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**M.Sc. (Part – I) (Semester – I) Examination, 2015
(New – CBCS)
MICROBIOLOGY (Paper – II)
Microbiological Techniques and Scientific Writing**

Day and Date : Wednesday, 18-11-2015

Max. Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

- N.B. :** 1) Part – I question 1 is **compulsory**.
2) Attempt **any four** questions from Part – II.
3) Figures to the **right** indicates **full** marks.
4) Answer to the **two** Parts should be written in the same answer book.

PART – I

1. Rewrite the following sentences by selecting the correct answer from given alternatives :

14

- 1) The Svedberg unit is used to express _____ of particle.
a) Relative centrifugal field b) Particle density
c) Sedimentation coefficient d) Medium density
- 2) _____ makes the content of book easily accessible to its readers.
a) An index b) A table c) Introduction d) References
- 3) The most commonly used detector in GLC is the
a) Electron capture b) Flame ionization
c) Variable wavelength d) Nitrogen phosphorous
- 4) The relative centrifugal force is determined by the formula
a) $(1.118 \times 10^{-5}) (\text{rpm})^2 (r)$ b) $(1.118 \times 10^{-5}) (\text{rpm}) (r)^2$
c) $(1.118 \times 10^{-5})^2 (\text{rpm}) (r)$ d) $(1.118 \times 10^{-5}) (\text{rpm})^2 (r)^2$

P.T.O.



- 5) The most convenient system of citing references is
- a) Name and year system
 - b) Alphabet-number
 - c) Citation order
 - d) Order of year
- 6) Baiting technique is used for the isolation of
- a) Protozoa
 - b) Fungi
 - c) Algae
 - d) Viruses
- 7) _____ can be used for desalting of solutions.
- a) Ion exchange chromatography
 - b) Affinity chromatography
 - c) Gel filtration chromatography
 - d) TLC
- 8) GLC is used to separate
- a) Lipids
 - b) Volatile organic compounds
 - c) Proteins
 - d) Sugars
- 9) _____ is a brief summary of the information in a research document.
- a) Abstract
 - b) Review
 - c) Conclusion
 - d) Introduction
- 10) _____ is used as binder while preparing a slurry of stationary phase in TLC.
- a) Calcium sulphate
 - b) Calcium carbonate
 - c) Calcium chloride
 - d) Potassium sulphate
- 11) In swing out rotors the cups or buckets attain _____ position during rotation.
- a) Vertical
 - b) Horizontal
 - c) Fixed angle
 - d) Linear
- 12) The scientific paper is written in _____ format.
- a) IMDAR
 - b) IMRAD
 - c) RADIM
 - d) MIRAD
- 13) How the results and interpretations agree (or contrast) with the previously published work is shown in
- a) Introduction
 - b) Results
 - c) Acknowledgment
 - d) Discussion
- 14) _____ is used to separate large DNA molecules.
- a) PFGE
 - b) Agarose gel electrophoresis
 - c) PAGE
 - d) PAGE-SDS electrophoresis



PART – II

Attempt **any four** questions :

2. Describe the principle, method and applications of density gradient centrifugation. **14**
 3. Give the detail account of Good Manufacturing Practices and Good Laboratory Practices. **14**
 4. Explain principle, materials and applications of High Performance Liquid Chromatography (HPLC). **14**
 5. Write short answers (**any two**) : **14**
 - a) Explain guidelines of writing a research paper.
 - b) Discuss how to write a project report.
 - c) Explain principal and application of nanofiltration.
 6. Write short notes on (**any two**) : **14**
 - a) Mechanism of ion exchange chromatography.
 - b) Describe principal and applicaitons of TLC.
 - c) Describe oral and poster presentation in conferences.
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**M.Sc. (Part – I) (Semester – I) Examination, 2015
(New CBCS) MICROBIOLOGY
(Paper – III) : Recent Trends in Virology**

Day and Date : Friday, 20-11-2015
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

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

PART – I

1. Rewrite the sentence by choosing correct alternative from the following : **14**
- 1) Viroids were discovered by
a) Diener b) Puschner c) Boin d) Baltimore
 - 2) In lambda (λ) phage _____ gene is responsible for the lysogenic state.
a) Q b) A c) R d) C1
 - 3) _____ crystallised the TMV first time.
a) Harshey b) Chase c) Stanely d) Sanger
 - 4) Breast Cancer in mice is caused by
a) Raus Sarcoma virus b) Adenovirus
c) Poxvirus d) Bittner virus
 - 5) Lipid bilayer membrane of poxviruses is originated from _____ host cell.
a) Plasma membrane b) Nuclear membrane
c) Endoplasmic reticulum d) Golgi apparatus
 - 6) Yolk sac is useful for cultivation of _____ virus.
a) TMV b) Rabies c) Herpes simplex d) Plant
 - 7) _____ has both RNA and DNA as its genome.
a) HIV b) Reovirus
c) Human cytomegalovirus d) Raus Sarcoma virus

P.T.O.



