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**M.Sc. (Microbiology) (Semester – I) (New) (CBCS) Examination, 2017**  
**Cytology and Taxonomy of Microorganisms**

Day & Date: Tuesday, 25-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :** 1) Q.1, Part - I is compulsory.  
 2) From Part - II, attempt any 4 questions.  
 3) Part - I & Part - II should be written in same answer book.

**PART - I**

**Q.1 A) Rewrite the sentences by choosing correct answers: 14**

- 1) \_\_\_\_\_ Organ of bacteria is useful for adhesion.  
 A) Cellwall      B) Capsule      C) Flagella      D) Fimbriae
- 2) Bacterial phylogeny is based on \_\_\_\_\_ analysis.  
 A) 16 S rRNA      B) G+C content      C) DNA melting      D) Morphology
- 3) L-forms of bacteria are likely resistant to \_\_\_\_\_ antibiotics  
 A) Streptomycin      B) Penicillin      C) Erythromycin      D) Chloromycetin
- 4) \_\_\_\_\_ contains cellulose in cell wall.  
 A) Mycoplasma      B) Bacteria      C) Algae      D) Viruses
- 5) Azotobacter is independent \_\_\_\_\_ fixer.  
 A) Nitrogen      B) Sulphar  
 C) Phosphorous      D) Iron.
- 6) \_\_\_\_\_ is connecting link between bacteria & fungi.  
 a) Actinomycetes      b) Algae  
 c) Viruses      d) Rickettsia
- 7) In salmonella typhi, typhi indicates name of \_\_\_\_\_  
 a) Disease      b) Symptoms  
 c) Genus      d) Species
- 8) \_\_\_\_\_ is protein rich alga.  
 A) Cytonema      B) Coenozygote      C) Spirulina      D) Cyanobacteria
- 9) Motility of bacteria is \_\_\_\_\_ character used in taxonomy.  
 A) Cultural      B) Morphological      C) Biochemical      D) Serological
- 10) \_\_\_\_\_ are types of archaebacteria.  
 a) Methanogen bacteria      b) Bacillus  
 c) E. coil      d) Proteus.



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**M.Sc. (Microbiology) (Semester – I) (New) (CBCS) Examination, 2017**  
**MICROBIAL CHEMISTRY AND ENZYMOLOGY**

Day & Date: Tuesday, 25-04-2017      Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**N.B.** :1) part- I, questions 1 is compulsory.

2) Attempt **any four** questions from **Part - II**

3) Figures to the **right** indicate **full** marks.

4) Draw well rebilled diagrams wherever necessary.

**Q.1 A) Rewrite the sentences by choosing correct given below: 14**

1) \_\_\_\_\_ is oligomeric enzyme.

- A) Protease      B) Serine      C) Protease      D) Peptidase

2) \_\_\_\_\_ is allosteric enzyme.

- A) Aspartate lyase  
B) Aspartate hydrolase  
C) Aspartate oxidase  
D) Aspartate carbomyl transferase

3) When fats are added in water they convened into droplets and dispersed the process is called \_\_\_\_\_

- A) Saponification    B) Rancidity    C) Hydrolysis    D) Emulsification

4) Glycogen and starch are \_\_\_\_\_

- A) Monosaccharide  
B) Disaccharide  
C) Homopolysucchrude  
D) Heteropolysaccharide

