SLR-JQ-332

Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Microbiology
CYTOLOGY AND TAXONOMY OF MICROORGANISMS

Day & Date: Monday, 18-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) _____ of bacteria helps in adhesion to the host cell.
   a) Cell wall b) Flagella
   c) Capsule d) Fimbriae

2) _____ lack complete TCA cycle.
   a) Mycoplasma b) Rickettsia
   c) Actinomycetes d) Fungi

3) Rikettsia are _____.
   a) Gram -ve bacteria b) Gram +ve bacteria
   c) Motile d) Link between fungi & bacteria

4) Formation of elementary bodies during reproduction is property of _____.
   a) Chlamydiae b) Rickettsia
   c) Cyanobactaria d) Lichen

5) _____ produce natural antibiotics.
   a) Lichen b) Cyanobactaria
   c) Chlamydiae d) Actinomycetes

6) First edition of Bergey's manual divides actinomycetes in _____ sections.
   a) 5 b) 7
   c) 4 d) 10

7) The coprophilic fungi inhabit _____.
   a) dung substratum b) dead wood
   c) decaying leaves d) food articles.

8) Only asexual reproduction is found in _____.
   a) Ascomycetes b) Basidiomycetes
   c) Oomycetes d) Deuteromycetes.

9) The food reserve of blue green algae is _____.
   a) Cyanophycean starch b) Globulin
   c) Fats and oils d) Cellulose

10) Microorganisms are classified _____.
   a) Know their distribution b) Establish relationship
   c) Know their main habitat d) Study evolution

11) The category family is between _____.
   a) Genus and Species b) Order and Genus
   c) Phylum and Genus d) Kingdom and Class

12) Lichens growing on rocks are _____.
   a) Saxicolous b) Corticolous
   c) Lignocolous d) Terricolous

13) Binomial nomenclature consists of two words _____.
   a) Order and Family b) Family and Genus
   c) Species and Variety d) Genus and Species

14) In Ectomycorrhiza the fungus partner is commonly _____.
   a) Phycomycetes b) Basidiomycetes
   c) Fungi imperfection d) Zygomycetes

Q.2 A) Answer the following questions. (Any Four) **08**

1) Define phylogeny.
2) What are diatoms?
3) What is binomial nomenclature?
4) How are lichens are classified?
5) What are slime molds?

B) Write Notes. (Any Two) **06**

1) Lichens
2) Phylogenic tree
3) Cell differentiation in Bacillus

Q.3 A) Answer the following questions. (Any Two) **08**

1) Describe reproduction in Algae.
2) Write note on Mycorrhizae.
3) Describe chemotaxonomy

B) Answer the following questions. (Any One) **06**

1) Where are mycoplasma found? Give their significance.
2) Describe the modes of reproduction in Chlamydiae and their importance.

Q.4 A) Answer the following questions. (Any Two) **10**

1) Give the major distinguishing characteristics of Actinomycetes.
2) Describe the reproduction in fungi.
3) Discuss general properties of Rickettsia.

B) Answer the following questions. (Any One) **04**

1) Describe in brief characteristics of Mycoplasma.
2) Write note on Chlorophyta.

Q.5 Answer the following questions. (Any Two) **14**

a) Briefly summarize the content of each fire volumes of Bergey's manual of systemic bacteriology.
b) Discuss surface properties of Bacteria.
c) Write an essay on Cyanobacteria.

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Seat No.	

Set P

M.Sc.(Semester - I) (CBCS) Examination Oct/Nov-2019
Microbiology
MICROBIAL CHEMISTRY AND ENZYMOLOGY

Day & Date: Tuesday, 05-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Multiple Choice Questions. **14**

1) When $V_o = \frac{1}{2}$Vmax them km = _____.
   a) [E] b) [S]
   c) [ES] d) [P]

2) _____ protein is said to form parallel β-pleated sheets.
   a) Albumin b) Globulin
   c) Gelatin d) Kreatin

3) Aspartate transcarbamoylase is _____ enzyme.
   a) iso b) multi
   c) holo d) allosteric

4) _____ amino acid has negatively charged R group.
   a) Tryptophan b) Alanine
   c) Leucine d) Glutamic acid

5) _____ are amphipathic lipids.
   a) Phosphoglycerides b) Sphinolipids
   c) Triglycerides d) Glycosyl acylglycerols

6) Numbers of isoprene units in triterpene are _____.
   a) 3 b) 4
   c) 6 d) 5

7) ____ are serve as chief storage form of energy in cells.
   a) Protein b) Lipids
   c) Vitamins d) Porphyrins

8) _____ is also known as cyanocobalamin.
   a) Vitamin – B_{12} b) Vitamin – B_1
   c) Vitamin – B_2 d) Vitamin – B_6

9) Bond between two amino acids is _____ bond.
   a) ionic b) Ester
   c) covalent d) Hydrogen

10) Maltose is _____.
   a) Monosaccharide b) Disaccharide
   c) Oligosaccharide d) Trisaccharide

11) Octadecanoic acid contain _____ carbon atoms.
   a) 18 b) 8
   c) 28 d) 38

12) _____are precursor for all sterols.
a) Terpenes b) Lipids
c) Glycolipids d) Cholesterols

13) Enzymes of the _____ class involved in synthesis of new bonds.
a) Ligases b) Lyases
c) Hydrolases d) Transferases

14) _____ is oligomeric enzyme.
a) Alcohol dehydrogenase b) Pyruvate dehydrogenase
c) Lactate dehydrogenase d) Serine protease

Q.2 A) Answer the following questions. (Any Four) **08**
1) List aromatic amino acids.
2) Give furanose ring form.
3) Oxidoreductases.
4) Define protamines.
5) Steriochemical specificity.

B) Answer the following questions. (Any Two) **06**
1) Write on properties of proteins.
2) What are provitamins? Give their significance.
3) Lock and Key model.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Oligomeric and monomeric enzymes
2) Mulitienzyme system
3) Bacteriorhodopsin

B) Answer the following questions. (Any One) **06**
1) Write on basic structure of carbohydrates and their nomenclature.
2) Write on water soluble vitamins and their role.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Write on isoenzymes.
2) Concept of active site – Ogston's experiment.
3) Prostaglandins and their role.

B) Answer the following questions. (Any One) **04**
1) Haemoglobin and leghaemoglobin.
2) Induced fit hypothesis.

Q.5 Answer the following questions. (Any Two) **14**
a) What is kinetics,write on Briggs and Haldane modification.
b) Give an account on ligand induced conformational changes in allosteric enzymes.
c) Write on types of fatty acids and their nomenclature.

