22MBP101

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – **APPLIED MICROBIOLOGY**

INTRODUCTORY MICROBIOLOGY & SYSTEMATICS

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Which of the following scientist tried to disprove Spontaneous generation by using simple goose necked flasks.
(i) Franz Schulz (ii) Louis Pasteur
(iii) Theodor Schwan (iv) John Tyndall

2 Which of the following is used to know the phylogeny?
(i) mRNA (ii) tRNA
(iii) DNA (iv) rRNA

3 Which among the following comes under Gram Positive Eubacteria?
(i) *Clostridium* (ii) *Azatobacter*
(iii) *Rhizobium* (iv) *Methanogens*

4 This fungi division includes 'Club fungi'.
(i) Zygomycota (ii) Deuteromycota
(iii) Basidiomycota (iv) Ascomycota

5 A fully formed infectious viral particle is called---------
(i) Virion (ii) Viroid
(iii) Capsid (iv) Virusoid

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Discuss in brief note on Contributions of Edward Jenner.
OR
b State out the role of Disinfections with suitable examples.

7 a Illustrate in brief about basic steps involved in Differential Staining.
OR
b Analyse the importance of Numerical Taxonomy.

8 a Evaluate the impacts of Diversity with suitable explanation.
OR
b Sketch out Spirochetes with neat diagram.

9 a Explain in detail about reproductive stages of Basidiomycetes.
OR
b Justify Algal pigments are better than synthetic pigments.

10 a State the significance of viral nomenclature.
OR
b Determine the general properties of Viruses.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Analyze the significance of Spontaneous generation theory.

OR

b Classify physical sterilization methods with suitable example.

12 a Construct suitable preservation methods for microbial cultures.

OR

b Criticize Evolutionary diversity with proper explanation.

13 a State out Archaea is a primitive microbes.

OR

b Categorize High G-C gram positive bacteria.

14 a Predict growth and reproduction of Oomycetes.

OR

b Recommend Biofuels are better fuels for tomorrow.

15 a Determine in brief note on Evolution of Viruses.

OR

b Justify Tissue culture best suitable for cultivation of Viruses.

Z-Z-Z END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – **APPLIED MICROBIOLOGY**

MICROBIAL BIOCHEMISTRY AND PHYSIOLOGY / MICROBIAL PHYSIOLOGY METABOLISM AND BIOLOGICAL CHEMISTRY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1. Mention the average size of the cells in the exponential phase is _____.
   (i) Larger than the initial size (ii) Smaller than the initial size
   (iii) Equal to the initial size (iv) Maybe smaller or larger than the initial size

2. Which is the final electron acceptor for lactic acid fermentation?
   (i) Lactic acid (ii) Oxygen
   (iii) Pyruvate (iv) NAD

3. Which of the following amino acids are aromatic in nature?
   (i) Methionine (ii) Isoleucine
   (iii) Proline (iv) Histidine

4. Which of the following are found in extreme saline conditions?
   (i) Halophiles (ii) Thermophiles
   (iii) Psychrophiles (iv) Alkalophilis

5. Name the two essential fatty acids?
   (i) Linoleate and linolenate (ii) Oleic and linoleic
   (iii) Lauric and myristic (iv) Arachidonic and oleic

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6. a) Discuss about the biosynthesis amino acids.
   (OR)
   b) Explain the nucleotide biosynthesis.

7. a) State the process of Methanogenesis.
   (OR)
   b) Illustrate C3 and C4 pathway.

8. a) How to determine the cell population density by using Quorum sensing?
   (OR)
   b) Describe the kinetics of regulatory enzymes.

9. a) Analyze about the estimation of carbohydrates.
   (OR)
   b) Illustrate the structural features of amino acids.

10. a) Classify about the lipids.
    (OR)
    b) Discuss the general characteristics of enzymes.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11. a) Elucidate about the Batch, continuous and synchronous culture.

(OR)

b) Give an account on sporulation, germination and regulation of *Bacillus* species.

12. a) Describe about the Bioluminescence.

(OR)

b) Interpret about substrate level phosphorylation.