5) Pyrimidine and thiazide present in \_\_\_\_\_

- A) Vitamin K      B) Vitamin D  
C) Vitamin A      D) Vitamin B

6) Muscle contain \_\_\_\_\_

- a) Myoglobin      b) Mycolic acid  
c) Myoglobin      d) Mixoglobin

7) Bond between hemoglobin and oxygen is \_\_\_\_\_

- a) Irreversible      b) Ester  
c) Ether      d) Covalent

- 8) \_\_\_\_\_ is Ketoses  
 A) Fructose                      B) Glucose                      C) Galactose                      D) Maltose
- 9) Rickets is caused due to deficiency of \_\_\_\_\_  
 A) Vitamin B    B) Vitamin A                      C) Vitamin D                      D) Vitamin C
- 10) Maltose is \_\_\_\_\_  
 a) Monosaccharide                      b) Oligosaccharide  
 c) Disaccharide                      d) Polysaccharide
- 11) \_\_\_\_\_ hetero polysaccharide functions as tissue cements.  
 a) Hyaluronic acid                      b) Starch  
 c) Glycogen                      d) Cellulose.
- 12) \_\_\_\_\_ is called provitamin.  
 a) Niacin                      b) Carotene  
 c) Biotin                      d) Thiamine
- 13) Chymotrypsin, trypsin, elastase are examples of \_\_\_\_\_ enzymes.  
 A) Monomeric                      B) Chimeric                      C) Oligomeric                      D) Trimetric
- 14) \_\_\_\_\_ is immoacid.  
 A) Glutamine    B) Glutamic acid                      C) Praline                      D) Aspartic acid

## PART II

- Q.2**                      Give brief account of structure and nomenclature of carbohydrates.                      **14**
- Q.3**                      What is chemical and enzyme kinetics give an account of Briggs & Holden modification                      **14**
- Q.4**                      Discuss different methods used to identify functional groups in the active site.                      **14**
- Q.5**                      **Write short answers Any Two**                      **14**  
 1) Significance of  $m$  equation &  $k_m$   
 2) Functions of Vitamins  
 3) Steroids and trepans.
- Q.6**                      **Write short answers Any Two**                      **14**  
 1) Role of metal ions in enzyme function  
 2) Multienuymes.  
 3) Transition state theory.

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**M.Sc. (Microbiology) (Semester – I) (New) (CBCS) Examination, 2017  
RECENT TRENDS IN VIROLOGY.**

Day & Date: Saturday, 22-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B.:** 1) Part- I, Questions 1 is **compulsory**.  
2) Attempt **any 4** questions from **Part - II**  
3) Figures to the **right** indicate **full** marks.

**PART I**

**Q.1 A) Rewrite the sentence by choosing correct alternative from the following: 14**

- 1) \_\_\_\_\_ has both RNA and DNA as its genome.
 

|                       |                          |
|-----------------------|--------------------------|
| a) HIV                | b) Human cytomegalovirus |
| c) Raus sarcoma virus | d) Reovirus              |
  
- 2) The only virus which has double stranded RNA is \_\_\_\_\_
 

|               |                |
|---------------|----------------|
| a) Bunyavirus | b) Reovirus    |
| c) Calcivirus | d) Rhabdovirus |
  
- 3) \_\_\_\_\_ lacks protective capsid around the nucleic acids.
 

|                 |                  |
|-----------------|------------------|
| a) Slow viruses | b) Viroids       |
| c) Prions       | d) Naked Viruses |
  
- 4) Hubner and Todaro proposed \_\_\_\_\_ theory.
 

|             |                     |
|-------------|---------------------|
| a) Provirus | b) Proto virus      |
| c) Oncogene | d) Somatic mutation |
  
- 5) Elution process is observed in \_\_\_\_\_ virus.
 

|            |              |
|------------|--------------|
| a) Rubella | b) Influenza |
| c) Mumps   | d) Picorna   |
  
- 6) Koplik's spots are found in \_\_\_\_\_ disease.
 

|             |              |
|-------------|--------------|
| a) Polio    | b) Cancer    |
| c) Measeles | d) Influenza |
  
- 7) Potato spindle tuber disease is caused by \_\_\_\_\_
 

|            |           |
|------------|-----------|
| a) Virus   | b) Prions |
| c) Viroids | d) Exons  |
  
- 8) The capsid of picornaviruses is made up of \_\_\_\_\_ capsomers.
 

|       |       |
|-------|-------|
| a) 32 | b) 10 |
| c) 8  | d) 2  |

- 9) Yolk sac is useful for cultivation of \_\_\_\_\_ virus.  
 a) TMV      b) Rabies      c) Herpes simplex      d) Plant
- 10) \_\_\_\_\_ is most accurately describes a latent infection caused by a virus.  
 a) The virus replicates in the host and the host cell is usually killed by the release of the progeny viruses.  
 b) The virus genome has into the host cell, and possibly transformed the cells into tumor cells.  
 c) The viral genome is inside the cell, but the genome is not replicating or the virus is not doing harm to the cell.  
 d) The virus replicates in the host cell, and slowly releases virus progeny with very few of the infected cells dying.
- 11) \_\_\_\_\_ is suitable for cultivation of plant viruses.  
 a) Embryonated chicken Egg      b) Tissue culture  
 c) Lab animals      d) Tumor cells
- 12) In lambda ( $\lambda$ ) phage \_\_\_\_\_ gene is responsible for the host cell lysis.  
 a) Q      b) A  
 c) R      d) b2
- 13) Antiviral substance produced in human body is \_\_\_\_\_  
 A) Antibody      B) Antigen      C) Interferon      D) immunogenic
- 14) \_\_\_\_\_ is a temperate phage.  
 A)  $\Theta$ X174      B) T4      C) T3      D)  $\lambda$