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Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Microbiology
RECENT TRENDS IN VIROLOGY

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) A type of cell culture that can reproduce for an extended number of generations and is used to support viral replication is a _____.
   a) Continuous cell line b) Cell strain
   c) Diploid fibroblast cell d) Primary cell culture

2) Viroid genomes are extremely small in size, only about _____ nucleotides.
   a) 30 b) 300
   c) 100 d) 600

3) Antiviral substance produced in human body is _____.
   a) Antibody b) Immunogen
   c) Antigen d) Interferon

4) In λ lysogeny, delayed early gene products cII and cIII are necessary for RNA polymerase to initiate transcription at the promoter _____.
   a) PL b) PR
   c) P_{RM} d) P_{RE}

5) Adenoviruses possess _____ Capsid symmetry.
   a) Helical b) Icosahedral
   c) Complex d) Prolate Icosahedron

6) _____ bacteriophage contain single stranded RNA.
   a) Φ 6 b) M13
   c) PM2 d) MS2

7) As of 2017, _____ orders, 131 families, 46 subfamilies, 803 genera, and 4,853 species of viruses have been defined by the ICTV.
   a) 11 b) 9
   c) 7 d) 8

8) _____ belongs to Orthomyxoviridae family.
   a) Influenza virus b) Adeno virus
   c) Picorna virus d) Herpes virus

9) _____ Classification of viruses is based on the method of viral mRNA synthesis.
   a) ICTV b) LHT
   c) Baltimore d) Holmes

10) _____ virus contain double stranded RNA.
   a) Reovirus b) Bunya virus
   c) Calcivirus d) Rhabdovirus

11) The capsid of picornaviruses is made up of _____ capsomers.
a) 8 b) 32
c) 10 d) None of the above

12) Viral genomes often contain _____, short sequence or set of sequences that directs encapsidation.
a) Terminal signal b) Packaging signal
c) Coding signal d) Genomic signal

13) The subviral infectious agent viroids were discovered by _____.
a) Baltimore b) Diener
c) Puschner d) Boin

14) In Pock, assay, viral dilution is inoculated onto the surface of _____.
a) Yolk sac b) Amniotic cavity
c) Chorioallantoic membrance d) Allantoic cavity

Q.2 A) Define and explain any four of the following. **08**
1) Antigenic shift and drift.
2) Prophage
3) Cell transformation
4) ICTV
5) Maturation

B) Write short note. (Any Two) **06**
1) Insect viruses
2) Viroids
3) Purification of viruses

Q.3 A) Answer any two of the following. **08**
1) Give brief account of Interferon.
2) Satellite viruses and their role in plant virus replication.
3) Emerging viral infections.

B) Answer any one of the following. **06**
1) Brief outline of discovery of viruses.
2) Briefly describe the mechanism of Animal virus adsorption and entry into the host cell.

Q.4 A) Answer any two of the following. **10**
1) Describe pathogenesis and control of Human Immunodeficiency virus.
2) Discuss the maintenance of lysogenic state in λ phage.
3) Discuss briefly the morphology and ultra-structure of viruses.

B) Answer any one of the following. **04**
1) Give brief account of Prions.
2) Give brief account of Infectivity assays.

Q.5 Answer any two of the following. **14**
1) Discuss the role of DNA viruses in Oncogenesis.
2) Describe briefly the productive cycle of Double Stranded DNA phage.
3) Discuss briefly the physical and chemical methods used for assay of viruses.

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Seat No.	

Set P

M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2019
Microbiology
MICROBIOLOGICAL TECHNIQUES AND SCIENTIFIC WRITING

Day & Date: Saturday, 09-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) The technique electrophoresis was developed by _____.
   a) Tsweet b) Sevedberg
   c) Sanger d) Tiselius

2) ____ is used as detector for amino acids in chromatographic separations.
   a) Ninhydrin b) Na- acetate
   c) Copper sulphate d) Alkaline copper sulphate

3) While writing materials and methods of research paper _____ tense must be used.
   a) Present b) Future
   c) Past d) Continuous present

4) Websites that allow the user to search for data on keywords is _____.
   a) routers b) chat engines
   c) web server d) search engine

5) _____ is not stationary phase.
   a) Liquid–liquid b) Gas–liquid
   c) Solid–solid d) Gas–solid

6) If the mobile phase is gas, movement of solutes is determined by its _____.
   a) boiling point b) melting point
   c) solubility d) volatility

7) _____ medium is used for cultivation of *streptococcus* pneumoniae.
   a) Nutrient ager b) Blood agar
   c) W & B d) N_2 free mannitol agar

8) The electrophoretic technique that used isoelectric focusing is _____.
   a) AGE b) PAGE
   c) 2D PAGE d) SDS PAGE

9) Scanning Electron Microscope is important for its _____.
   a) 2D image b) 3D image
   c) very large & sharp image d) fluorescent image

10) Good research journal must have _____.
   a) result factor b) impact factor
   c) value factor d) citation factor

11) Scientific paper is organized in IMRAD method in which 'R' stands for ____.
   a) Reference b) Result
   c) Reinvestigation d) Review

12) Gas chromatography is performed _____.
   a) only in column
   b) only on plane surface
   c) either in column of plane surface
   d) neither in column nor on plane surface

13) The most common gel used in DNA separation is _____.
   a) agar b) polyacrylamide
   c) agarose d) sephadex

14) The P^H of Sabouraud's agar is _____.
   a) 7.2 b) 11.1
   c) 5.4 d) 8.8

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define centrifugation.
2) What is Bioinformatics?
3) What is impact factor?
4) Explain tissue culture technique.
5) List media for cultivation of Algae.

B) Answer the following questions. (Any Two) **06**
1) Explain what is operational qualification?
2) Explain principle of reverse phase chromatography.
3) Write in short about methods of cultivation of protozoa.

Q.3 A) Answer the following questions. (Any Two) **08**
1) High performance Liquid Chromatography technique.
2) Explain how to write abstract of research paper.
3) Describe density gradient centrifugation.

B) Answer the following questions. (Any One) **06**
1) Describe methods of validation & calibration of equipments.
2) Explain Ion exchange chromatography and its applications.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain moving boundary electrophoresis.
2) Give importance and significance of documentation.
3) Give brief account of cultivation of viruses.

B) Answer the following questions. (Any One) **04**
1) Explain basic concept of scientific writing.
2) Explain different types of centrifuges & rotors.

Q.5 Answer the following questions. (Any Two) **14**
a) Explain principle of planar chromatography & explain paper chromatography.
b) How to write research thesis.
c) Describe SDS PAGE with principle of electrophoresis.

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Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Microbiology
MICROBIAL GENETICS

Day & Date: Monday, 04-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagram whenever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Lac Z gene in Lac operon express to synthesize _____.
   a) Beta- Galactosidase b) Galactoside permease
   c) acetylase d) Repressor

2) ____ is initiation codon in translation.
   a) AUG b) AGU
   c) UGA d) GUA

3) The coding sequences on the eukaryotic genes are termed as _____.
   a) Introns b) Exons
   c) Split genes d) Interrupted gene

4) Cairn's model of DNA replication explains mode of DNA replication in ____ DNA.
   a) Single stranded linear b) Double stranded linear
   c) Single stranded Circular d) Double stranded circular

5) Site specific recombination requires an enzyme recombinase which identifies a unique DNA sequence of _____.
   a) 2-20 bases b) 200-2000 bases
   c) 20-200 bases d) 2000 - 3000 bases

6) Helix unwinding during replication is accomplished by _____.
   a) DNA Gyrase b) DNA polymerase I
   c) DNA Helicase d) DNA Primase

7) The law of purity of gametes is also known as Mendel's ____ law of heredity.
   a) First b) Second
   c) Third d) Fourth

8) DNA as genetic material was proved by _____ using 'Phage labeling experiment'.
   a) Hershey and Chase
   b) Fraenkel- Conrat and Williams
   c) Griffith
   d) Avery and MacLeod and McCarty

9) In a Cis-Trans Test the word 'Cis' means _____
   a) Cistron b) Coupling
   c) Sister chromatids d) Complementation

10) Plasmid contain _____marker.
   a) Antibiotic resistance b) Endotoxin resistance
   c) Exotoxin resistance d) Pigment