13. a) Criticize the significance of Extremophiles in biotechnology.

(OR)

b) State about the adaptation in thermophiles.

14. a) Categorize the different types of classification of amino acids.

(OR)

b) Write an account on structure and different forms of DNA.

15. a) Elaborate about the Enzyme kinetics.

(OR)

b) Discuss about the Structure and functions of fat soluble vitamins.

Z-Z-Z END

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – APPLIED MICROBIOLOGY

CELL BIOLOGY & MOLECULAR DYNAMICS

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 When a cell releases a signal molecule into the environment and a number of cells in the immediate vicinity respond, this type of signaling is
(i) Typical of hormones (ii) Autocrine signaling
(iii) Paracrine signaling (iv) Synaptic signaling

2 A mutation in DNA gyrase is likely to result in resistance to which one of the following antibiotics?
(i) Amphotericin B (ii) Ciprofloxacin
(iii) Penicillin (iv) Streptomycin

3 To which class of transcription factor do nuclear receptors belong?
(i) Zinc finger proteins (ii) Leucine zipper proteins
(iii) Helix-turn-helix proteins (iv) Helix-loop-helix proteins

4 Which of the following about mRNA stability is not correct?
(i) Regulation of mRNA stability is a way of regulating gene expression
(ii) Prokaryotic mRNAs have a half-life of only a few minutes
(iii) Histone mRNAs have especially long poly-A tails and are stable
(iv) It is thought that poly-A tails stabilize eukaryotic mRNAs

5 Which of the following bacterial operon is not controlled by attenuation?
(i) Arabinose (ii) Tryptophan
(iii) Leucine (iv) Histidine

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Explain the mechanism of Ras-dependent RTK pathway.
OR
b "cAMP as a second ary messenger" – justify.

7 a Evaluate the functions of repetitive gene sequences in a DNA.
OR
b A cell genome consist of mutant primase and DNA Pol-1, 5'→3' exonuclease activity, what will be happened during the genome replication. Resolve this issue.

8 a Derive the trans-splicing events of mRNA.
OR
b Demonstrate the functions of general transcriptional factors.

Cont...

9 a Demonstrate the concept of Wobble hypothesis.

OR

b Elucidate the mechanism of tRNA activation.

10 a Illustrate the genetics of Gal operon.

OR

b Analyze the importance of enhanceosome on gene regulation with suitable examples.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a "Secondary messengers act as major signaling molecules involved in cardiac muscle and adult brain functions" – Justify with suitable examples.

OR

b Comment on the mechanism of Ras on MAP-kinase pathway.

12 a Illustrate the pre-initiation complex of transcription and their modification during RNA elongation.

OR

b Distinguish between cis- and trans- splicing in eukaryotes.

13 a Describe the "one gene one polypeptide concept" by taking evidence from biochemical mutation in human and Neurospora.

OR

b Explain the events in replication in eukaryotic genome.

14 a Explain the molecular mechanism of termination of protein synthesis.

OR

b Explain the role of ERGIC on protein function. Give suitable illustrations.

15 a Demonstrate the ß-gal functions of the following gene orientation with suitable illustrations. i) $I^+O^+Z^+$; ii) $I^-O^+Z^+$; iii) $I^-O^-Z^+$; iv) $I^+O^-Z^+$.

OR

b Explain the functions of siRNA on Gene expression.

Z-Z-Z END

22MBP104

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – **APPLIED MICROBIOLOGY**

BIORESEARCH INSTRUMENTATION & AI

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Which of the following centrifugation is used to separate certain organelles from whole cell?
(i) Analytical (ii) isopycric
(iii) Differential (iv) Rate zonal

2 The tracking dye used in SDS-PAGE will be -------
(i) Anionic (ii) Cationic
(iii) Non ionic (iv) Amphipathic

3 What is ethidium bromide?
(i) Buffer (ii) chelating agent
(iii) DNA Solution (iv) Enzyme

4 CARD-FISH uses --------- molecule with fluorescent labelling for identification
(i) Pyrimidine (ii) Tyramide
(iii) purine (iv) Tyrosine

5 Chemiluminescent EIA is used to detect ---------- organisms
(i) paramecium (ii) Trichomonas
(iii) Giardia (iv) Trachomatis

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL questions carry **EQUAL** marks (5 x 3 = 15)

6 a Explain about the principle and function of atomic force microscopy.
OR
b Explain about Radioactive isotopes.

