

9. General Microbiology (MB. 311), 2066

Time : 3 hour

Full Marks : 100

Group "A"

Long answer questions:

5×10=50

Attempt ALL the questions.

1. Distinguish between classification and nomenclature. Classify bacteria based on temperature requirement for growth. [2+8]
2. Define sterilization . Explain the procedure of moist heat sterilization in bacteriology laboratory. [2+8]
3. Explain the steps of TCA cycle with diagram showing ATP generation. [10]
4. Distinguish between DNA, RNA , Plasmid, genome and genetic code. Explain conjugation process with diagram and example. [4+6]
5. Write down the scheme for classification of medically important viruses, with example for each group. [10]

Group "B"

Short answer questions:

7×5=35

Attempt ALL the questions.

6. Sketch the structure of Entamoeba histolytica.
7. Explain in brief the techniques of isolation and enumeration of Yeast and Mold.
8. Explain in brief the concept of host parasite relationship.
9. Describe Germ theory of disease in brief.
10. Explain the important roles of biomolecules in microorganisms.
11. Explain in brief the principle and procedure of MPN method.
12. Explain the steps of bacterial growth and factors affecting growth.

Group "C"

Very short answer questions:

5×3=15

13. Attempt any FIVE questions.
 - (a) Spontaneous Generation Theory
 - (b) Whittakar's Five Kingdom Concept
 - (c) Gram Staining
 - (d) Catabolism and anabolism
 - (e) Scope of Microbial Biotechnology
 - (f) Plasmodium Falciparum.

General Microbiology (MB. 311), 2067

Bachelor Level / Science & Tech / I Year

Full Marks, 100

Time: 3 hrs.

GROUP "A"

Long answer questions-

[5x 10=50]

Attempt ALL the questions.

1. Define microbiology. Discuss its scope and applications in modern science. [2+81]
2. Give two differential characteristics of Gram positive and Gram negative bacteria. Describe cell wall composition of Gram negative bacteria. [2+8]
3. Define bacterial growth. Describe bacterial growth curve. [2+8]
4. Define virology. Describe laboratory methods for cultivation and counting of viruses. [2+8]
5. Mention general characteristics of yeast and molds with suitable diagrams. [10]

GROUP "B"

Short answer questions:

[5x7=35]

Attempt any FIVE questions.

6. Describe bacterial transduction and its importance.
7. Describe procedures of any two types staining of bacteria.
8. Describe the procedure for enumeration of bacteria by spread plate technique.
9. Describe general characteristics and structure of any one helminthic parasite.
10. Describe lactic acid fermentation pathway.
11. Explain Louis Pasteur's experiment in support of biogenesis.

GROUP "C"

Very short answer questions:

[5x3=15]

12. Attempt any FIVE questions.
 - a. Mention principle of autoclaving.
 - b. Define genetic code.
 - c. Define resolving power of a microscope.
 - d. Define selective media with two examples.
 - e. Enlist three medically important protozoan parasites.
 - f. Define biomolecules.

OLD COURSE

Attempt ALL the questions. Comprehensive Questions

1. Define culture media. Describe different types of culture media used for cultivation and characterization of bacteria. [4+10]
2. Define genetic code. Describe recombination of gene in bacteria.
3. What do you mean by sterilization? Describe control of micro-organisms by chemical agents. [2+121]
4. Answer any FOUR questions [4x4=16]
 - a. Briefly describe the classification schemes of viruses.
 - b. Point out differences between Gram positive and Gram negative

bacteria.

- c. Give an account on nutritional types of bacteria.
 - d. Briefly describe the classification schemes of medically important fungi.
 - e. Define aseptic techniques and explain precautions to be taken in microbiology laboratory.
5. Justify the statement. [4x4=16]
- a. Seventy percent ethanol is more germicidal.
 - b. Spores of bacteria are resistant than vegetative cell.
 - c. Best growth of micro-organisms is achieved in optimum temperature.
 - d. Viruses are not cultured on synthetic media.
6. Answer any FOUR questions: [4x4=16]
- a. Briefly describe the structure of Giardia.
 - b. Give an account of cultivation technique of anaerobic bacteria.
 - c. Mention the contribution of Louis Pasteur.
 - d. Describe mutualism with suitable examples.
 - e. Briefly explain bacterial growth curve.
7. Answer any FIVE questions: [5x2=10]
- a. Define breed count method.
 - b. Enlist industrially important micro-organisms.
 - c. Enlist various fermentative pathways of bacteria.
 - d. Mention the applications of electron microscope.
 - e. Give two major characteristics of kingdom Monera.
 - f. Define silent mutation.

General Microbiology (MB. 311), 2068

Bachelor Level / Science & Tech / I Year

Full Marks: 100

Time: 3 hrs.

GROUP "A"

Long answer questions:

Attempt ALL the questions.