## PART II

- Q.2** Take a detail account on structure, genomic organization, pathogenesis and control of RNA Animal viruses with suitable example. **14**
- Q.3** Write an essay on multiplication of Bacteriophages. **14**
- Q.4** **Write short answer on Any Two of the following:** **14**  
 A) Briefly explain Ontogenesis.  
 B) Briefly describe Neutralization of viruses by antibody and interferon.  
 C) What is ICTV & ICNV? Describe in brief cataloging of viruses.
- Q.5** **Write short answers (any two):** **14**  
 A) Draw labeled diagram of the influenza virus and add a note on its pathogenesis.  
 B) Briefly describe genomic replication of DNA and RNA animal viruses.  
 C) What are Prions? Explain how they are differ from viroids.
- Q.6** **Write short answers any two:** **14**  
 A) Insect viruses.  
 B) Genetic analysis of viruses by classical genetic method.  
 C) ELISA.



- 8) \_\_\_\_\_ is a type of planar chromatography.  
 a) Gas Liquid Chromatography      b) Affinity Chromatography  
 c) Thin Layer Chromatography      d) HPLC
- 9) Which gel is commonly used for the separation of DNA molecules  
 \_\_\_\_\_  
 a) Agar    b) polyAcrylamide    c) Agarose    d) Ethidium bromide
- 10) Svedberg is a unit of \_\_\_\_\_  
 a) Gravitational force      b) Sedimentation rate  
 c) Retention time      d) Elution rate
- 11) Which of the following is used as binding agent in TLC \_\_\_\_\_  
 a) Calcium Chloride      b) Calcium Sulfate  
 c) Cobalt Chloride      d) Magnesium Chloride
- 12) Ion exchange chromatography is based on \_\_\_\_\_  
 a) Partition      b) Adsorption  
 c) Electrostatic attraction      d) Electrical mobility
- 13) Diethylaminoethyl cellulose (DEAE-Cellulose) is an example of \_\_\_\_\_  
 a) Anion exchanger      b) Cation Exchanger  
 c) Both a) & b)      d) None of the above
- 14) In SDS-PAGE, separation is based on \_\_\_\_\_  
 a) Size      b) Shape      c) Molecular      d) Density

## PART II

- Q.2** Write an essay on SDS-PAGE technique for protein separation **14**
- Q.3** What is enrichment? Explain various methods involved in enrichment and isolation of bacteria. **14**
- Q.4** Briefly describe what is Chromatography? Write in detail Gas Liquid **14**
- Q.5** **Write short answers (any two)** **14**  
 a) Briefly describe 2D Electrophoresis  
 b) Making a Oral presentation  
 c) Discuss the roles of SDS, TEMED & Coomassie Brilliant Blue in electrophoresis
- Q.6** **Write short answers any two.** **14**  
 a) Thin Layer chromatography  
 b) Iso-electric focusing  
 c) IMRAD system



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**M.Sc. Microbiology (Semester – II) (New) (CBCS) Examination, 2017  
MICROBIAL GENETICS**

Day & Date: Wednesday, 19-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

- N.B. :**
- 1) *Part-I, Questions NO.1 Compulsory.*
  - 2) *Attempt any 4 questions from Part II.*
  - 3) *Figures to the right indicate full marks.*
  - 4) *Answer to the Part I and Part II are to be written in same answer booklet only.*

**(Part-I)**

**Q.1 Choose the correct alternative given in the bracket.**

**14**

- 1) \_\_\_\_\_ enzyme produces negative superhelicity and removes the positive developed during replication.
  - a) Topoisomerase
  - b) DNA gyrase
  - c) DNA polymerase I
  - d) DNA polymerase II
  