7 a Write a note on NMR spectroscopy.
OR
b Explain about Beer Lamberts law for absorption spectroscopy.

8 a Explain the working principle of Gas chromatography.
OR
b What is the principle of Ion exchange chromatography with examples of cation and anion exchanges?

9 a Explain the working principles of biosensors.
OR
b Explain RFLP and their applications in DNA fingerprinting.

10 a Illustrate the probe hybridization technique with examples.
OR
b What are the common uses and amplification of AI? Explain in brief.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 6 = 30)

11 a Write in detail about the principle and application of SEM.

OR

b Write in detail about bright field and dark field microscope.

12 a Describe the working principle and applications of Spectrophotometer.

OR

b Explain the various types of centrifuges with their working principles.

13 a Explain HPLC. Write the principle and instrumentation with neat diagram.

OR

b Explain in detail about flow cytometry.

14 a Explain the advantages of metagenomics analysis.

OR

b Explain about SDS DAGE with neat diagram.

15 a Discuss in detail about CO2 gas detection in BACTEC systems.

OR

b Explain about the molecular diagnosis of MDR-TB and MRSA.

Z-Z-Z END

22MBP105

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch - **APPLIED MICROBIOLOGY**

MICROBIAL GENETICS, GENOMICS & PROTEOMICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Hemophilia is an example of ---------- inheritance.
(i) Dominant (ii) Receesive
(iii) Allelic (iv) Sex-linked

2 In DNA mismatch repair ---------- process distinguishes the parental and daughter strands.
(i) Phosphorylation (ii)Adenylation
(iii) Thymidilation (iv) Hemi-methylation

3 The key feature of Holliday model is the formation of ---------- DNA.
(i) Duplex (ii) Hetero duplex
(iii) Homo duplex (iv) Nicks

4 The transposable element was first discovered in
(i) Garden pea (ii) Maize
(iii) Green gram (iv) Red gram

5 EMBL is an example of ---------- database.
(i) Protein (ii) Structural
(iii) Functional (iv) Nucleic acid

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Illustrate in detail about the process of Genomic imprinting and add a note on it's regulation.

OR

b Discuss in detail about the process of Incomplete dominance with suitable example.

7 a What is meant by site directed mutagenesis? Write its applications.

OR

b State the process of Nucleotide excision repair with its mechanism.

8 a Give a neat sketch about the process of conjugation with suitable diagram.

OR

b Elucidate the process of transfer of bacterial chromosome by Hfr cells.

Cont...

9 a What are Transposons? Explain its various classes and its function

OR

b Discuss the general characteristics and Mutants of Neurospora.

10 a Categorize the types of Nucleic acid databases with its applications.

OR

b What is meant by Transcriptomics? Explain its uses.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11a Elucidate the process of Linkage map and Linkage analysis with suitable example.

OR

b Analyze the experiment of Mendel's law of Independent assortment and add a note on its deviations.

12 a Explain the process of Frame shift and point muatation with its mechanism.

OR

b How the DNA is getting damaged? Explain the causes of damage with suitable example.

13 a Illustrate in detail about the process of Generalized and specialized transduction with its applications.

OR

b Enumerate the process of recombination with reference to Holliday model with suitable diagram.

14 a Discuss in detail about the lifecycle and Genetic regulation of λ phage.

OR

b What is meant by Transposition? Explain its mechanism with suitable example.

15 a Evaluate the various applications of Genomics in the field of Agriculture, Medicine and forestry.

OR

b Explain the Construction the phylogenetic tree and add a note on its special types.