- 8) One step growth experiment was devised by
 a) Watson b) Crick c) Lederberg d) Delbruck
- 9) The name of order in ICTV system always ends with suffix
 a) Viridae b) Virales c) Virinae d) Vira
- 10) _____ virus can undergo antigenic shift.
 a) Rabies b) Hepatitis c) Influenza d) Pox
- 11) The capsid of picornaviruses is made up of _____ capsomers.
 a) 8 b) 10 c) 32 d) 2
- 12) Rabies virus is _____ shaped.
 a) Icosahedral b) Helical c) Spherical d) Bullet
- 13) Human body produces _____ as antiviral substance.
 a) Antibody b) Antigen c) Interferon d) Immunogen
- 14) The only virus which has double stranded RNA is
 a) Bunyavirus b) Reovirus c) Calcivirus d) Rhabdovirus

PART – II

Attempt **any four** questions from the following :

2. Take a detail account on structure, genomic organization, pathogenesis and control of adenovirus. **14**
3. Explain in detail, multiplication and control of HIV. **14**
4. Write short answer on **any two** of the following : **14**
 a) Describe in detail structure, genomic organization and reproduction of DNA and RNA bacteriophages.
 b) Briefly describe emerging viral infections.
 c) What are interferons ? Describe their mode of action and clinical use.
5. Write short answers (**any two**) : **14**
 a) Draw labelled diagram of the influenza virus and add a note on antigenic shift and antigenic drift.
 b) Briefly describe host and virus factors involved in pathogenesis of viruses.
 c) Describe in detail post transcriptional changes in DNA and RNA animal viruses.
6. Write short notes on (**any two**) : **14**
 a) Prions
 b) Cataloging of the viruses.
 c) Cultivation of viruses using embryonated eggs, experimental animals and cell lines.



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**M.Sc. – I (Semester – I) (CBCS) Examination, 2015
MICROBIOLOGY (Paper – IV) (New)
Microbial Chemistry and Enzymology**

Day and Date : Monday, 23-11-2015
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions:** i) *Part – I is compulsory.*
ii) *From Part – II attempt any four.*
iii) **All questions carry equal marks.**
iv) *Figures to the right indicate full marks.*
v) *Draw neat and labelled diagrams.*

PART – I

1. Rewrite the following sentences by using correct alternatives : 14
- 1) _____ heteropolysaccharide functions as tissue cementing substance.
- a) Glycogen
b) Capsular material of diplococcus pneumoniae
c) Peptidoglycan
d) Hyaluronic acid
- 2) Proline is _____ amino acid.
- a) Sulfhydryl
b) Aromatic
c) Immuno
d) Basic
- 3) Damage caused by free radicals is reduced by antioxidants like _____
- a) Vit. A
b) Vit. C
c) Nicotinamide
d) Coenzyme



12) Glycerin combines with three fatty acids to form a simple lipid called _____

- a) Stearin
- b) Triglyceride
- c) Glyceride
- d) Terpene

13) Maltose is an example of _____

- a) Monosaccharide
- b) Polysaccharide
- c) Disaccharide
- d) Triose

14) Number of isoprenoid units in triterpenes are _____

- a) 8
- b) 6
- c) 4
- d) 10

PART – II

- 2. Explain kinetics of enzyme catalysed reaction. 14
 - 3. Write in detail about classification of amino acids. 14
 - 4. Write an essay on water soluble vitamins and their role. 14
 - 5. Write short notes on (**any two**) : 14
 - a) Induced fit and lock and key hypothesis.
 - b) Isoenzymes and their significance.
 - c) Leghaemoglobin and hemoglobin.
 - 6. Write short notes on (**any two**) : 14
 - a) Ramchandran plot
 - b) Chemical kinetics
 - c) Bacterial rhodopsin.
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**M.Sc. (Part – I) (Semester – II) Examination, 2015
MICROBIOLOGY (Paper – V) (CGPA)
Microbial Genetics**