- 2) Overlapping genes are found in \_\_\_\_\_.
  - a) x 174
  - b) E. coli
  - c) T<sub>4</sub> bacteriophage
  - d) MS<sub>2</sub>
  
- 3) The law of purity of gametes is also known as Mendel's \_\_\_\_\_ law of heredity.
  - a) First
  - b) Second
  - c) Third
  - d) Fourth
  
- 4) DNA sequences containing transposase gene flanked by inverted repeats are called \_\_\_\_\_.
  - a) IS elements
  - b) Simple transposons
  - c) Composite transposons
  - d) Phage elements
  
- 5) Synthesis of RNA primers for DNA chain elongation is carried out by \_\_\_\_\_.
  - a) RNA polymerase
  - b) RNA primase
  - c) DNA polymerase
  - d) RNA transcriptase
  
- 6) In A form of DNA, one turn of helix consists of \_\_\_\_\_ base pairs.
  - a) 10
  - b) 11
  - c) 9.33
  - d) 8
  
- 7) \_\_\_\_\_ has the smallest chromosome?
  - a) Mycobacterium,
  - b) E. coli,
  - c) Salmonella,
  - d) Mycoplasma

- 8) According to Oparin's theory source of energy for different chemical reaction leading to formation of 'primordial soup' was\_\_\_\_\_.
- From volcanoes, electrical discharges & solar energy
  - None of these
  - Only heat from volcanoes
  - Only electrical discharges
- 9) Each DNA has \_\_\_\_\_ reading frames.
- 1,
  - 2,
  - 3,
  - 6
- 10) Site specific recombination requires an enzyme recombinase which identifies a unique DNA sequence of \_\_\_\_\_.
- 2-20 bases,
  - 200-2000 bases,
  - 20-200 bases,
  - None
- 11) In PCR \_\_\_\_\_ DAN polymerase is used.
- Type I,
  - Type II,
  - Type III,
  - Type IV,
- 12) Most abundant class of organisms on earth are \_\_\_\_\_.
- Insects
  - Plants,
  - Parasites of unicellular organisms (UOPs)
  - Bacteria
- 13) The replicon encoding genes essential for the cell survival is called as \_\_\_\_\_.
- Genome
  - Chromosome
  - Codon
  - Proteome
- 14) Cairn's model of DNA replication explains mode of DNA replication in \_\_\_\_\_ DNA.
- Single stranded linear
  - Double stranded linear
  - Single stranded Circular
  - Double stranded circular

**PART-II**

- Q.2** What is genetic complementation? Explain in detail intergenic and intragenic complementation and add a note on cis-trans test of genetic function. **14**
- Q.3** What is finger printing? Explain the techniques and applications of DNA foot printing and DNA finger printing. **14**
- Q.4** Give the detailed account of detection, purification, amplification and rearrangement of plasmids. **14**
- Q.5 Write in short on any Two of the following:** **14**
- Types and properties of genetic code.
  - One gene one polypeptide hypothesis.
  - Discuss the rolling circle model of DNA replication.
- Q.6 Write short notes on any TOW of the following:** **14**
- Alternative forms of DNA.
  - Describe Operon model with reference to lac operon.
  - Post transcriptional in Prokaryotes.





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**M.Sc.(Microbiology) (Semester-II) (New) (CBCS) Examination, 2017  
Microbial Physiology And Metabolism**

Day & Date: Monday, 24-04-2017

Max. Marks: 70

Time: 10.30 AM to 01.00 PM

**Instructions :**

- 1) From Part-I, Question-1 is compulsory
- 2) Attempt any four questions from Part-II
- 3) Figures to the right indicate full marks.
- 4) Draw neat and diagrams wherever required.