11) Beadle and Tatum proposed One cistron - one polypeptide theory by using ____ strain.
a) Neurosporacrassa b) Streptococcus pneumonia
c) Escherichia Coli d) Aspergillusorizae

12) Transposon Tn5 carries gene for _____ resistance.
a) Kanamycin b) Ampicillin
c) Penicillin d) Chloramphenicol

13) A replication by semiconserative mode in E.coli was experimentally proved by _____.
a) Zinder and Lederberg b) Meselson and StahI
c) Delbruck & Delbruck d) Watson & Crick

14) DNA sequences containing transposase gene flanked by inverted repeats are called _____.
a) IS elements b) Simple transposons
c) Composite transposons d) Phage elements

Q.2 A) Explain any four of the following. **08**
1) What is a Split gene?
2) RFLP.
3) Dihybrid cross
4) Photo reactivation
5) Transposons

B) Write short notes on any two of the following **06**
1) Types of Plasmids
2) Southern blotting techniques
3) Structure of t-RNA

Q.3 A) Answer any two of the following **08**
1) Explain in short transcription process.
2) Write general properties of transposons.
3) Write a short note on Insertion sequences.

B) Answer any one of the following **06**
1) Write in short about enzymes involved in DNA replication.
2) Explain in brief Polymerase Chain Reaction.

Q.4 A) Answer any two of the following **10**
1) Mendel's law of Segregation and dominance.
2) Explain in brief Translation in Prokaryotes.
3) Explain in brief Cis-Trans Test for Bacteriophage T4.

B) Answer any one of the following **04**
1) Explain, in short SOS DNA repair mechanism.
2) Write different examples of genetic disorders.

Q.5 Answer any two of the following **14**
a) Explain in brief Lactose operon mode.
b) Explain in brief DNA replication in E. coli.
c) Explain in brief Sanger DNA sequencing technique.

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Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Microbiology
MICROBIAL ECOLOGY AND DIVERSITY

Day & Date: Wednesday, 06-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) The organisms degrading pesticides are called _____ bacteria.
   a) xenobiotic b) endolithic
   c) xerophilic d) acidophilic

2) _____ a phylogenic domain of prokaryotes consists of halophiles and extreme thermopiles.
   a) Protozoa b) Archaebacteria
   c) Actinomycetes d) Ctinorhiza

3) Bioluminescence is the result of mutualistic association between _____.
   a) Bacteria and fungi
   b) algae and fungi
   c) luminescent bacteria & marine invertebrates
   d) Animal and viruses

4) The importance of ecosystem lies in _____.
   a) CO_2 production b) bacterial degradation
   c) oxygen production d) flow of energy

5) _____ is an example of lichens.
   a) Permelia b) Hyphomonas
   c) Trichospor nigrecans d) Pyrolobus fumarii

6) The term ecosystem was first introduced by _____.
   a) Alexander b) Auther Tansely
   c) Aurther Stanely d) Robert Koch

7) Peptidoglycan is absent in the cell wall of _____.
   a) thermophiles b) psychrophiles
   c) halophiles d) barophiles

8) Rhodomicrobium is an example of _____.
   a) green non sulphur b) Cyanobacteria
   c) Green sulphur bacteria d) Purple non sulphur bacteria

9) LUX gene is responsible for _____.
   a) biolumiscence b) N_2 fixation
   c) methanogenesis d) nitrification

10) VAM fungi is an example of _____.
   a) N_2 fixer b) sulfur supplier
   c) phosphate absorber d) Phosphate solubilizer

11) *Photobacterium Shewanella* is an example of _____.
a) xerophile b) thermophile
c) Barophile d) halophile

12) *Pseudomonas putida* is used for _____.
a) N_2 fixation b) methanogenesis
c) biomagnifications d) bioremediation

13) In _____ process organic matter is decomposed to release simpler, inorganic compound.
a) mineralization b) ammonification
c) nitrification d) nitrogen fixation

14) _____ association helps to improve phosphorus nutrition of plants.
a) Rhizosphere b) Mycorrhizae
c) Bioluminescence d) Root nodulation

Q.2 A) Define and explain any four of the following. **08**
1) Halophilic microorganisms
2) Biodeterioration
3) Magnetotactic bacteria
4) Ecosystem
5) Microbial interaction

B) Write short Notes. (Any Two) **06**
1) General characteristic of purple and green sulphur bacteria
2) Microbial fossils
3) Population explosion

Q.3 A) Answer any two of the following questions. **08**
1) Explain in detail Anoxygenic photosynthetic microbes.
2) Identification of uncultured microorganisms.
3) What is Bioluminescence? Explain in detail with example.

B) Answer any one of the following questions. **06**
1) Discuss the process of Microorganisms in prospecting of oils.
2) Give the detailed account of Extremophiles.

Q.4 A) Answer any two of the following questions. **10**
1) Briefly describe uncultured organisms.
2) Discuss in detail Endolithic microorganisms in Antarctica.
3) Briefly describe Microbial World and its General characteristics and outline classification.

B) Answer any one of the following questions. **04**
1) Briefly explain General characteristics of Cyanobacteria.
2) Explain Briefly Methanogenic Archeobacteria.

Q.5 Answer any two of the following questions. **14**
a) Explain in detail “Role of microorganisms in biological nitrogen fixation.
b) Give the detail account of microbe-microbe, microbe-plant and microbe-animal interactions.
c) What is Biodeterioration? Explain in detail role of Microbes in Biodeterioration.

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Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Microbiology
MICROBIAL PHYSIOLOGY AND METABOLISM

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Which of the following aids the movement of glucose across a cell membrane?
   a) Protein b) Phosphate
   c) Glycolipid d) Cholesterol

2) Which of the following conditions is required for diffusion to occur?
   a) ATP energy
   b) a living cell
   c) a concentration difference
   d) a selectively-permeable membrane

3) Which of the following processes moves molecules using cellular energy?
   a) Osmosis b) Diffusion
   c) Pinocytosis d) Facilitated transport

4) The sodium-potassium pump passes _____.
   a) more Na+ out than K+ in
   b) K+ out and Na+ in on a one-for-one basis
   c) Na+ out and K+ in on a one-for-one basis
   d) K+ and Na+ in the same direction

5) Which one out of the following is not a NAD^+ requiring enzyme?
   a) Lactate dehydrogenase
   b) Pyruvate dehydrogenase complex
   c) Maltate dehydrogenase
   d) Acyl co-A dehydrogenase

6) Which of the following enzyme catalyses the direct transfer and incorporation of O_2 into a substrate molecule is _____.
   a) Reductase b) Oxidase
   c) Oxygenase d) Peroxidase

7) The enzyme involved in biosynthesis of fatty acid is _____.
   a) Succinate dehydrogenase b) NADH dehydrogenase
   c) ATP synthase d) Acto acetyl ACP synthetase

8) Pyruvate is the precursor for _____.
   a) Alanine b) Glutamate
   c) Serine d) Proline

9) In purine nucleus nitrogen atom at 1 position is derived from ____
   a) Aspartate b) Glutamine
   c) Glycine d) Alanine

10) Phosphoribosyl pyrophosphate is a precursor of tryptophan and
a) Tyrosine b) Histidine
c) Phenylalanine d) Isoleucine

11) Adenosine deaminase deaminates adenosine to _____.
a) Hypoxanthine b) Inosine
c) Xanthine d) Guanosine

12) Which of the following is an important precursor in pyrimidine pathway?
a) Glycine b) Aspartate
c) Glutamine d) Leucine

13) The source of the necessary elements of life is _____.
a) an inorganic environmental reservoir b) the sun
c) rocks d) the air

14) Sulfonamide drugs initially disrupt which process?
a) folic acid synthesis b) Transcription
c) PABA synthesis d) protein synthesis

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is PRPP? How is it formed?
2) What is Redox potential?
3) Brief on Facilitated diffusion.
4) What are anapleurotic reactions? Give its example.
5) Conversion of ribonucleotides into deoxyribonucleotides.

