SLR-MK – 79

Seat No.	

M.Sc. (Biotechnology) (Part – I) (Semester – I) (New) (CBCS) Examination, 2016
Paper – I : MICROBIOLOGY

Day and Date : Tuesday, 29-3-2016 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

Note : *1) Section – **I** is **compulsory**.*
*2) Answer **any four** questions from Section – **II**.*

SECTION – I

1. A) Rewrite the following sentence by using correct option : **7**

i) Fungi can be stained by using _____ stain.
   a) Safranine
   b) Leishman's stain
   c) Lactophenol cotton blue
   d) Basic fuchsin

ii) A fungi in which sexual stage is unknown belongs to _____
   a) Zygomecetes b) Basidiomycetes
   c) Mastigomycetes d) Deuteromycetes

iii) _____ is not a temperate phage.
   a) S1 b) Lambda
   c) P22 d) Φ X174

iv) Out of the following _____ kills bacteria by producing nascent oxygen.
   a) Iodine b) Ethylene oxide
   c) Chlorine d) Heavy metals

v) The significant characteristics of an electron responsible for maximum resolution in electron microscope is _____
   a) Small size b) High velocity
   c) Less wavelength d) All of these

P.T.O.

vi) Positive sense single stranded RNA is present in _____ virus.

a) Lambda b) Polio

c) Hepatitis d) Influenza

vii) Sulfolobus is a _____ organism.

a) Thermophilic b) Metallophilic

c) Acidophilic d) Thermoacidophilic

B) Define the following terms : **7**

i) Anoxygenic photosynthesis.

ii) Differential staining.

iii) Pure culture.

iv) Transmission electron micorscope.

v) Temperate phage.

vi) Continuous cell culture.

vii) Lyophilization.

SECTION – II

2. Describe in detail about the micro-organism in extreme pH conditions. **14**

3. Give an brief account of isolation, cultivation and enumeration of viruses. **14**

4. Explain different criteria for characterization of micro-organisms. **14**

5. Write short notes on **any two** of the following : **14**

i) Acidophiles

ii) Sterilization by using heat

iii) Basidiomycetes.

6. Write short notes on **any two** of the following : **14**

i) Bacterial nomenclature

ii) Multiplication of TMV

iii) Gram's staining.

SLR-MK – 80

Seat No.	

M.Sc. – I (Semester – I) (New CBCS) Examination, 2016
BIOTECHNOLOGY
Paper – II : Concept of Biochemistry

Day and Date : Thursday, 31-3-2016 Total.Marks : 70

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

***Note** : 1) Section **I compulsory**.*

*2) Answer **any four** questions from Section **II**.*

SECTION – I

1. A) Multiple choice question : **7**

1) _____ gland secretes calcitonin.

a) Parathyroid gland b) Thyroid gland

c) Pituitary gland d) Adrenal gland

2) Functionally similar to cytochrome c but able to carries only one electron at a time is _____ protein.

a) Plastocyanin b) Plastoquinone

c) Ferredoxin d) Fe-S cluster

3) Conversion of Acetyl co A to Malonyl co A is takes place in presence of _____ coenzyme.

a) Biotin b) ADP c) FAD d) NADPH

4) _____ is wrong about endergonic reactions.

a) It is used in coupled reaction

b) It has negative ΔG

c) Energy is absorbed in this reaction

d) Products has more free energy than reactants

5) _____ amino acid contains guanidine and significant positive charge at pH 7.

a) Arginine b) Lysine c) Histidine d) Serine

P.T.O.

6) Nucleotides have following characteristic components
   a) Nucleoside
   b) A nitrogenous base and phosphate
   c) Phosphate and pentose sugar
   d) Phosphate and nucleoside

7) Basic cause of Alzheimer's disease is
   a) Accumulation of acetylcholine
   b) Abnormal β amyloid formation
   c) Degeneration of adrenergic nerve terminal
   d) Accumulation of adrenaline

B) Define the following terms : **7**

i) Paracrine and autocrine hormone.
ii) Domain.
iii) Insulin.
iv) Light reaction.
v) Entropy.
vi) Vitamins.
vii) Auxin.

SECTION – II

2. Classify the amino acids on the basis of polarity with structure. Add a note on properties of amino acids. **14**

3. Explain in details dietary sources, deficiency diseases and recommended daily requirement of fat soluble vitamins. **14**

4. Explain in detail oxidative phosphorylation. **14**

5. Answer **any two** of the following : **14**
   i) Distinguish between alpha helix and β-pleated sheets.
   ii) Give an account on pheromones.
   iii) What is photophosphorylation ? Write a note on Z scheme of photophosphorylation.

6. Write short notes on **any two** of the following : **14**
   i) Calvin cycle.
   ii) β oxidation.
   iii) Sucrose synthesis.

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SLR-MK – 81

Seat No.	

