups.
9. Enlist general criteria used for viral classification and explain any 2 in detail.
10. Comment on: Types of viral genomes.
11. Comment on: Hemagglutination test as a tool in detection of viruses.
12. Elaborate on structural components of a virus.
13. Give detail accounts of Viroids and prions.

Shri Shivaji Maratha Society's
S.B.B Alias Appasaheb Jedhe College of Arts, Commerce and Science
Shukrawar Peth Pune- 02
M.Sc. Part I - Internal examination April -2016
MB: 603 Microbial Metabolism

Time: 2.30 hrs

Max. Marks - 50

Q. Attempt any 10 out of the following

1. Diagrammatically represent Oxidative Phosphorylation.
2. Explain the principle of salt precipitation giving example.
3. Explain MWC model
4. Diagrammatically explain Lineweaver Burk plots showing effect of uncompetitive inhibition and comment on it.
5. Explain Random and compulsory order mechanism for kinetics of two substrate enzyme catalyzed reaction.
6. Explain King and Altman procedure for two substrate enzyme catalyzed reaction.
7. Derive equation for Hill plot and state its significance in relation to allosteric enzymes
8. Define - a. First law of Thermodynamics b. Second law of Thermodynamics
 c. Enthalpy d. Gibb's free energy e. Entropy
9. Explain Fluid Mosaic Model of plasma membrane
10. Explain mechanism of glucose transporter with the help of suitable diagram.
11. Write a note on Na^+/K^+ ATPase pump.
12. Write a note on High energy compounds.

SHREE SHIVAJI MARATHA SOCIETY'S
S. B. B. Alias AppasahebJedheArts, Commerce and Science College,
Shukrawar Peth, Pune
Subject: MB 702 Molecular Biology (2016-2017)

Total marks: 50

Q.1 Write down answers of any 10 questions. Each question carries 5 mks.

- 1.Explain phage display system.
- 2.What makes the *lac* operon turn on?
- 3.Explain control of Trp operon by attenuation.
- 4.Explain Expressed sequence tags with example.
- 5.Explain with suitable example the significance of non coding RNA.
- 6.Justify "Insertion sequences is an integral part of Tn
- 7.Explain Hot start PCR different from normal PCR.
- 8.Explain Ty elements in yeast
- 9.Explain the principle of DNA microarray.
- 10.Explain with examples molecular diagnostic tools used in detection of cancer
- 11.Explain activity gel assay with example.
- 12.Explain the role of cAMP and CAP in regulation of lac operon.

Shri Shivaji Maratha Society's
S.B.B Alias Appasaheb Jedhe College of Arts, Commerce and Science
Shukrawar Peth Pune- 02
M.Sc. Part II - Internal examination
MB: 703 Industrial Wastewater Treatment

Time: 2.30 hrs

Max. Marks - 50

Q. Attempt any 10 out of the following.

1. Schematically represent Layout of typical wastewater treatment plant.
2. Describe the components of wastewater.
3. Describe various flotation techniques with the help of suitable diagram.
4. What are screens? Describe different screening devices used for screening.
5. What is disinfection? Comment on use of chlorine and UV in disinfection.
6. What is flocculation? Enlist the various chemical agents used in flocculation and explain how these chemicals manifest floccules formation.
7. Explain in-line and off-line flow equalization with suitable diagram. Add a note on its advantages.
8. Define **BOD**. Give a flow chart of BOD estimation **OR** Define **COD**. Give a flow chart of COD estimation
9. What is sedimentation? Describe various types of settling phenomenon involved in wastewater treatment.
10. Write a note on Adsorption in wastewater treatment. Define Adsorbate and Adsorbent
11. Explain the methods for estimating parameters used for determining wastewater treatment Efficacy.
12. Enlist major disinfectants used in wastewater treatment. Write a note on "Breakpoint-chlorination"

SHREE SHIVAJI MARATHA SOCIETY'S
S. B. B. Alias AppasahebJedheArts, Commerce and Science College,
Shukrawar Peth, Pune
Subject: MB 802 Molecular Biology-II (2016-2017)

Total marks: 50

Q.1 Write down answers of any 10 questions. Each question carries 5 mks.

1. Comment on 'Site directed mutagenesis for protein engineering'.
2. Write a short note on Conserved genes.
3. Explain with example many proteins from one gene.
4. What is SNP? Explain SNPs and diseases.
5. Explain role of different enzymes used in recombinant DNA technology.
6. Human Genome project and its applications.
7. Explain in brief YAC and HAC.
8. Explain the applications of transgenic plants and animals.
9. What is imprinting of genes? How does imprinting occur?
10. Discuss the role of expression vectors in gene technology?
11. Write 2 methods in detail used for gene sequencing.
12. Explain selection and screening of recombinants with example.

Shri Shivaji Maratha Society's
S.B.B Alias Appasaheb Jedhe College of Arts, Commerce and Science
Shukrawar Peth Pune- 02
Pune- 02
M.Sc. Part I - Internal examination
MB: 803 Microbial Technology

Time: 2.30 hrs

Max. Marks - 50

Q. Attempt any 10 out of the following

1. What is the cardinal rule for design of a fermentor? State the dimension ratio
2. Write a note on Airlift reactor
3. What are the applications, advantages and limitations of Fed Batch mode of operation?
4. What are the different types of impeller? Explain each with examples.
5. What are the different types of metabolites produced by an organism? Explain each with examples.
6. Comment on Industrial use of Fungi.
7. Write a note on Fungi as a Biofertilizers.
8. What are Biocontrol agents? Explain use of fungi as Biocontrol agent.
9. Write a note on Bioremediation by Fungi.
10. What are MFC? Comment on use of fungi as MFC.
11. Explain architecture of Fungal cell.