Z-Z-Z END

21MBP14

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **APPLIED MICROBIOLOGY**

MEDICAL BACTERIOLOGY, MYCOLOGY AND PARASITOLOGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Scarlet fever is caused by _____.
(i) S. aureus (ii) S.pneumoniae
(iii) S.pyogenes (iv) K.pneumoniae

2 Shigellosis infection is attributed to the _____ activity of shiga toxin which increases the severity by tissue invasion of large intestine.
(i) Exotoxic (ii) Enterotoxic
(iii) Cytotoxic (iv) Neurotoxic

3 Example for the opportunistic mycotic infection.
(i) Candidiasis (ii) Histoplamosis
(iii) Dermatophytes (iv) Mycetoma

4 The larval form of Taenia solium is called _____.
(i) Cysticerus cellulosae (ii) Cysticercoid
(iii) Cysticerus bovis (iv) Cysticerus ovale

5 Which technique is used for CSF collection ?
(i) Phlebotomy (ii) Lumbar puncture
(iii) Tracheostomy (iv) Catheter

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Explain the infections caused by Staphylococcus.
OR
b Write a note on Anthrax.

7 a Describe the laboratory diagnosis of Syphilis.
OR
b Write a note on Brucellosis.

8 a Differentiate the pathogenesis of Histoplasmosis.
OR
b Write a note on Aspergillosis.

9 a Explain the clinical features of Trichomoniasis.
OR
b Outline the pathogenicity of Wuchereria bancrofti.

10 a Explain the clinical diagnosis of Nosocomial infections.
OR
b Give an account on the processing of urine sample.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Describe the pathogenicity and laboratory diagnosis of Diptheria in childrens.

OR

b Explain the morphology, pathogenicity and laboratory diagnosis of Pulmonary Tuberculosis.

12 a Explain the morphology, pathogenicity and laboratory diagnosis of Enteric Fever.

OR

b Explain the morphology, pathogenicity and laboratory diagnosis of Vibrio cholarae.

13 a Give an account on pathogenicity and diagnosis of subcutaneous mycosis.

OR

b Give a detailed account on Systemic mycosis.

14 a Explain the clinical symptoms and life cycle of malaria.

OR

b Explain the clinical symptoms and life cycle of Ascariasis.

15 a Explain the processing of clinical specimen for microbiological diagnosis.

OR

b Give an account on antibiotic sensitivity tests.

Z-Z-Z END

21MBP15

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **APPLIED MICROBIOLOGY**

IMMUNOTECHNOLOGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Hassal's corpuscles are found in which organ of man?
(i) Blood (ii) Liver
(iii) Spleen (iv) Thymus

2 Which of the following amino acid residues depicts in CDR1of light chain?
(i) 20-22 (ii) 24-34
(iii) 10-18 (iv) 40-60

3 Diagnosis of contact dermatitis could be done by
(i) Patch test (ii) CFT
(iii) Provocation test (iv) Cutaneous test

4 Which of the following in outer coat of HIV virus?
(i) GP 120 (ii) GP 130
(iii)GP 140 (iv) GP 150

5 Fetus belongs to which of the following transplant?
(i) Xenograft (ii) Isograft
(iii) Autograft (iv) Allograft

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Discuss how skin provide the first line of defense.
OR
b Describe the role of complement in humoral immunity.

7 a Explain differentiation and maturation of T cell.
OR
b State about antibody diversity.

8 a Enlist the function of the complement system.
OR
b What is autoimmunity? Explain any two autoimmune disorders.

9 a Discuss innate and adaptive immunity to viruses.
OR
b List out the types, sources and functions of interleukins.

10 a Compare and comment on Class I and Class II MHC molecules.
OR
b Brief about immunopotentiation and immunosupression.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Explain briefly about the T cell mediated immunity.

OR

b Describe award of Nobel Prizes of different workers in immunology.

12 a Elaborate molecular biology of immunoglobulin synthesis..

OR

b Write an essay on Ag-Ab interactions.

13 a Briefly explain delayed type hypersensitivity.

OR

b Comment on any two primary immunodeficiency disorders.

14 a Discuss immunity to (i) Fungi (ii) Protozoa and (iii) Nematodes.

OR

b Give detailed account on types of vaccine with merits and demerits.