B) Write Notes on (Any Two) **06**
1) ATP as energy currency
2) Pyruvate dehydrogenase complex
3) Reverse osmosis

Q.3 A) Answer the following questions. (Any Two) **08**
1) Illustrate group translocation mechanism of Nutrients transport across the cell membrane.
2) Write on different components of ETC.
3) Write on Drug metabolism.

B) Answer the following questions. (Any One) **06**
1) Write on ETC of aerobic and anaerobic bacteria.
2) Write steps involved in alpha, beta, and omega oxidation of alkanes.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Write in detail on de novo synthesis of pyrimidines.
2) Conversion Inosine monophosphate into GMP and AMP.
3) Describe microbial hormones and their significance

B) Answer the following questions. (Any One) **04**
1) What is Oxygen toxicity? Describe mechanisms to overcome it by microorganisms?
2) Write in detail on biosynthesis of Aspartate family amino acid.

Q.5 Answer the following questions. (Any Two) **14**
a) Write on different permeation systems in *E.coli* for amino acids.
b) Write in detail on biosynthesis saturated fatty acids.
c) Discuss in detail on drug detoxification.

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Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Microbiology
MEDICAL MICROBIOLOGY

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Endotoxins of Gram negative bacteria are made up of _____.
   a) Lipoproteins b) Proteins
   c) Lipids d) Lipopolysaccharides

2) _____ is one of the proteins that transfer iron to the calls and control the level of free iron the blood and external secretions.
   a) Lysozyme b) Lactoferrin
   c) Heamoglobin d) Leucocidin

3) Antiphagocytic factor present in bacteria is _____.
   a) Capsule b) Endospore
   c) Flagella d) Pilli

4) Peptic ulcer is caused by _____.
   a) *Wucheria bancrofti* b) *Trichonella spiralis*
   c) *Helicobacter pylori* d) *Balantidium coli*

5) Lymphatic filariasis is caused by _____.
   a) *Wucheria bancrofti* b) *Leptospira icterohaemorrhagiae*
   c) *Ascaris lumbricoides* d) *Enterobicus vermicularis*

6) The most common bacteria associated with dental cavities are _____.
   a) Streptococci b) Staphylococci
   c) Micrococci d) Pneumococci

7) _____ is a dimorphic fungus that exists as a mold in soil and as a yeast in tissue.
   a) *Blastomyces dermatitidis* b) *Cryptococcus neoformans*
   c) *Aspergillus niger* d) *Histoplasma capsulatum*

8) Ringworm is caused by _____.
   a) *Tinea pedis* b) *Tinea cruris*
   c) *Tinea corporis* d) *Tinea unguium*

9) Radio labelled antigens or antibodies are detected in the test _____.
   a) API b) RIA
   c) ELISA d) FAT

10) Enzyme used in dissolving blood clots in heart attack is _____.
   a) Lysozyme b) Ribonuclease
   c) Streptokinase d) Trypsin

11) _____ inhibits the bacterial *de novo synthesis* of folic acid.
a) Trimethoprim b) Penicillin
c) Isoniazid d) Cycloserine

12) _____ blocks the transfer of the peptide from the peptidyl- tRNA to the next aminoacyl-tRNA .
a) Penicillin b) Vancomycin
c) Chloramphenicol d) trimethoprim

13) The cell lines which go transformation and acquires the ability to divide indefinitely is called as _____.
a) Finite cell lines b) Continuous cell lines
c) Cell strains d) Primary cell lines

14) Food poisoning is caused by _____.
a) *Clostridium tetani* b) *Clostridium botulinum*
c) *Clostridium perfringens* d) *Clostridium welchii*

Q.2 A) Answer any four of the following questions. **08**
1) What is mechanism of bacterial adhesion to tissues?
2) Write on AIDS and prevalence of Tuberculosis.
3) Write on Rubella viruses.
4) Give role of extracellular products in fungal infections.
5) What are anti protozoal drugs?

B) Write Notes. (Any Two) **06**
1) Mechanism of action of beta lactams
2) Transferrins
3) Dengue fever

Q.3 A) Answer any one of the following questions. **08**
1) Explain Mycoplasma and cryptococcal infections.
2) Give general account on Pathogenic fungi.
3) Explain ELISA test.

B) Answer any one of the following questions. **06**
1) Give the mechanism of action of three antibiotic which inhibit protein synthesis in bacteria.
2) Write with suitable examples on Enzymes in medical diagnosis and therapy.

Q.4 A) Answer any two of the following questions. **10**
1) Describe collection, transportation and preliminary processing of clinical specimens.
2) Write on epidemiological methods - descriptive, analytical and experimental epidemiology, measurement of infection rate.
3) Explain Anaerobic bacterial infections in Human beings and therapy.

B) Answer any one of the following questions. **04**
1) Antigenic variation and bacterial virulence.
2) Dental Caries and periodontal diseases and their infectious nature.

Q.5 Answer any two of the following questions. **14**
1) Describe morphological, cultural, antigenic characters, pathogenesis, transmission, laboratory diagnosis, prevention and control of Herpes virus.
2) Give the characteristics and mode of action of toxins in Diphtheria, Cholera, *Vibrio parahaemolyticus* and endotoxins of gram negative bacteria.
3) Explain mechanism, requirements, procedure and uses of Western Blot test in diagnosis.

SLR-JQ-341

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Microbiology
MOLECULAR BIOLOGY AND GENETIC ENGINEERING

Day & Date: Monday, 18-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) PCR amplification cycle involves _____.
   A) Denaturation
   B) Primer annealing
   C) Reaction mixture containg target DNA, primer, thermostable DNA polymerase and dNTP
   D) DNA polymerization
   a) A, B and C b) A, B, C and D
   c) B, C and D d) A, C and D

2) Recombinant DNA technology is also called as _____.
   a) Biotechnology b) Nano biotechnology
   c) Genetic engineering d) Transgenic technology

3) Radioisotopes of _____ have been used extensively to trace the path of biochemical reactions.
   a) carbon b) ammonium
   c) Uranium d) Thorium

4) Restriction enzymes cut DNA at _____.
   a) The sequence CTGGTC only
   b) A site specific for each enzyme
   c) Specific short methylated sequences
   d) Sites that are 10 bases apart

5) DNA heated to well above the Tm was cooled quickly, the absorbance decreased called _____.
   a) Hypochromicity b) Phasmid
   c) Hyperchromicity d) Cosmids

6) _____ can be used to build genomic libraries.
   a) chromosome b) Cosmids
   c) Phagemids d) nucleosomes

7) To be a cloning vector plasmid does not require _____.
   a) An origin of replication b) An antibiotic resistance marker
   c) A restriction site d) Centromere