Day and Date : Tuesday, 17-11-2015
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B. :** 1) *Part – I question 1 is compulsory.*
2) *Attempt **any four** questions from Part – II*
3) *Figures to the **right** indicate **full** marks.*
4) *Answer to the **two** Parts should be written in the **same** answer book.*

PART – I

1. Rewrite the sentences after choosing the correct answer from the given alternatives.

14

- 1) The unit of DNA in which an individual act of replication occurs is called the
 - a) Replicon
 - b) Origin
 - c) Transcription unit
 - d) Operon
- 2) Triplet UAG is called as
 - a) Opal
 - b) Amber
 - c) Ochre
 - d) Opine
- 3) _____ factor places initiator tRNA at P site of the ribosome.
 - a) EF – Tu
 - b) IF – 2
 - c) IF – 3
 - d) EF – Ts



- 4) _____ enzyme functions as replicase in *E. coli*.
 - a) Polymerase I
 - b) Polymerase II
 - c) Polymerase III
 - d) Polymerase IV

- 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) Overlapping genes are found in
 - a) ϕ X 174
 - b) *E. coli*
 - c) T₄ bacteriophage
 - d) MS₂

7. DNA sequences containing transposase gene flanked by inverted repeats are called
 - a) IS elements
 - b) Simple transposons
 - c) Composite transposons
 - d) Bacteriophage elements

- 8) DNA replication by semiconservative mode in *E. coli* was experimentally proved by
 - a) Watson and Crick
 - b) Meselson and Stahl
 - c) Zinder and Lederberg
 - d) Delbruck and Delbruck



- 9) Model for replicative transposition was proposed by
 - a) McClintock
 - b) Shapiro
 - c) Luria
 - d) Dupra
- 10) *E. coli* polynucleotide ligase requires _____ for its activity.
 - a) FAD
 - b) FMN
 - c) NAD
 - d) NADP
- 11) Transposon Tn5 carries gene for _____ resistance.
 - a) Kanamycin
 - b) Ampicillin
 - c) Penicillin
 - d) Chloramphenicol
- 12) Helix unwinding during replication is accomplished by
 - a) DNA helicases
 - b) DNA gyrase
 - c) DNA polymerase I
 - d) DNA polymerase II
- 13) Jumping genes were discovered by
 - a) Barbara McClintock
 - b) Beadle and Tatum
 - c) Lederberg
 - d) Delbruck
- 14) Removal of thymine dimers is carried out by
 - a) DNA polymerase I
 - b) DNA polymerase II
 - c) DNA polymerase III
 - d) Exonuclease



PART – II

2. What is genetic complementation ? Explain in detail intergenic and intragenic complementation and add a note on citrons test of genetic function. **14**
 3. Describe in detail detection, purification, amplification and rearrangement of plasmids. **14**
 4. Explain experiments performed to prove that, DNA is genetic material in bacteria and viruses. **14**
 5. Attempt **any two** of the following. **14**
 - a) Explain the techniques and applications of DNA foot printing and DNA finger printing.
 - b) Discuss the rolling circle model of DNA replication.
 - c) Describe operon model with reference to arabinose operon.
 6. Attempt **any two** of the following. **14**
 - a) Post transcriptional processing in Prokaryotes
 - b) RFLP
 - c) SOS repair.
-



SECTION – II

Attempt **any four** of the following :

2. Write an essay on biosynthesis of saturated fatty acids. **14**
 3. Write in detail degradation of aromatic hydro carbons. **14**
 4. Write an essay on photosynthetic and nonphotosynthetic electron transport chain. **14**
 5. Give an account of Denovo synthesis of pyrimidines. **14**
 6. Attempt **any two** of the following. **14**
 - i) Write short note on drug metabolism.
 - ii) Active transport.
 - iii) Theories of ATP formation.
 7. Answer **any two** of the following : **14**
 - i) Write note on gentisate pathway.
 - ii) Simple and facilitated diffusion.
 - iii) Omega oxidation.
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M.Sc. (Semester – III) Examination, 2015
MICROBIOLOGY (CGPA)
Paper – IX : Molecular Biology and Genetic Engineering

Day and Date : Monday, 16-11-2015
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

- Instructions:** 1) Part – I, question 1 is **compulsory**.
2) Attempt **any four (4)** questions from Part – II.
3) Figures to right indicate **full** marks.
4) Answers to Part – I and Part – II are to be written in **same answer booklet only**.