**PART – I**

**Q.1 A) Choose the correct answers from given alternatives. 14**

- 1) Photosynthetic apparatus in cyanobacteria contain three proteins collectively called.....
 

|                    |                   |
|--------------------|-------------------|
| A) Galactoproteins | B) Chromoproteins |
| C) Phycobilisomes  | D) Phycomycins.   |
  
- 2) ..... are transported by group translocation
 

|             |               |
|-------------|---------------|
| A) Proteins | B) Aminoacids |
| C) Fats     | D) Sugars     |
  
- 3) NAD and NADH are ..... For dehydrogenases
 

|               |                |
|---------------|----------------|
| A) Cofactors  | B) Coenzymes   |
| C) Apoenzymes | D) Holoenzymes |
  
- 4) ..... enzyme involved in conversion of nucleosides to nucleotides
 

|                          |                           |
|--------------------------|---------------------------|
| A) Nucleoside oxides     | B) Nucleoside kinas       |
| C) Nucleoside reeducates | D) Nucleoside transferees |
  
- 5) TCA cycle is major route of ATP generation in .....
 

|                     |                      |
|---------------------|----------------------|
| A) Chemolithotrophs | B) Chemoheterotrophs |
| C) Phototrophs      | D) Aeroheterotrophs  |
  
- 6) Cytochromes are conjugated proteins consisting..... as prosthetic group.
 

|           |          |
|-----------|----------|
| A) Amino  | B) Acyl  |
| C) Formyl | D) Heame |
  
- 7) Phosphotransferase also regulate..... enzyme
 

|                       |                        |
|-----------------------|------------------------|
| A) Adenylate cyclease | B) Adenylate oxidase   |
| C) Adenylate kinase   | D) Adenylate reductase |

- 8) Phycobilins are water soluble open chain.....  
 A) Tetraphytols                      B) Phytols  
 C) Tetra pyrroles                      D) Octa pyrrols
- 9) A revolving door model of active transport has been proposed to explain the passage of ..... through cell membrane.  
 A) Glucose                              B) Lactose  
 C) Maltose                              D) Sucrose
- 10) ..... shows similarities with the probable ancestor of mitochondria  
 A) Dipiococcus                      B) Micrococcus  
 C) Paracoccus                      D) Mitococcus
- 11) Keto acids are converted to leucine moles by tranamination of .....  
 A) Aspomate                      B) Pyruvate  
 C) Glutamate                      D) Glutamine
- 12) When fats are added in water, they are converted into droplets and get dispersed, the process is called.....  
 A) Saponification                      B) Rancidity  
 C) Hydrolysis                      D) emulsification
- 13) ..... is nothing but microbial hormone  
 A) Pheromone                      B) Provitamin  
 C) Prostaglandin                      D) Phosphalipid
- 14) Osmosis is flow of solvent from region of ... to ... solute conc<sup>n</sup>.  
 A) Low to low                      B) Low to high  
 C) High to high                      D) High to low

## PART - II

- Q2** Write in detail on concept and components of ETC. **14**
- Q3** Give an account on steps in TCA cycle and anapleurotic reductions. **14**
- Q4** Write in brief on biosynthesis of amino acids **14**
- Q5** **Write in short on Any TWO** **14**  
 i) Oxygen toxicity  
 ii) Simple and facilitated diffusion  
 iii) Theories of ATP generation
- Q6** **Write in short on Any TWO** **14**  
 i) Acid permiases and their significance  
 ii) Drug metabolism  
 iii) Amphibolic nature of TAC













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**M.Sc. Microbiology (Semester – Iv) (New) (CBCS) Examination, 2017  
WASTE MANAGEMENT TECHNOLOGY**

Day & Date: Friday, 21-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- N.B. :** 1) *Part- I, Questions NO.1 Compulsory.*  
 2) *Attempt any 4 questions from Part II*  
 3) *Figures to the right indicate full marks.*  
 4) *Answer to the Part I and Part II are to be written in Same answer booklet only.*

**Part-I**

**Q.1 A) Rewrite the following sentences by selecting correct answer from given alternatives: 14**

- 1) Melanoidin pigments are present in \_\_\_\_\_ industry waste water water.
 

|                   |               |
|-------------------|---------------|
| a) Paper and pulp | b) Cyanide    |
| c) Textile        | d) Distillery |
  
- 2) Oil and grease present in industrial wastes are generally removed by \_\_\_\_\_ process.
 

|                         |                             |
|-------------------------|-----------------------------|
| a) Chemical coagulation | b) Physical                 |
| c) Chlorination         | d) Activated sludge process |
  
- 3) EL Nion effect is observed in \_\_\_\_\_.
 

|           |          |
|-----------|----------|
| a) Oceans | b) Rives |
| c) Ponds  | d) Wells |
  