15 a Explain how could tumor escapes host immune mechanisms?

OR

b Describe the types of immunosuppressive therapy for organ transplantation.

Z-Z-Z END

21MBP16

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **APPLIED MICROBIOLOGY**

BIOSTATISTICS & RESEARCH METHODOLOGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 O gives are also called as --------
(i) Circle diagram (ii) Angular diagram
(iii) Cumulative frequency curves (iv) Pictograms

2 The mode of the data set 21,22,23,23,24,25,23 is ------
(i) 21 (ii) 22 (iii) 23 (iv) 24

3 Correlation coefficient is a number between --------
(i) +1 and +2 (ii)0 and +1 (iii)-1 and 0 (iv) -1 and +1

4 What is the mean of a chi square distribution with 6 degrees of freedom?
(i)4 (ii)12 (iii)6 (iv)8

5 Article published in research journal are -------
(i) Reference sources (ii) Secondary sources
(iii) Primary sources (iv) Tertiary sources

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 (a) Define biostatistics and explain the kinds of biological data.

OR

(b) Explain the methods to calculate survival times.

7 (a) Locate median from the following.

Length of leaves	5	5.5	6	6.5	7	7.5	8
Frequency	10	16	28	15	30	40	34

OR

(b) What do you understand by central tendency? What are the merits and demerits of Arithmetic mean?

8 (a) What is ANOVA? Explain the basic principle of ANOVA.

OR

(b) A drug given to each of the 12 persons resulted in the following changes in the blood pressure from normal -3,2,8,-1,3,0,7,-2,1,5,0,4.Calculate by students T test whether changes is significant or not?

9 (a) Briefly discuss on the types of theoretical distribution.

OR

(b) The probability that a boy will get a scholarship is 0.90 and a girl will is 0.80.What is the probability that atleast one of them to get a scholarship?

Cont...

10 (a) Outline the steps involved in a research process.

OR

(b) Write short notes on ISSN and ISBN , Plagiarism.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 (a) How are statistical data collected? Explain the methods of data collection.

OR

(b) Describe the methods for testing the prevalence and incidence of morbidity Measurement.

12 (a) What is correlation? What are the methods of studying correlation?

OR

(b) Give an account on students T test.

13 (a) Explain in detail about Chi square test.

OR

(b) What are the different types of graphical representation of data? Explain it.

14 (a) Given below are the heights of individuals each from 2 different populations. Apply student T test and whether the heights of the individuals from these 2 populations are significantly different from each other keeping the level of significance P=0.05(T.V=1.734)

Population 1	150	154	160	168	166	160	156	160	164
Population 2	166	160	158	172	174	180	176	160	158

OR

(b) The following table illustrates the sample psychological health rating of corporate executives in the field of banking, manufacturing, retailing.

Banking	14	16	18		
Manufacturing	14	13	15	22	
Retailing	18	16	19	19	20

Can we consider the psychological health of corporate executives in the given three fields to be equal at 5% level of significance.(T.V=4.26)

15 (a) Explain different systems of citing references with examples.

OR

(b) Explain the various components of a research report.

Z-Z-Z END

21MBP17A

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **APPLIED MICROBIOLOGY**

DISCIPLINE SPECIFIC ELECTIVE – I : PHARMACEUTICAL MICROBIOLOGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Which of the following molecules can form a hydrogen bond with hydrogen?
(i) Sodium (ii) Oxygen
(iii) Aluminum (iv) Rubidium

2 Antibiotic are used to treat infection by?
(i) Virus (ii) Bacteria
(iii) All the microorganisms (iv) None of the above

3 Following are the phase I reactions except?
(i) Oxidative reaction (ii) Hydrolytic reaction
(iii) Reductive reaction (iv) Sulphide reaction

4 Which of the following are not correct on the basis of clinical trials?
(i) Biomedical research (ii) Behavioral research
(iii) Studies on human subjects (iv) Study based only on animals

5 Which one of these is genetically determined adverse drug reaction?
(i) Addication (ii) Tertogenecity
(iii) Carcinogenecity (iv) Idiosyncracy

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Write a short notes on atomic orbital theory.
OR
b Explain about the Electrophile.