PART – I

1. A) Rewrite the sentences after choosing correct answer from the given alternatives. 7
- 1) The Blue-White Screen is a _____ technique that allows for the detection of successful ligations in vector based gene cloning.
a) isolation b) separation c) screening d) none
 - 2) _____ DNA molecules are sometimes called 'Chimeric DNA'.
a) cDNA b) Recombinant
c) Both a) and b) d) None
 - 3) _____ vector includes plasmids that can propagate in eukaryotes and prokaryotes.
a) Phagemid b) Phasmid c) Shuttle d) None
 - 4) pBR 322 is _____ base pairs in length.
a) 4361 b) 4631 c) 4136 d) 416
 - 5) Dosage compensation may occur in other organisms like *Caenorhabditis elegans* which is a _____.
a) fruit fly b) roundworm
c) plant species d) all of these



- 6) To detect hybridization of the probe to its target sequence, the probe is tagged with a non-radioactive molecular marker _____
- a) Digoxigenin
 - b) Phosphorus
 - c) Both a) and b)
 - d) None
- 7) Maxam-Gilbert sequencing requires radioactive labeling at one _____ end of DNA.
- a) 3'
 - b) 5'
 - c) Both a) and b)
 - d) None

1. B) Answer the questions or define the following : **7**
- a) Homopolymer tailing
 - b) Metabolic engineering
 - c) PUC 1
 - d) Transfection
 - e) Genetic load
 - f) DNA ligase
 - g) DNA fingerprinting.

PART – II

Attempt **any four** questions from the following :

2. What is genetic engineering ? Explain in detail vectors used in genetic engineering. **14**
3. Explain in detail how bacterial recombination processes are beneficial for selection and adaptation. **14**
4. Explain in detail 'Nucleic acid Hybridization'. **14**
5. Write short answer on **any two** of the following : **14**
- a) Discuss the process of 'Polymerase Chain Reaction'.
 - b) Briefly describe methods 'Dosage Compensation'.
 - c) Explain in brief application of recombinant DNA technology.
6. Write short notes on **any two** of the following : **14**
- a) Legal aspects in Genetic Engineering
 - b) Northern Blotting
 - c) 'Radioactive Tracer'.
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M.Sc. – II (Semester – III) (C.G.P.A.) Examination, 2015
MICROBIOLOGY
Paper – X : Health Care and Diagnostic Microbiology

Day and Date : Wednesday, 18-11-2015
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

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

PART – I

1. Rewrite the sentences after choosing the correct answer from the given alternatives :

14

- i) Which of the following bacteria toxin bind to the nerve cells, preventing chemical communication between nerve and muscle cells ?
a) Diphtheria toxin
b) Botulinum toxin
c) Escherichia coli endotoxin
d) Erythrotoxic toxin
- ii) Which of the following antibiotic DO NOT affect protein synthesis ?
a) Actinomycin D
b) Chloramphenicol
c) Streptomycin
d) Tetracycline
- iii) Which of the following is NOT true for exotoxins ?
a) The exotoxins can work by binding and entering the host cell
b) They can cause toxemia
c) They rarely have enzymatic activity
d) They can be converted to toxoids
- iv) Penicillin inhibits _____ synthesis.
a) Protein
b) Cell wall
c) membrane
d) DNA

P.T.O.



- v) Scientist who discovered Streptomycin was _____
- | | |
|-------------|-------------|
| a) Flemming | b) Walksman |
| c) Benet | d) Burnet |
- vi) Which of the following enzyme is used in Enzyme linked immunoabsorbant assay ?
- | | |
|-------------|---------------|
| a) Protease | b) Lipase |
| c) Amylase | d) Peroxidase |
- vii) Endotoxins have relatively _____ potency.
- | | |
|---------|---------|
| a) Low | b) High |
| c) Same | d) No |
- viii) Endotoxins are part of the outer membrane of the cell wall of _____
- | | |
|---------------------------|---------------------------|
| a) Gram positive bacteria | b) Gram negative bacteria |
| c) Actinomycetes | d) Fungi |
- ix) Adenylate cyclise toxin is produced by _____
- | | |
|----------------------|--------------------------------|
| a) Vibrio cholerae | b) Bordutella pertussis |
| c) Chlostrium tetani | d) Corynebacterium diphtheriae |
- x) Which of the following bacterium produce neurotoxin which is A-B toxin cause flaccid paralysis ?
- | | |
|-------------------|--------------|
| a) C. diphtheriae | b) C. tetani |
| c) V. cholerae | d) S. aureus |
- xi) Exotoxins are typically _____
- | | |
|------------------|-------------|
| a) Carbohydrates | b) Proteins |
| c) Lipids | d) Sugars |
- xii) Which of the following is NOT a semisynthetic chemotherapeutic agent ?
- | | |
|------------------|-----------------|
| a) Ampicillin | b) Penicillin |
| c) Carbenicillin | d) Trimethoprim |
- xiii) Gentamicin is an antibiotic produced by _____
- | | |
|------------------------|-----------------|
| a) Micromonospora | b) Penicillium |
| c) Streptoverticillium | d) Streptomyces |
- xiv) _____ acts as folic acid intermediate antagonists.
- | | |
|---------------------|------------------|
| a) Trimethoprim | b) Sulphonamides |
| c) Both (a) and (b) | d) None of these |