1. Define sterilization. Describe the mechanism of microbial control by temperature and radiation. [2+8]
2. Describe the structure and functions of Prokaryotic DNA. [10]
3. Describe the bacterial growth curve. Explain the affecting the microbial growth. [6+4]
4. Mention the basis of viral classification. Briefly classify viruses on the basis of genetic material with examples. [3+7]
5. Describe EMP pathway and its significance in bacteria. [8+2]

GROUP "B"

Short answer questions:

Attempt any FIVE questions.

6. Explain the conjugation process in bacteria.
7. Write in brief the methods of anaerobic culture of bacteria.

[5x7=35]

8. Explain the role of normal flora of human body.
9. Write in brief the germ theory of disease.
10. Describe structure of Giardia with labelled diagram.
11. Point out the differences between Gram positive and Gram negative bacteria.

GROUP "C"

Very short answer questions:

[5x3=15]

12. Attempt any FIVE questions.
 - a. Enlist microbial flora in non-polluted freshwater environment.
 - b. List three fungi with diseases caused by them.
 - c. Enlist important micro-organisms used in food industry.
 - d. Differentiate between bacterial spore and capsule.
 - e. Mention the properties of agar-agar used in bacteriological media.
 - f. Enlist five kingdoms proposed by Whittaker.

General Microbiology (MB. 311), 2069

Bachelor Level/Science & Tech./I Year
(For: Regular Examinee only)

Full Marks : 100

Time: 3 hrs.

GROUP 'A'

Long answer questions:

[5×10=50]

Attempt ALL the questions.

1. Outline the structure of tailed bacteriophage. Explain the lytic cycle of the phage. [2+8]
2. What is bacterial recombination? Explain the process of gene transfer in bacteria by conjugation. [2+8]
3. What is difference between disinfection and sterilization? Explain any two methods of sterilization. [4+6]
4. Give any two characteristics that differentiate prokaryotic and eukaryotic microorganisms. Describe the detail the cell wall structure of gram positive bacteria. [2+8]
5. Describe the TCA cycle. [10]

GROUP 'B'

Short answer questions:

[5×7=35]

Attempt any FIVE questions.

6. Classify carbohydrates and point out some of its important properties.
7. Explain active transport system in bacteria.
8. Give the general structure and characteristics of Giardia lamblia.
9. Describe with example different types of media used for culturing bacteria.
10. Describe the process of isolation of fungi in laboratory.
11. Describe the first line of non-specific defense mechanism exhibited by host against pathogens.

GROUP 'C'

Very short answer questions:

[5×3=15]

12. Attempt any FIVE questions.

- (a) Mention the Germ theory of disease.
- (b) Write the function of bacterial capsule.
- (c) Define chemolithotropic bacteria.
- (d) Draw a diagram of yeast.
- (e) Describe symbiosis.
- (f) Define plasmid.

General Microbiology (MB. 101), 2070 (New course)

Four Year Bachelor Level/Science & Tech./1 Year

Full Marks: 100

Time: 3 hrs.

GROUP "A"

Long Answer Questions

Attempt FOUR questions.

(4×10=40)

1. Define identification and nomenclature of bacteria and describe any two basis of classification of bacteria. [4+6]
2. What is bacterial recombination? Explain in detail the process of gene transfer in bacteria by transduction. [3+7]
3. What is glycolysis? Explain the EMP pathway. [2+8]
4. Define growth of bacteria. Describe the growth curve and the factors affecting bacterial growth. [2+6+2]
5. Explain general structure of HIV virus and mention its medical importance. [10]
6. Define sterilization. Describe any two physical methods of microbial control. [2+8]

GROUP "B"

Short Answer Questions

Attempt any Eight questions.

(8×5=40)

7. Explain the role of normal flora of human body.
8. Write in brief the method of enumeration of bacteria by spread plate technique.
9. Write down Koch's postulates.
10. Describe the structure of Giardia lamblia trophozoite with diagram.
11. Mention in brief on fungal culture.
12. Draw a well labelled diagram of microscopic structure of yeast and point out its properties.
13. Differentiate between antigen and antibody.
14. Write down the application of micro-organism in food microbiology.
15. Mention classification of protozoa.
16. Mention types of staining of bacteria.

GROUP "C"

Attempt any Eight questions.

(8×2.5=20)

17. Very short answers questions:
 - (a) Use of light microscope.
 - (b) Explain specific immunity.
 - (c) List up medically important fungi.
 - (d) Write down the role of extra chromosomal DNA in bacteria.

- (e) List any two anaerobic bacteria.
- (f) List the names of amoebic dysentery causing protozoa.
- (g) Write down the method of streak plate technique
- (h) Define MPN method.
- (i) Define antibiotics.
- (j) Give two names of soil transmitted helminths.

General Microbiology (MB. 101), 2071

Bachelor Level (4 Yrs.) / 1 Year/Science & Tech.

Full Marks- 100

Time: 3 hrs

GROUP "A"

Long Answer Questions.

Attempt FOUR questions.