8) _____ vector include plasmids that can propogate in eukaryotes and prokaryotes.
   a) Phagemid b) Phasmid
   c) Shuttle d) Cosmids

9) BAC is derived from _____.
   a) ColE plasmid b) Mu plasmid
   c) 2 μ plasmid d) F plasmid

10) A cloning vector consisting of CoS site inserted in a plasmid used to clone DNA Segment of lambda phage is _____.
   a) BACs b) phagemid
   c) YAC d) Cosmids

11) _____ enzyme is known as Molecular scissor.
   a) exonuclease b) helicase
   c) Restriction endonuclease d) ligase

12) A DNA fingerprinting involves _____.
   a) Chain terminators b) RFLPs
   c) VNTR loci d) Degenerate oligonucleotides

13) Maxam- Gilbert sequencing requires radioactive labeling at _____ end of DNA.
   a) 5' b) 3'
   c) Both 5'&3' d) Neigher 5' nor 3'

14) _____ is not a component of YAC.
   a) Cos site b) Telomere
   c) Origin of replication d) Centromere

Q.2 A) Define and explain any four of the following questions. 08

1) Shuttle vectors.
2) Electroporation
3) RFLP
4) Replacement vectors
5) DNA Libraries

B) Write short notes. (Any Two) 06

1) Artificial plasmids
2) Transfection
3) M13 Based Vectors

Q.3 A) Answer the following questions. (Any Two) 08

1) Explain homopolymer tailing.
2) Dosage compensation
3) Briefly describe conjugation process and add a note on its significance.

B) Answer the following questions. (Any One) 06

1) Briefly describe protein sequencing and protein engineering and add a note on its significance.
2) Explain in detail role of restriction endonucleases in Genetic Engineering.

Q.4 A) Answer the following questions. (Any Two) 10

1) Briefly describe role of bacteriophage vectors in recombinant DNA technology.
2) Describe briefly the Fluctuation test and replica plate technique.
3) Explain Southern Blotting technique.

B) Answer the following questions. (Any One) **04**

1) What are Vectors? How they are significant in Genetic engineering?
2) Give brief account of cDNA libraries.

Q.5 Answer the following questions. (Any Two) **14**

a) Give an account of techniques used for screening of recombinants.
b) Explain theories of Oncogenesis.
c) What is DNA sequencing? Discuss in Sanger's method of DNA sequencing.

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Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Microbiology
BIOPROCESS TECHNOLOGY AND FERMENTATION TECHNOLOGY

Day & Date: Tuesday, 05-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) _____ is an upstream processing.
   a) Media formulation b) Product recovery
   c) Product purification d) Cell lysis

2) Prevention of Thrombosis can be done by using _____ in clinical field.
   a) Mannan b) Alginate
   c) Xanthan d) Dextran

3) Mixed culture can be maintained using chemostat cultures in _____ culture.
   a) Fed-batch b) Continuous
   c) Batch d) Biostat

4) Total time required for streptomycin fermentation is _____.
   a) 2 day b) 40 hours
   c) 5 hours d) 5 days

5) _____ is a type of whisky.
   a) Irish b) Logan
   c) Larger d) Ale

6) Androstenedione is converted into testosterone by _____.
   a) Bacillus b) Yeast
   c) Virus d) Rickettsia

7) Activated charcoal is used in _____ chromatography.
   a) Gel b) affinity
   c) adsorption d) ion exchange

8) Bruce Ames test is used for _____ testing.
   a) Carcinogenicity b) Allergy
   c) Toxicity d) Assay

9) _____ Mutagenic agent is used for strain improvement.
   a) U. V. rays b) $\propto$- rays
   c) γ – rays d) Cosmic rays

10) _____ is a white button mushroom.
   a) A. Campestris b) A. bisporus
   c) V. Volvacea d) Pleurotus spp.

11) _____ are antifoam agents used in fermentation media.
   a) Acids b) Alkalis
   c) Silicon compounds d) Cedar wood oils.

12) A company wished to ensure that no one else can use their logo as a _____.
   a) Copy right b) Patent
   c) Trade mark d) Design

13) Vitamin B12 is also called as _____.
   a) Folic acid b) Niacin
   c) Thiamin d) Cyanocobalamin

14) Recovery of Ethanol is done by _____.
   a) Distillation b) Precipitation
   c) Filtration d) Centrifugation

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is fermentation broth rheology?
2) Define synchronous growth.
3) What is function of baffles and impeller in fermenter?
4) What is batch fermentation?
5) Define primary screening.

B) Write Notes. (Any Two) **06**
1) Pyrogenicity testing
2) Sterilization of fermentation media
3) Applications of Biopolymers

Q.3 A) Answer the following questions. (Any Two) **08**
1) Scale up of fermentation process.
2) Screening of Antibiotic producers.
3) Bioethics

B) Answer the following questions. (Any One) **06**
1) Describe in detail Amylase production.
2) Describe recovery of product by chromatography.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Describe the vitamin B12 production.
2) Describe various types of fermenters.
3) Describe the pyrogenicity and toxicity testing of product.

B) Answer the following questions. (Any One) **04**
1) Describe the mushroom production.
2) Describe the designing of fermentation media.

Q.5 Answer the following questions. (Any Two) **14**
a) Describe in detail streptomycin production.
b) Describe in detail production of Whisky and Brandy.
c) Write an essay on Intellectual Property Rights.

SLR-JQ-343

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Microbiology
BIOENERGETICS AND MOLECULAR ENZYMOLOGY

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) The atoms of the pyrmidine ring are derived form _____.
   a) Carbamoyl phosphate and Aspartate
   b) Glutamine
   c) Glucose
   d) Glutamic acid

2) Phosphoglycerate kinase functions in carbohydrate metabolism to produce ATP via _____ phosphorylation.
   a) Oxidative b) Substrate level
   c) Photo d) ETC

3) Trypsins are active in _____ environment.
   a) Acidic b) Neutral
   c) Alkaline d) Hot

4) Enzymes having slightly different molecular structures but performing identical activity are _____ enzymes.
   a) iso b) Holo
   c) Apo d) Co

5) _____ enzyme is used in both glycolysis and gluconeogenesis.
   a) Hexokinase b) Glucokinase
   c) Phospho fructokinase d) 3-phosphoglycerate kinase

6) Linear inhibition is sometimes called _____ inhibition.
   a) Mixed b) Incomplete
   c) Complete d) Partial

7) Regulation of the fatty acid biosynthesis occurs at the enzymatic step catalyzed by _____.
   a) Pyruvate carboxylase b) Acetyl coA carboxylase
   c) Acetyl transferase d) Malate translocase

8) Omega oxidation of hydrocarbons leads to formation of _____ acids.
   a) Monocarboxylic b) Dicarboxylic
   c) Tricarboxylic d) Polycarboxylic

9) _____ is precursor for all sterols.
   a) Terpene b) Lipid
   c) Glycolipid d) Cholesterol

10) Enzymes of _____ class catalyse the hydrolytic cleavage of bonds in substrate.
   a) Hydrolases b) Lyases
   c) Ligases d) Transferases

11) In ED pathway net yield of ATP for every one glucose molecule is _____.
a) 1 b) 2
c) 12 d) 38

12) The protein portion of enzyme is called _____ enzyme.
a) Apo b) Co
c) Holo d) Ribo

13) Kinetic models to explain the enzyme catalyzed reactions was proposed in 1913 by _____.
a) Fisher and Khosland b) Kuhne & Khosland
c) Michaelis and Menten d) Hanes & Khune

14) _____ are end products of aerobic respiration.
a) Glucose and O_2 b) Co_2, water and energy
c) Co_2 and O_2 d) Pyruvic acid and H_2s

Q.2 A) Answer the following questions. (Any Four) **08**
1) Give the significance of Glyoxylate pathway.
2) Define allosteric enzymes and give example.
3) What K_m value?
4) Give the components of ETC.
5) What is ribozyme?