- 4) In \_\_\_\_\_ type of lake balance between activity of producer organisms and consumer organisms is equal.
 

|                |                 |
|----------------|-----------------|
| a) Eutrophic   | b) Oligotrophic |
| c) Mesotrophic | d) All of these |
  
- 5) Eathworms are generally used for the process of \_\_\_\_\_.
 

|                 |               |
|-----------------|---------------|
| a) Green manure | b) Wormi      |
| c) Vermi        | d) Night Soil |
  
- 6) The primary technique used in gathering audit information is \_\_\_\_\_.
 

|                      |                     |
|----------------------|---------------------|
| a) Documentation     | b) Audit interviews |
| c) Public disclosure | d) Presentation     |
  
- 7) ISI tolerance limit of BOD for industrial waste effluents discharged into public swer is \_\_\_\_\_ ppm
 

|        |        |        |         |
|--------|--------|--------|---------|
| a) 100 | b) 200 | c) 500 | d) 1000 |
|--------|--------|--------|---------|

- 8) \_\_\_\_\_ method is used for industrial waste treatment by GEM.  
 a) Activated sludge process                      b) Biomethanation  
 c) Bioaugmentation                                  d) Biofilm
- 9) The solubility of oxygen is very high at \_\_\_\_\_ °C temperature.  
 a) 10                                      b) 20                                      c) 30                                      d) 40
- 10) In industrial waste treatment \_\_\_\_\_ organism is responsible for bulking of sludge.  
 a) Fungi    b) Protozoa  
 c) Rickettsia    d) Bacteria
- 11) Generally paper and pulp industry waste contains \_\_\_\_\_ % of lignin.  
 a) 10-20    b) 20-40  
 c) 50-60    d) 70-80
- 12) \_\_\_\_\_ gas is mainly responsible for green house effect.  
 a) Oxides of nitrogen                                      b) Carbon dioxide  
 c) Ozone    d) Oxides of sulphur
- 13) Inactivated sludge process, the floc formation is enhanced by \_\_\_\_\_  
 a) Dyes    b) Spargers  
 c) Proteins    d) Metal ions
- 14) For effective aerobic biological treatment process, the BOD:N:P ration must be maintained at \_\_\_\_\_  
 a) 100:50:10    b) 100:50:1  
 c) 100:5:1    d) 100:0:5:1

## PART-II

- Q.2** Write an essay on water tracing. **14**
- Q.3** Discuss in detail critical operating parameters in industrial waste treatment. **14**
- Q.4** Write in detail novel method for pollution control with reference to vermicomposting and root zone process. **14**
- Q.5** Write in short on any **TWO** of the following: **14**  
 1) Characterization of distillery waste.  
 2) EL Nino and Acid rain  
 3) Enzymes and pollution
- Q.6** Write short notes on any **TOW** of the following: **14**  
 1) ELA and EA  
 2) Bioaugmentation  
 3) Types of biological treatments



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**M.Sc. Microbiology (Semester–IV) NEW (CBCS) Examination, 2017  
AGRICULTURAL MICROBIOLOGY**

Day & Date: Monday, 24-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- Instructions :** 1) Part-I, Q.1 is compulsory.  
 2) Attempt any four questions from Part-II  
 3) Figures to the right indicates marks.  
 4) Answers to the Part-I & Part-II should be written in same answer book.

**PART-I**

**Q.1 A) Rewrite the following sentences by selecting correct answer from given alternatives. 14**

- 1) The conversion of molecular nitrogen into ammonia is known as .....  
 a) Ammonification                      b) Nitrogen Fixation  
 c) Denitrification                      d) Nitrate reduction.
  
- 2) Mycorrhiza is symbiotic association between the roots of plant and .....  
 a) Algae                                      b) Bacteria  
 c) Fungi                                      d) Viruses
  
- 3) Clay soil have ..... water holding capacity.  
 a) Strong                                      b) Zero  
 c) Low                                        d) Medium
  
- 4) ..... is an example of sulfur oxidizing bacteria.  
 a) Rhizobium                              b) Azotobacter  
 c) Pseudomonas                        d) Thiobacillus.
  