(4×10=40)

1. Write down the functions of bacterial DNA. Explain structure of prokaryotic DNA with suitable diagram. [2+8]
2. Describe in detail the principle of nomenclature of bacteria based on three and five kingdom concepts.
3. Define metabolism. Explain the TCA cycle. [2+8]
4. Define protozoa. Write down the classification of parasites with examples. [2+8]
5. Explain procedure of pour plate and spread plate methods of bacterial culture technique. [5+5]
6. Define sterilization. Describe different aseptic techniques used in microbiology. [2+8]

GROUP "B"

Short Answer Questions.

Attempt any Eight questions.

(8×5=40)

7. Briefly explain spontaneous generation theory of disease.
8. Briefly explain scope of microbial biotechnology.
9. Write down briefly on classification of virus.
10. Explain the role of normal flora of human skin.
11. Describe briefly on host parasite relationship for causing a disease.
12. Explain briefly on different stages of bacterial growth curve.
13. Outline the procedure of capsule staining of bacterial.
14. Differentiate between the cell wall composition of gram positive and gram negative bacteria.
15. Describe the conjugation between F⁺ and F⁻ bacterial cell
16. Describe the technique for enumeration of yeast.

GROUP "C"

Attempt any Eight questions.

(8×2.5=20)

17. Very short answers questions:
 - a. Explain briefly on plaque assay.
 - b. Define Gram negative bacteria with two examples.

- c. Write down nucleotide bases of DNA.
- d. Define bacteriophage.
- e. Use of phase contrast microscope.
- f. Explain non specific immunity.
- g. Maintenance of anaerobic bacteria
- h. Define glycogenesis.
- i. Give two names of DNA virus
- j. Define antibiotics.

General Microbiology (MB. 101), 2072

Bachelor Level (4 Yrs. Prog.) I Year/Science & Tech.

Full Marks: 100

Time: 3 hrs.

Group "A"

Long Answer Questions

Attempt FOUR questions.

(4×10 = 40)

1. Mention the general schemes of classification of bacteria. Describe taxonomic rank of living organisms and bacteria. [6+4]
2. What is capsule? Describe the composition and functions of capsule. [2+4+4]
3. Differentiate between fed batch and continuous culture. Describe the factors affecting microbial growth. [4+6]
4. Describe glycolysis including energy source and enzyme involved. [10]
5. What is plasmid? Describe the types of plasmid and their functions. [2+3+5]
6. Describe the morphology, pathogenesis and laboratory diagnosis of Entamoeba histolytica. [4+3+3]

Group "B"

Short Answer Questions.

Attempt any Eight questions.

(8×5 = 40)

7. Mention the different types of culture media used in microbiology laboratory with examples.
8. Describe the roles of mRNA, tRNA and rRNA.
9. Describe base pair substitution mutation.
10. Describe the principle and process of control of microorganisms by using alcohols.
11. Enlist the beneficial and harmful effects of normal flora.
12. Describe one step growth curve of virus with diagram.
13. Describe different morphology of fungi with diagram.
14. Describe the principle of acid-fast staining.
15. Differentiate between catabolism and anabolism with examples.
16. Describe the principle and procedure of indole test.

Group "C"

Attempt any Eight questions.

(8×2.5 = 20)

17. Very short answers questions:

- (a) Enlist the applications of microbiology in food industry.
- (b) Define spheroplast
- (c) Mention the enumeration techniques for bacteria.
- (d) What is R-factor?
- (e) Enlist four major aseptic techniques in microbiology lab.
- (f) Define nosocomial infection.
- (g) Mention any two blood parasites.
- (h) Differentiate between yeast and mold.
- (i) Define bacteriophage.
- (j) Define epidemic disease.

**10. Physical Geology, Structural Geology,
Crystallography & Mineralogy (Geo. 311), 2066**

Time : 3 hour

Full Marks : 100

Attempt NINE questions, selecting THREE from each Group.

Group "A"

1. What is volcano ? Describe various types of volcanic products.
2. (a) Define weathering . Describe chemical weathering.
(b) Discuss the hydrologic cycle. Define aquifer, water table and vadose water.
3. (a) Describe the landforms produced by river deposition.
(b) Describe the erosion landforms produced by glaciers.
4. (a) What is an earthquake ? Discuss the mechanism of earthquake generation.
(b) Write short notes on-any TWO:
i) Wave refraction, beaches and head land
ii) Isostasy
iii) Sand dunes

Group "B"

5. (a) Describe the procedures of finding the intersection of two planes by using stereographic projection.
(b) Define a fold. With neat sketches distinguish between (i) Overtured fold and recumbent fold (ii) Antiform and synform.
6. (a) What do you understand by fault ? Describe the criteria to recognize the fault in the field.
(b) Define an unconformity. With neat sketches describe briefly the different types of unconformity.
7. (a) What is topographic map ? Describe the roles to use the topographic map for geological studies .
(b) What is joint Discuss the geometrical and genetic classifications of joint.