B) Write short notes. (Any Two) **06**
1) Phosphoketolase pathway
2) Active site
3) Fermentation of methane

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe biosynthesis of Pyrmidines.
2) Describe HMP pathway.
3) Describe mechanism of action of lysozyme.

B) Answer the following questions. (Any One) **06**
1) Describe in detail Extremoenzymes.
2) Derive the Michaelis- Menten equation.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Microbial degradation of aliphatic hydrocarbons.
2) Describe in detail Allosteric enzymes.
3) Describe microbial growth on C, compounds.

B) Answer the following questions. (Any One) **04**
1) Describe Lineweaver-Burke plot.
2) Degradation of aromatic compounds.

Q.5 Answer the following questions. (Any Two) **14**
a) Describe in detail TCA cycle.
b) Discuss various factors affecting enzyme action.
c) Describe the synthesis and degradation of Reserve materials.

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Microbiology
PHARMACEUTICAL MICROBIOLOGY

Day & Date: Monday, 04-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) _____ is designated to kill bacteria but does not kill endospore.
   a) Fungicide b) Viricide
   c) Sporocide d) Bactericide

2) _____ are antimicrobial agents that are applied to living objects to destroy microorganisms.
   a) Phenol b) Antiseptics
   c) Disinfectants d) Glyceraldehydes

3) The commonly used gas for sterilization process is _____.
   a) Nitrogen b) Methane
   c) Hydrogen sulphide d) ethylene oxide

4) Mechanism of inhibition of Streptomycin includes _____.
   a) Inhibition of protein synthesis b) Cell wall degradation
   c) DNA denaturation d) Blocking the transport system

5) Varicella injection is a _____ type of injection.
   a) Intravenous b) Intramuscular
   c) Subcutaneous d) Oral

6) Bacteria get resistance for aminoglycosides by _____.
   a) Change in character of porin b) Modifying enzymes
   c) Alteration of target site d) Degrading enzymes

7) ____ concerned with change in temperature required to kill specific number of microbes.
   a) L value b) D value
   c) B value d) Z value

8) Enzyme asparaginase has been used in the treatment of _____.
   a) Acute Childhood Leukemia b) Gaucher's Disease type II
   c) Gaucher's Disease type I d) Cystic Fibrosis

9) ____ use a attenuated form of the germ that causes a disease.
   a) DNA vaccines b) Killed vaccines
   c) Live vaccines d) RNA vaccines

10) _____ is the example of broad spectrum antibiotics.
   a) Ampicillin b) Azithromycin
   c) Erythromycin d) Vancomycin

11) _____ is not a semisynthetic chemotherapeutic agent.
   a) Ampicillin b) Sulfonamide
   c) Mithicillin d) Penicillin

12) _____ is a second generation cephalosporin
a) Cefaclor b) Cefotaxime
c) Cepholexin d) None of the above

13) _____ is not the example of antiseptic agent.
a) Chlorine
b) Quaternary ammonium compounds
c) Acetic acid
d) Alcohols

14) The role of _____ is to protect the integrity and quality of manufactured product intended for human use.
a) Good laboratory practices b) Good human practices
c) Good record practices d) Good manufacturing process

Q.2 A) Define and explain any four of the following questions. 08
1) synthetic peptide vaccines
2) GLP
3) Disinfectant
4) sterile injectibles
5) gene therapy

B) Write Notes. (Any Two) 06
1) Immobilization
2) D value
3) Sterilization

Q.3 A) Answer the following questions. (Any Two) 08
1) Describe in detail New vaccine technology
2) Explain how Biosensors are useful in pharmaceutical industry
3) Describe in detail action of antibiotics on bacterial protein synthesis

B) Answer the following questions. (Any One) 06
1) Explain Molecular Principles of drug targeting with examples
2) Describe in detail Mode of action of non-antibiotics antimicrobial agents.

Q.4 A) Answer the following questions. (Any Two) 10
1) Comment on “Quality Assurance and Good Manufacturing Practices (GMP) and Good Laboratory Practices”.
2) Explain drug designing process with example.
3) Discuss the various sterilization techniques employed for sterilizing the Pharmaceutical products in industries.

B) Answer the following questions. (Any One) 04
1) Describe in detail Application of microbial enzymes in pharmaceutical industries.
2) Explain in detail how the antimicrobial agents reach the targets.

Q.5 Answer the following questions. (Any Two) 14
a) What are microbial fermentations? Explain in detail production of streptodornase.
b) Discuss in brief, how should be the design and layout of sterile product manufacturing unit in pharmaceutical industries.
c) Describe in detail Amino glycosides and antitumor substances.

SLR-JQ-345

Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Microbiology
FOOD AND DAIRY MICROBIOLOGY

Day & Date: Wednesday, 06-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Food intoxication is the ingestion of _____ produced by microorganisms in food.
   a) Toxin b) Vitamin
   c) Amino acid d) Enzyme

2) Undesirable changes in food is called food _____.
   a) Decay b) Fermentation
   c) Spoilage d) Preservation

3) _____ is main protein present in milk.
   a) Albumin b) Globalin
   c) Gelatin d) Casein

4) _____ test is used for determination of efficiency of pasteurization.
   a) MBRT b) Phosphatase
   c) MPN d) IMVic

5) _____ is an example of semihard cheese.
   a) Roquefort b) Cheddar
   c) Cottage d) Limberger

6) _____ test is used for determination of microbial quality of milk.
   a) SPC b) MPN
   c) MBRT d) Phosphatase

7) _____ is a waste product from dairy industry.
   a) Molasses b) SWL
   c) CSL d) Whey

8) _____ temperature and time is used for LTH method of milk pasteurization.
   a) 71.7^{0c} for 15 seconds b) 62.8^{0c} for 30 min
   c) 140^{0c} for 2 seconds d) 200^{0c} for 1 seconds

9) _____ is an example of food infections.
   a) Salmonellosis b) Botulism
   c) Intoxication d) Tetanus

10) Full fat yogurt must contains not less than _____% milk fat.
   a) 8.25 b) 12.5
   c) 3.25 d) 0.5

11) _____ is an example of perishable food.
   a) Milk b) Sugar
   c) Potato d) Onion

12) Tainting is an anaerobic bacterial spoilage of _____.
a) Fruits b) Vegetables
c) Milk d) Meat

13) _____ are used for determination of eggs spoilage.
a) Refractometer b) Candler
c) Colorimeters d) Photometer

14) _____ organism produces ropiness in milks.
a) Bacillus subtilis b) Escherichia coli
c) Alcaligenes viscolactis d) Lactobacillus lactis

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define food poisoning.
2) Define Pasteurization.
3) List the organisms used for yogurt production.
4) Define Irradiation.
5) Give the composition of milk.