- 5) Nodules of legumes are distinctly red in colour because of presence of.....  
 a) Leghemoglobin                      b) Nitrogenase  
 c) Rhizophore                            d) Ammonia.
  
- 6) In tissue culture technique.....is used for surface sterilization of starting material.  
 a) NaCl                                        b) HCl  
 c) NaOH                                      d) HgCl<sub>2</sub>

- 7) ..... is used to control insect pests as bioinsecticide.  
 a) Pseudomonas                      b) E-coli  
 c) Salmonella                         d) B-thuriangiensis
- 8) In soil ..... Is dominant substance as a chemical component.  
 a) Silicon dioxide                      b) Phosphorous  
 c) Sulfur                                 d) Nitrogen
- 9) In plants.....is acts as metal activator for enzymes.  
 a) Boron                                 b) Zinc  
 c) Sodium                                d) Chlorine
- 10) .....is common nitrogen fixer in paddy fields.  
 a) Rhizobium                            b) Frankia  
 c) Azospirillum                        d) Azotobacters
- 11) Iron sulphides and manganese oxides gives ..... colour to the soil.  
 a) Black                                 b) Red  
 c) Yellow                                 d) Green
- 12) ..... is the product of composting using various species of worms  
 a) Green manure                        b) Chemical fertilizer  
 c) Biofertilizer                         d) Vermicompost
- 13) C : N ratio for Micro Geological decomposition of organic matter (humus) is roughly.....  
 a) 10 : 1                                 b) 1 : 10  
 c) 30 : 10                                d) 10 : 30
- 14) The organic debris layer of soil is called.....  
 a) O horizon                              b) A horizon  
 c) B horizon                              d) C horizon

### PART - II

- |           |   |           |
|-----------|---|-----------|
| <b>Q2</b> | Write an essay on Biofertilizers.   | <b>14</b> |
| <b>Q3</b> | Describe in detail Carbon Cycle.  | <b>14</b> |
| <b>Q4</b> | Describe in detail Biopesticides  | <b>14</b> |
| <b>Q5</b> | Write any two of the following.<br>i) Plant tissue culture<br>ii) Nitrogen Cycle<br>iii) Phizosphere and phyioshere | <b>14</b> |
| <b>Q6</b> | Write any two of the following<br>i) Green Manure   | <b>14</b> |



- ii) Physicochemical and biological properties of soil.
- iii) Root nodule

|          |  |
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| Seat No. |  |
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**M.Sc Microbiology (Semester-IV) (New) (CBCS) Examination, 2017  
FOOD AND DAIRY MICROBIOLOGY**

Day & Date: Wednesday, 26-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- Instructions :** 1) Part I Question 1 is compulsory  
 2) Attempt any four questions from Part II  
 3) Figures to the right indicate marks.  
 4) Answer to the two parts should be written in the same answer book.

**PART-I**

**Q.1 A Rewrite the following sentences by selecting the correct answer from given alternatives 14**

- 1) Propionibacterium shermanii is member of starter used for .... Type of cheese manufacturing.
 

|            |              |
|------------|--------------|
| a) Cheddar | b) Swiss     |
| c) Cottage | d) Camembert |
  
- 2) Discolouration of cheese is caused by .....
 

|                             |                           |
|-----------------------------|---------------------------|
| a) Aspergillus Niger        | b) Penicillium roqueforti |
| c) Saccharomyces cerevisiae | d) Penicillium camemberti |
  
- 3) Acetaldehyde is the major flavor compound in .....
 

|           |            |
|-----------|------------|
| a) Cheese | b) Yoghurt |
| c) Kefir  | d) Kumiss. |
  
- 4) Slime production in milk is caused by.....
 

|                 |                        |
|-----------------|------------------------|
| a) Leuconostoc  | b) Lactic streptococci |
| c) Lactobacilli | d) Coxiella            |
  
- 5) Non protein nitrogen constitutes about .....% of the total nitrogen of milk
 

|      |      |       |       |
|------|------|-------|-------|
| a) 5 | b) 3 | c) 50 | d) 15 |
|------|------|-------|-------|
  
- 6) Milk serum is milk plasma minus.....
 

|            |                    |
|------------|--------------------|
| a) Calcium | b) Casein micelles |
| c) Lactose | d) Water           |
  
- 7) Mastitis is caused by.....
 