PART – II

Attempt **any four (4)** questions from Part – II.

2. Write in detail on “Mechanism of action of Penicillin and Bacitracin”. **14**
 3. Write in detail on “Detection of antibody antigen reaction”. **14**
 4. Write essay on “Immunohistochemistry (IHC)”. **14**
 5. Write in short on **any two** of the following : **14**
 - a) Beta lactamase, Extended Spectrum Beta Lactamase (ESBL), Carbapenase Enzymes causing antibiotic resistance in bacteria.
 - b) Florescence in Situ Hybridizaiton (FISH).
 - c) Adhesion and invasion.
 6. Write short notes on **any two** of the following : **14**
 - a) Microbial toxins.
 - b) Antibiotic sensitivity testing by disc method.
 - c) Polymerase chain reaction.
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**M.Sc. – II (Semester – III) (C.G.P.A.) Examination, 2015
MICROBIOLOGY**

Bioprocess Technology and Fermentation Technology (Paper – XI)

Day and Date : Friday, 20-11-2015

Max. Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

- N.B. :** 1) *Part – I, Q. 1 is compulsory.*
2) *Attempt **any four** questions from Part – II.*
3) *Figures to the **right** indicate **full** marks.*
4) *Answers to the **two** Parts should be written in the **same** answerbook.*

PART – I

1. Rewrite the following sentences by selecting correct answers from given alternatives.

14

- i) Brownian motion is related with _____
a) Impaction b) Diffusion
c) Precipitation d) Crystallization
- ii) _____ is a sensitive analytical tool which converts biological signals into electrical signals.
a) Biosensor b) Bioprocess
c) Bioproduct d) Bioengineering
- iii) _____ is a right granted by Govt. to an inventor.
a) Copyright b) Destruction
c) Patent d) None of these
- iv) Distillation is used for recovery of _____
a) Penicillin b) Vit. B₁₂
c) Amylase d) Ethanol
- v) Allergy testing of product is carried out on _____
a) Mice b) Cat c) Rabbit d) Guinea pig

P.T.O.



- vi) Molasses is a waste from _____ industry.
- a) Dairy
 - b) Tannery
 - c) Minery
 - d) Sugar
- vii) _____ is a test organism used for penicillin bioassay.
- a) *S. aureus*
 - b) *E. coli*
 - c) *Shigella*
 - d) *Vibrio*
- viii) Crowded plate technique is used for screening of _____ producers.
- a) Antibiotic
 - b) Amylase
 - c) Vit. B₁₂
 - d) Ethanol
- ix) Vortex formation in fermentor is decreased by _____
- a) Spargers
 - b) Aerators
 - c) Baffles
 - d) Biosensors
- x) Genetic engineering is used for strain _____
- a) Preservation
 - b) Sterilization
 - c) Cultivation
 - d) Improvement
- xi) _____ is used for streptomycin production.
- a) *Str. griseus*
 - b) *Asp. niger*
 - c) *Pen. chrysogenum*
 - d) *B. amylolyticus*
- xii) Lab scale fermentor have _____ litre capacity.
- a) 1 – 5
 - b) 100 – 200
 - c) 500 – 700
 - d) 1000 – 5000
- xiii) _____ is an example of edible mushroom.
- a) *A. niger*
 - b) *Agaricus bisporus*
 - c) *Rhizobium*
 - d) None of these
- xiv) _____ is used for production of L-lysine.
- a) *Cory. diphtheria*
 - b) *Cory. glutamicum*
 - c) *Asp. niger*
 - d) *Str. griseus*