B) Write Notes. (Any Two) **06**
1) Spoilage of meat and meat products
2) Phosphatase test
3) Bulgarian sour milk

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain the preservation of food by high temperature.
2) Describe the tests used for grading of milk and food.
3) Discuss the contamination of food by harmful micro-organisms

B) Answer the following questions. (Any One) **06**
1) Describe in brief food laws and standards.
2) Describe in detail production of cheese.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Describe the microbial flavors in food and dairy industry.
2) Describe in detail milk pasteurization methods.
3) Describe in detail food as substrate for microorganisms.

B) Answer the following questions. (Any One) **04**
1) Discuss the spoilage of canned foods.
2) Describe the investigation of food borne diseases.

Q.5 Answer the following questions. (Any two) **14**
1) Discuss in brief quality and safety assurance in food and dairy industry.
2) Describe in detail spoilage of milk and milk products.
3) Write an essay an fermented food products.

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Microbiology
PRINCIPLES OF BIOINSTRUMENTATION AND TECHNIQUES

Day & Date: Friday, 08-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) _____electrophoretic procedures does not depend on the charge of the protein.
   a) Isoelectric focusing
   b) Zone electrophoresis
   c) Moving boundry electrophoresis
   d) SDS-PAGE

2) _____is used to visualize live cells.
   a) phase contrast b) TEM
   c) Cytometer d) SEM

3) Photograph which is taken from microscope is known as _____.
   a) Macrograph b) micrograph
   c) Monograph d) pictograph

4) _____has a quaternary structure.
   a) Insulin b) A-chymotrypsin
   c) Haemoglobin d) Myoglobin

5) Themal denaturation of protein involves _____.
   a) Increase in its isoelectric point
   b) Covalent modification of certain amino acids
   c) Random cleavage of pepetide bonds
   d) Conformation change in the protein

6) Object can be magnified under electron microscope about _____.
   a) 300, 000 times b) 350, 000 times
   c) 250, 000 times d) 450, 000 times

7) _____is a source used in spectroscopy.
   a) Tungsten lamp b) LASER
   c) Sodium vapour lamp d) Tube light

8) In 2D gel electrophoresis the final gel separates the proteins on the basis of.
   a) pl and MW b) Charge and pl
   c) pH and Molarity d) Charge and MW

9) In western blotting, sample proteins are separated by using _____.
   a) Gel electrophoresis
   b) Agarose gel electrophoresis
   c) SDS polyacrylamide gel electrophoresis
   d) Nitrocellulose membrane

10) Affinity chromatography deals with the.
   a) protein -lipid interaction
   b) protein -protein interaction
   c) protein –carbohydrate interaction
   d) specific binding of a protein constituent for another molecule

11) Buffers are mixture of _____.
   a) weak acid and their conjugate base
   b) Strong acid and weak base
   c) Strong acid and strong base
   d) weak base and their conjugate acid

12) The secondary structure of protein cannot be determined by _____.
   a) Circular dichroism
   b) Fluorescence spectroscopy
   c) NMR
   d) X-ray crystallography

13) _____ is an imino acid.
   a) Cysteine
   b) Glycine
   c) Proline
   d) Histidine

14) Thin layer chromatography is _____.
   a) High pressure chromatography
   b) Electric mobility of ionic species
   c) Partition chromatography
   d) Adsorption chromatography

Q.2 A) Define and explain any four of the following questions. **08**

1) Autoradiography.
2) Nephlometry.
3) Flowcytometry.
4) Affinity chromatography.
5) TEM.

B) Write short notes.(Any Two) **06**

1) Western blotting technique
2) Freeze etching
3) Ion exchange chromatography

Q.3 A) Answer the following questions.(Any Two) **08**

1) Explain in detail Electrochemical cells.
2) Describe in detail Working and applications of nanaometry.
3) Discuss in detail the principles and applications of Immnuoelectroporesis.

B) Answer the following questions.(Any One) **06**

1) Explain in detail working of fluorescence transmission electron microscopy.
2) Explain in detail working of Affinity chromatography and give its applications.

Q.4 A) Answer the following questions. (Any Two) **10**

1) Briefly describe Gas sensing electrodes.
2) What is X-ray diffraction? Explain Protein structure determination by X-ray diffraction.
3) Briefly describe Conformational properties of protein.

B) Answer the following questions.(Any One) **04**

1) Comment on HPLC.
2) Explain principle and working of SEM.

Q.5 Answer the following questions.(Any Two) **14**

a) Explain in detail the radioisotopic technique. Comment on its applications.

b) Explain the working of U. V. –Visible spectrophotometer and give its applications.

c) Comment on Phase contrast Microscopy.

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Microbiology
HEALTH CARE AND DIAGNOSTIC MICROBIOLOGY

Day & Date: Monday, 11-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Streptomycin binds _____ subunit of bacterial ribosome.
   a) 60 s b) 50 s
   c) 40 s d) 30 s

2) _____ shows synergistic action with Trimethoprim.
   a) Penicillin b) Streptomycin
   c) Sulphonamides d) Tetracyclin

3) Amphotericin B acts on _____.
   a) Bacteria b) Actinomycetes
   c) Fungi d) Viruses

4) Which of the following antibiotic affect protein synthesis?
   a) Actinomycin D b) Vancomycin
   c) Chloramphenicol d) Sulphonamides

5) _____ causes ADP ribosylation of elongation factor 2 leads to inhibition of protein synthesis in target cells.
   a) Diphtheria toxin b) Botulinum toxin
   c) *Escherichia coli* endotoxin d) Erythrogenic toxin

6) Adenylate cyclase activity is observed with _____ toxin.
   a) cholera b) diphtheria
   c) tetanus d) endotoxins

7) _____ acts as folic acid intermediate antagonists.
   a) Trimethoprim b) Sulphonamides
   c) both (a) and (b) d) None of these

8) Gentamicin is an antibiotic produced by _____.
   a) Streptomyces b) Penicillium
   c) Streptoverticillium d) Micromonospora

9) Which of the following is NOT a semisynthetic chemotherapeutic agent?
   a) Chloramphenicol b) Penicillin
   c) Carbanicillin d) Ampicillin

10) Exotoxins are typically _____.
   a) Carbohydrates b) Proteins
   c) Lipids d) Polysaccharides

11) Which of the following bacterium produces neurotoxin causing flaccid paralysis?
   a) C. *tetani* b) *V. choleriae*
   c) *C. diphtheriae* d) *S. aureus*

12) Streptomycin antibiotic inhibits _____ synthesis.
a) cell wall b) Protein
c) Membrane d) DNA

13) Which of the following is NOT true for exotoxins?
a) They can be converted to toxoids
b) They rarely have enzymetic activity
c) They can cause toxaemia
d) The exotoxins can work by binding and entering the host cell

14) _____ is the mechanism of antibiotic resistance.
a) Decreased cell wall permeability to antibiotics
b) Enzymatic deactivation of antibiotics
c) Altered target sites of antibiotic
d) All of these

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is carcinogenicity testing?
2) How saponins are detected by chemical test?
3) Write any two differences between exotoxins and endotoxins.
4) Write any two applications of RIA.
5) Describe mechanism of action of polymyxin antibiotic.

B) Answer the following questions. (Any Two) **06**
1) Describe the mechanisms of adhesioin
2) Discuss the role of FDA in pharma industries
3) Transmission of infection

Q.3 A) Answer the following questions. (Any Two) **08**
1) Factors affecting antimicrobial assay techniques in liquid media.
2) PCR
3) FISH

B) Write Notes on (Any One) **06**
1) Microbial toxins.
2) Antiviral agents.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Solvent extraction of bioactive molecules.
2) Antimicrobial assay by agar diffusion method.
3) Chemical methods for detection of alkaloids, flavonoids and saponins.