7 a Details account on medically importance of parasitic disease.
OR
b Explain about the Tetracycline.

8 a Describe the excretion of drug.
OR
b Explain about the ED50.

9 a Write a short notes on purification procedures for drug.
OR
b Explain about the drug safety.

10 a Write a short notes on drug synergism and it's types.
OR
b Describe the latrogenic disease.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Give an account of chemical bonds.

OR

b Explain in details about determining the Stoichiometry of chemical reactions.

12 a Describe in details about the sulphonamides.

OR

b Write an details about the quality for medicines and formulation.

13 a Explain in details about routes of drug administration.

OR

b Describe in details about principles of toxicity.

14 a Write an short notes on Indian medicinal plant and trees.

OR

b Describe the details about adverse drug reaction.

15 a . Explain in details about medicinal importance of magnesium and iron.

OR

b Write an details account on board and narrow spectrum drugs

Z-Z-Z END

19MBP07

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(Second Semester)

Branch – **APPLIED MICROBIOLOGY**

MICROBIAL GENETICS

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Linkage map is based on the frequencies of _____ between markers during crossover of homologous chromosomes.
(i) Recombination (ii) Insertion
(iii) Deletion (iv) Duplication

2 Replica plating is used for the isolation of _____ mutants.
(i) Myxotrophic (ii) Autotrophic
(iii) Heterotrophic (iv) Auxotrophic

3 A bacterium with conjugative plasmid integrated in to it's chromosomal DNA is called
(i) Mobilizable plasmid (ii) Transposon
(iii) Retroposon (iv) Hfr strain

4 Helitrons are which group of bacterial transposons?
(i) Class I (ii) Class II
(iii) Class III (iv) Class IV

5 During infection by λ phage which enzyme introduces negative supercoils?
(i) DNA Polymerase (ii) DNA Gyrase
(iii) Lygase (iv) Reverse transcriptase

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks
(5 x 3 = 15)

6 a Illustrate in detail about the Mendel's law of Independent Assortment with suitable example.

OR

b Discuss in detail about the complementation test and it's uses.

7 a Evaluate in brief about the process of site directed mutagenesis with it's types and applications.

OR

b Explain the process of mutation by insertion, inversion and deletion.

8 a Explain the process of Gene transfer by conjugation with suitable diagram.

OR

b Elucidate in detail about the process of Generalized and specialized transduction.

9 a Illustrate in detail about the types and functions of Transposons.

OR

b Evaluate the structure and functions of yeast TY-1 transposon.

Cont...

10 a What is Neurospora? Explain it's characteristics and mutants.

OR

b What is meant by Tetrad analysis? Explain the process with suitable example.

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Analyze the process of crossing over with suitable diagram and add a note on it's consequences.

OR

b Explain in detail about the following :
(i) Genomic imprinting
(ii) Phenocopy

12 a Elucidate the various Repair mechanism of DNA with a neat sketch and add a note on it's advantages.

OR

b Evaluate the process of various types of damage to DNA caused by physical and chemical agents.

13 a What is meant by Recombination?Explain the various models with suitable diagram and add a note on it's advantages.

OR

b Analyze in detail the role of various proteins involved in Recombination.

14 a What is meant by Transposition? Explain with a neat sketch about the mechanism of Transposition.

OR

b Elucidate the process of regulation and effects of Transposition in bacteria.

15 a What are molecular markers? Elucidate the role of markers in Gene mapping.

OR

b Enumerate in detail about the life cycle and genetic regulation of M13 phage.