PART – II

Attempt **any four** questions :

2. Explain in detail quality control in fermentation industry. **14**
 3. Describe in detail bioreactor design and operation. **14**
 4. Describe in detail various raw materials used for designing fermentation media and media sterilization. **14**
 5. Describe in brief **any two** : **14**
 - i) Bioethics
 - ii) Streptomycin fermentation
 - iii) Product recovery.
 6. Write short notes on **any two** : **14**
 - i) Mushroom production
 - ii) Environmental and genetic control of metabolic pathways
 - iii) Whisky production.
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M.Sc. – II (Semester – III) (C.G.P.A.) Examination, 2015
MICROBIOLOGY (Paper –XII)
Food and Dairy Microbiology

Day and Date : Monday, 23-11-2015
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

- N.B. :** I) *Part I question 1 is compulsory.*
II) *Attempt **any four** questions from Part II.*
III) *Figures to the **right** indicate **full** marks.*
IV) *Answers to the **two** Parts should be written in the **same** answer book.*

PART – I

1. Rewrite the following sentences by selecting the correct answer from given alternatives.

14

- i) Discolouration of cheese is caused by
- | | |
|----------------------------------|----------------------------------|
| a) <i>Aspergillus niger</i> | b) <i>Penicillium roqueforti</i> |
| c) <i>Penicillium camemberti</i> | d) <i>E.coli</i> |
- ii) Dahi provides an unfavourable medium for the proliferation of pathogens due to _____ environment.
- | | |
|-------------|------------|
| a) alkaline | b) acidic |
| c) salty | d) neutral |
- iii) Food poisoning from Khoa is due to heat stable toxin produced by
- | | |
|------------------------|--------------------------------|
| a) <i>Enterobacter</i> | b) <i>Streptococcus lactis</i> |
| c) <i>S.aureus</i> | d) <i>Salmonella</i> |
- iv) Acetaldehyde is the major flavour compound in
- | | |
|-----------|------------|
| a) Cheese | b) Kumiss |
| c) Kefir | d) Yoghurt |
- v) The toxins produced by *clostridium botulinum* affect _____ of human body.
- | | |
|------------------------|---------------------|
| a) Respiratory system | b) Nervous system |
| c) Reproductive system | d) Digestive system |



- vi) _____ constitute more than 98% of the milk fat.
- a) Diglycerides
 - b) Phospholipids
 - c) Triglycerides
 - d) Cholesterol
- vii) Milk serum is milk plasma minus
- a) casein micelles
 - b) water
 - c) calcium
 - d) lactose
- viii) _____ discolouration in both cream and butter is caused by *Pseudomonas nigrificiens*.
- a) Brown
 - b) Black
 - c) Yellow
 - d) Blue
- ix) *Streptococcus lactis* sub. sp. *diacetylactis* is a starter of choice in _____ making as it produces both acid and flavour.
- a) cheese
 - b) butter
 - c) kefir
 - d) curd
- x) Homogenization _____ the bacterial count of ice-cream mix.
- a) increases
 - b) maintain
 - c) decreases
 - d) reduces
- xi) The therapeutic potential of fermented milk product was first suggested by
- a) Metchnikoff
 - b) Pasteur
 - c) Koch
 - d) Alexander
- xii) _____ is the acid alcohol fermented milk product.
- a) Srikhand
 - b) Kumiss
 - c) Yoghurt
 - d) Bulgarian sour milk
- xiii) The late blowing in processed cheese is due to
- a) *Penicillium*
 - b) *Leuconostoc*
 - c) *Clostridia*
 - d) *Pseudomonas*
- xiv) _____ is the high acid fermented milk product.
- a) Yoghurt
 - b) Cultured butter milk
 - c) Kefir
 - d) Bulgarian sour milk



PART – II

Attempt **any four** questions :

2. Write an essay on microbiological examination of milk. **14**
 3. What is food preservation ? Explain preservation of foods by drying. **14**
 4. Write an essay on bacterial food born infections. **14**
 5. Describe in brief (**any two**) : **14**
 - a) Food preservation by use of irradiation.
 - b) Swiss cheese.
 - c) Chemical changes caused by micro-organisms during spoilage of food.
 6. Write short notes on (**any two**) : **14**
 - a) Concept of water activity.
 - b) Ropiness
 - c) Application of ultraviolet light in food industry.
-