|                             |                |
|-----------------------------|----------------|
| a) Shigella dysenteriae     | b) Penicillium |
| c) Streptococcus agalactiae | d) Klebsiella. |



|          |  |
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**M.Sc. Microbiology (Semester-IV) (New) (CBCS) Examination, 2017  
Pharmaceutical Microbiology**

Day & Date: Wednesday, 26-04-2017

Max. Marks: 70

Time: 02.30 PM to 05.00 PM

- Instructions :** 1) Part – 1, Question 1 is compulsory.  
 2) Attempt any 4 questions from Part II  
 3) Figures to the right indicate full marks.  
 4) Answer to the Part I and Part II are to be written Same answer booklet only.

**PART – I**

**Q.1 A Rewrite the sentence by choosing correct alternative from the following 14**

- 1) Macrolides have.....
  - a) Enhanced activity at acidic pH
  - b) Little activity against legionella
  - c) Induce cytochrome p450 enzymes
  - d) Half lives which increase in patients with anuria
  
- 2) ..... is considered to be bacteriostatic antibiotic.
  - a) Penicillin
  - b) Chloramphenical
  - c) Ciprofloxacin
  - d) Cefoxitin
  
- 3) The effective drug against penicillin resistant bacteria is.....
  - a) Chloramphenicol
  - b) Erythromycins
  - c) Augmentin
  - d) None of these
  
- 4) ..... inhibits bacterium cell wall synthesis.
  - a) Tetracycline
  - b) Erythromycins
  - c) Penicillin
  - d) Both a & b
  
- 5) During RBC count Blood must be prepared from .....
  - a) EDTA blood
  - b) Citrated blood
  - c) Oxalated blood
  - d) Clotted blood
  
- 6) Food poisoning is mainly caused by.....
  - a) Corynobacterium diptheriae
  - b) Clostridium rockfortae
  - c) Clostridium tetani
  - d) Clostridium botulinum

- 7) Ribosomal resistance occurs with.....
- a) Sulphonamides                      b) Penicillin  
c) Macrolides                              d) Fluoroquinolones
- 8) Generally the most effectively acting antimicrobial substance is.....
- a) Sodium hypochlorite                  b) Phenols  
c) Alcohol                                  d) Sodium bicarbonate
- 9) ..... can be used safely in pregnancy
- a) Gentamycin                              b) Erythromycin  
c) Doxycycline                              d) Moxifloxacin
- 10) Treatment of autoimmune disease includes.....
- a) Metabolic control  
b) Use of anti-inflammatory drugs  
c) Use of immunosuppressive drugs  
d) All of these
- 11) ..... is described as best secondary metabolite.
- a) Acetic acid produced from the oxidation of ethanol  
b) Ethanol from the fermentation of glucose  
c) Penicillin  
d) Citric acid from the partial oxidation of glucose.
- 12) ..... agar is used for screening antibiotic producers and acid producer.
- a) Simmson's                              b) Nutrient  
c) Wilkins                                  d) Sabouraud's
- 13) *Bacillus licheniformis* is used for production of.....
- a) Cloxacillin                              b) Streptomycin  
c) Penicillin                                d) Bacitracin
- 14) The purification and recovery of the production after fermentation is called as
- a) Upstream process  
b) Downstream process  
c) Surface fermentation  
d) None of these

## PART – II

### Answer any four questions from the following

- Q2**                      What is new vaccine technology? Discuss various DNA vaccines, synthetic peptide vaccines, and multivalent subunit vaccines.                      **14**
- Q3**                      Give a detailed account on Microbial contamination and spoilage of pharmaceutical products.                      **14**

- Q4** Describe in detail sulphonamides and Quinolone antimicrobial agents **14**
- Q5 Write short answers (any two)** **14**
- A) Explain in detail application of microbial enzymes in pharmaceuticals
  - B) What is Good Laboratory Practices (GLP)? Explain its importance in pharmaceutical industry.
  - C) Describe briefly Drug delivery system in gene therapy.
- Q6 Write short notes on any two** **14**
- a) What is Immobilization? Explain with procedures for pharmaceutical industry
  - b) Define Biosensors, Explain its application in pharmaceutical industry.
  - c) Describe in detail action of antibiotics on bacterial cell wall synthesis.