B) Answer the following questions. (Any One) **04**
1) ELISA
2) Mechanism of action of cycloserine, vancomycin and β-lactams.

Q.5 Answer the following questions. (Any Two) **14**
a) Discuss in detail the methods used in diagnostic microbiology.
b) Write in detail on ‘Mechanism of action of antibiotics inhibiting proteins synthesis.
c) Discuss in detail ‘Bacterial virulence factors’.

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Seat No.	

Set P

M.Sc. (Semester - IV) (CBCS) Examination Oct/Nov-2019
Microbiology
RECOMBINANT DNA TECHNOLOGY

Day & Date: Monday, 11-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat labeled diagrams wherever necessary

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) _____ enzyme adds phosphate group from ATP to 5'OH end of DS or SS DNA or RNA.
   a) Acid phosphatase b) Alkaline phosphatase
   c) Polynucleotide kinase d) Ligase

2) _____ type of restriction enzyme most commonly used in r-DNA technology.
   a) Type I b) Type II
   c) Type III d) Type IV

3) _____ enzyme is used in r DNA technology for progressive shortening of DNA.
   a) Exonuclease III b) BAL 31 nuclease
   c) S1 nuclease d) DNA polymerase I

4) BAC is derived from _____.
   a) ColE plasmid b) Mu plasmid
   c) pPUC19 plasmid d) F plasmid

5) _____ is a hybrid plasmid that contains λ cos sites at each end.
   a) Phasemid b) λ EMBL
   c) Cosmid d) λ blue print vector

6) λ EMBL4 is a _____ vector.
   a) Plasmid b) Deletion
   c) Insertion d) Replacement

7) Recombinant DNA technology is also called as _____.
   a) Biotechnology b) Nano biotechnology
   c) Genetic engineering d) Transgenic technology

8) _____ is not a component of YAC.
   a) Cos site b) Telomere
   c) Origin of replication d) Centromere

9) In 1968, scientist _____ discovered existence of restriction enzymes.
   a) Stanley Cohen b) Daniel Nathans
   c) Kary Mullis d) Werner Arber

10) _____ enzyme synthesizes DNA strand by using RNA as a template.
   a) Primase b) RNA polymerase
   c) Reverse transcriptase d) DNA polymerase II

11) Maxam- Gilbert sequencing requires radioactive labeling at _____ end of DNA.
   a) 5’ b) 3’
   c) Both 5’ & 3’ d) Neither 5’ nor 3’

12) Restriction enzymes cut DNA at _____.
   a) The sequence CTGGTC only
   b) A site specific for each enzyme
   c) Specific short methylated sequence
   d) Sites that are 10 bases apart

13) _____ plasmid vector is constructed from RSF2124, pSC 101 and pMB1 natural plasmids.
   a) pTi b) pBR322
   c) pBR329 d) pUC19

14) _____ can be used to build genomic libraries.
   a) Chromosome b) Cosmids
   c) Phagemids d) Nucleosomes

Q.2 A) Define and explain any four of the following questions. **08**
1) Recognition sequences
2) Ligation
3) RFLP
4) GEMS
5) Cosmids

B) Write short notes. (Any Two)
1) Restriction endonucleases
2) DNA polymerase
3) λ blue print vectors

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe cDNA libraries.
2) Describe Phage lambda (λ) as a vector.
3) Discuss DNA ligase.

B) Answer the following questions. (Any One) **06**
1) Describe briefly the genomic DNA libraries.
2) Chromosome walking.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Discuss the plasmid vectors and their properties.
2) Describe cloning and production of insulin.
3) Describe type II endonucleases.

B) Answer the following questions. (Any One) **04**
1) Automated sequencing.
2) Application of RFLP in forensic.

Q.5 Answer the following questions. (Any Two) **14**
1) Discuss briefly techniques used in recombinant DNA technology.
2) Describe PCR method and its Applications.
3) Describe PBR 322 - its construction and derivatives.

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Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Microbiology
IMMUNOLOGY AND IMMUNOTECHNOLOGY

Day & Date: Thursday, 07-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) T cell surface receptors for antigen partly recognize _____.
   a) Cytokines b) MHC
   c) Antibody d) ADCC

2) T- helper cells carry _____molecules as its specific marker.
   a) CD4 b) CD8
   c) CD9 d) CD3

3) The MHC is a collection of genes located on chromosome No. _____in humans.
   a) 15 b) 17
   c) 6 d) None of these

4) In an autoimmune disease pernicious anemia, antibodies are produced against _____.
   a) Folic acid b) Vitamin B12
   c) Intrinsic factor d) None of these

5) _____ cell has maximum phagocytic activity.
   a) Mast cells b) Basophil
   c) Monocyte d) Macrophage

6) MHC class I molecules are present on surface of _____.
   a) Only platelets b) All nucleated cells
   c) Only antigen presenting cells d) RBCs

7) In case of cancer TNM stands for _____.
   a) Tumour, Node, Metastases.
   b) Temperature, Metabolism, Nutrition.
   c) Tumour, Nerve, Metastases.
   d) Tumour, None, Metastases.

8) Cytokines _____.
   a) are lymphokines
   b) are monokines
   c) help to control & regulate immune
   d) all of these

9) Autoantibodies against acetyl-choline receptors are produced in _____.
   a) Rheumatoid arthritis b) Myasthenia gravis
   c) Goodpasture's syndrome d) Pernicious anemia

10) Immunity mediated by antibodies produced in the human or body fluids such as plasma or lymph is known as _____ immunity.
a) cell mediated b) Humoral
c) Natural active d) Artificial active

11) IgE _____.
a) is abundant in saliva b) Binds strongly to mast cells
c) cannot bind to macrophages d) activates the complement cascade

12) The failure to reject or inactivate self reactive cells results in _____.
a) Autoimmunity b) positive selection
c) negative selection d) suppression

13) Contact dermatitis and allergy of infection are an example of _____ hypersensitive reaction.
a) Type I b) Type - II
c) Type – III d) Type - IV

14) _____ is secondary lymphoid organ.
a) MALT b) Spleen
c) Lymph node d) All of these

Q.2 A) Answer the following questions.(Any Four) **08**
1) Primary and secondary lymphoid organs.
2) Innate immunity.
3) Antibody diversity.
4) Antigen presenting cells.
5) B lymphocytes.

B) Write Notes on. (Any Two) **06**
1) Autoimmunity
2) Signal transduction
3) T-Cell receptors

Q.3 A) Answer the following questions.(Any Two) **08**
1) Immunodeficiency disorders.
2) Properties and Immunoregulatory role of cytokines.
3) Immune system components in vertebrates.

B) Answer the following questions.(Any One) **06**
1) Western blotting
2) HLA typing

Q.4 A) Answer the following questions.(Any Two) **10**
1) Use of Anti nuclear antibody (ANA) test.
2) Properties of normal and cancerous cells.
3) Regulation of immune response.

B) Answer the following questions.(Any One) **04**
1) Acquired immunity.
2) MHC.

Q.5 Answer the following questions.(Any Two) **14**
a) Role of cytokines.
b) Cancer immunotherapy.
c) Natural killer (NK) cells.