Z-Z-Z END

18MBP03

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – **APPLIED MICROBIOLOGY**

CELL & MOLECULAR BIOLOGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1. Which phase forms spindle?
   (i) G_1 Phase (ii) G_2 Phase (iii) M Phase (iv) S Phase

2. What is the function of RFC in eukaryotic replication?
   (i) Catalytic subunit (ii) SSB (iii) Clamp loader (iv) Primase

3. What is the usual sequence of a Pribnow box?
   (i) AUAUA (ii) TATAAT (iii) UUUUU (iv) TTGACA

4. Which stop codon has been found to encode Selenocysteine?
   (i) UAA (ii) UAG (iii) UGA (iv) AGA

5. Find the negative regulation of gene expression is accomplished by
   (i) Allosteric inhibition
   (ii) Binding of RNA polymerase to the promoter
   (iii) Binding of a repressor to the DNA
   (iv) Binding of a repressor to the RNA polymerase

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a. Determine the reasons for mitosis to occur.
(or)
b. Sketch the signaling through G-Protein coupled receptors.

7. a. How many types of histones are there? Explain its function.
(or)
b. Illustrate the experiment of Meselson and Stahl for semi-conservative replication.

8. a. Discuss various forms of RNA polymerase with its roles.
(or)
b. Elucidate the concept of Rho-dependent termination.

9. a. Explain Wobble hypothesis.
(or)
b. Differentiate between monocistronic and polycistronic mRNA.

Cont...

10. a. Compare positive and negative gene regulation.

(or)

b. Discuss the structural and functional gene in Lac operon.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11. a. Define various phases of cell cycle. Add a note on significance of mitotic cell division.

(or)

b. Describe different types of cell surface receptors for cell signaling.

12. a. Briefly describe the process of DNA replication in *E.coli.*

(or)

b. Describe the sequence of events during DNA replication in eukaryotes.

13. a. Explain the eukaryotic Transcription initiation factors along with their functions.

(or)

b. Elucidate different post transcriptional modification.

14. a. Describe the salient features of Genetic code.

(or)

b. Enumerate the various differences between prokaryotic and eukaryotic translation.

15. a. Briefly describe the process of regulation of gene expression in Lac operon.

(or)

b. Discuss the mechanism of gene regulation in Tryptophan operon.

Z-Z-Z END

18MBP05

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – **APPLIED MICROBIOLOGY**

FOOD AND DAIRY MICROBIOLOGY

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Pasteurization is ----------.
(i) low temperature treatment (ii) high temperature treatment
(iii) steaming treatment (iv) low and high temperature

2 Which of the following statements are true regarding *Staphylococcus* food poisoning?
(i) is an enterotoxin (ii) causes gastroenteritis
(iii) produced by *Staphylococcus aureus* (iv) all of these

3 Salmonellosis involves ----------.
(i) An enterotoxin and exotoxin (ii) an enterotoxin and cytotoxin
(iii) Exotoxin and cytotoxin (iv) cytotoxin only

4 Two types of fermentations are carried out for the production of ----------.
(i) pickle (ii) sausages
(iii) yogurt (iv) vinegar

5 In which ISO standard used for food safety management in food industries?
(i) ISO 26000 (ii) ISO 22000
(iii) ISO 9001 (iv) ISO 14000

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a. List the food preservatives involved in food preservation.
OR
b. Explain the preservation by drying process.

7 a. Give some examples for mycotoxins. Explain.
OR
b. What is food borne infection? Give examples with mode of action.

8 a. Discuss the production of SCP with applications.
OR
b. Define probiotic, prebiotic, synbiotic and nutraceuticals.

9 a. Describe the process of various spoilage of milk.
OR
b. Illustrate the production of yoghurt with a neat flowchart.

10 a. List the food quality management principles.
OR
b. What is quality control and quality assurance in food industry?

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a. What TDT? How it is determined? Explain various heat treatments employed.

OR

b. List the various parameters affecting microorganisms in food.

12 a. What is food borne intoxification? Discuss with some examples.

OR

b. How food borne pathogens are detected? Explain with suitable techniques.

13 a. Explain the process of bread making with a neat flowchart.

OR

b. Describe the mushroom cultivation process with an example.

14 a. Illustrate the various steps in cheese production. Add a note on the starter culture and applications.

OR

b. Give a brief account on the production of dried milk products with flowchart.

15 a. What are the key benefits of ISO implementation in food safety and quality management system in food industries?

OR

b. Enlist the Seven Principles of Hazard Analysis and Critical Control Point (HACCP) System and explain it in brief.

Z-Z-Z

END