M.Sc. (Part – I) (Semester – I) (CBCS) (New) Examination, 2016
BIOTECHNOLOGY
Paper No. – III : Inheritance Biology

Day and Date : Saturday, 2-4-2016 Total Marks : 70

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

***Note** : 1) Section – **I** is **compulsory**.*
*2) Answer **any four** questions from Section – **II**.*

SECTION – I

1. A) Rewrite the sentence using correct alternative given below : **7**

i) Genotypes in which both alleles are the same are known as the same are known as _____

a) Homozygotes b) Heterozygotes
c) Phenotype d) Hybrids

ii) _____ inheritance is controlled by non nuclear genomes.

a) Meternal b) Chromosomal
c) Cytoplasmic d) All of the above

iii) _____ occurs in two patterns; specialized and generalized.

a) Conjugation b) Transformation
c) Transduction d) All of the above

iv) The Alu element found in the human genome is _____

a) a 7SL RNA homologue b) a good RNA polymerase III template
c) about 300 bp long repeat d) all of the above

v) The amphibian oocytes have _____ type of chromosome morphology.

a) Polytene b) Lamp brush c) Ring d) Balbiani

P.T.O.

vi) The alleles available among the reproductive members of a population from which gametes can be drawn is known as _____

a) Gene pool b) Allelic frequency
c) Genetic equilibrium d) Genetic drift

vii) The ABO blood group type locus in human beings is an example of _____ and dominance.

a) Multiple alleles b) Co-dominance
c) Recessive d) Seggregation

B) Define the following terms : **7**

i) Euploidy
ii) Conjugation
iii) Codominance
iv) F-plasmid
v) C-value paradox
vi) Genetic equilibrium
vii) Transposons.

SECTION – II

2. Write a note on linkage and crossing over with the help of suitable example. **14**

3. Write in detail about sex linked inheritance. **14**

4. Describe the methods of gene transfer techniques. **14**

5. Answer **any two** of the following : **14**

i) What is heterochromatin ? Explain.
ii) Extra chromosomal inheritance in mitochondria.
iii) Law of independent assortment.

6. Write short notes on **any two** of the following : **14**

i) Comment on different types of DNA repetitive sequences.
ii) What is the significance of study of population genetics ?
iii) Write what is Hfr strain. Explain.

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Seat No.	

M.Sc. (Part – I) (Semester – I) (New) (CBCS) Examination, 2016
BIOTECHNOLOGY
Biostatistics and Bioinformatics (Paper – IV)

Day and Date : Tuesday, 5-4-2016 Total Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

PART – I

1. A) Rewrite the sentence after choosing the correct answer from the given alternatives. **7**

1) _____ is one of the genome information resource.
a) NCBI b) PIR c) SIB d) RCSB

2) The secondary database of protein is _____
a) Swiss prot b TrEmbl c) Blocks d) PDB

3) FASTA was developed by _____
a) Needleman and Wunch b) Smith and Waterman
c) Lipman and Pearson d) None

4) _____ is one of the protein secondary structure.
a) Helix b) Turn c) Sheet d) All

5) A subset of the population selected to help make inferences on a population is called _____
a) Population b) Inferential statistics
c) Census d) Sample

6) Which of the following is not a measure of central tendency ?
a) Mode b) Variability c) Median d) Mean

7) It is necessary to find cumulative frequencies in order to draw _____

a) histogram
b) frequency polygon
c) ogive curve
d) column chart

B) Definitions : **7**

1) Proteome
2) Alignment
3) Homology
4) Biostatistics
5) Variable
6) Median
7) Chi square test.

PART – II

Answer **any four** of the following :

2. Write a note on Genome Information Resources. **14**

3. Add a note on structural databases of proteins. **14**

4. Explain the applications of statistics in Biology with examples. **14**

5. Answer **any two** : **14**

a) Write a note on pairwise sequence alignment.

b) Add a note on Phylogenetics analysis softwares.

c) Calculate Quartile deviation from the data 11, 12, 20, 16, 18, 30, 44, 40, 50, 46, 62.

6. Answer **any two** : **14**

a) What is Protein structure prediction ?

b) What is coefficient of variance ? Mention its importance.

c) Graphical representation of data.

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Seat No.	

M.Sc. – I Biotechnology (Semester – II) Examination, 2016
CELL BIOLOGY (Paper – V)
(New – CBCS)

Day and Date : Wednesday, 30-3-2016 Max. Marks : 70

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

Instructions : *1) Section **I** is **compulsory**.*
*2) From Section **II** attempt **any four**.*
*3) **All** questions carry **equal** marks.*
*4) Figures to the **right** indicate **full** marks.*
*5) **Draw** neat and labeled diagram.*

SECTION – I

1. A) Rewrite the following sentence by choosing the correct answer. **7**

1) The first person to observe live cells under microscope was
   a) Robert Hooke b) Leeuwnhoke c) Schleiden d) Virchow
2) Robert Hooke published the discovery of the cell in his book.
   a) Genera plantarum b) Species plantarum
   c) Micrographia d) Rhe origin of species
3) The protoplasm theory stating protoplasm as the physical basis of life was proposed by
   a) Fleming b) Purkinje c) Robert Brown d) Weismann
4) The nucleus was first described by
   a) Robert Brown b) Robert Hooke c) Weismann d) Nageli
5) The term cell was coined by
   a) Schwann b) Robert Hooke c) De Bary d) Tatum
6) Microtubules are composed mainly of a protein called
   a) Actin b) Tubulin c) Myosin d) Chitin
7) Cell theory was proposed by
   a) Beadle and Tatum b) Robert Hooke
   c) Schleiden and Schwann d) Leenuwnhoeck

B) Define the following terms : **7**

i) Cell Theory
ii) Cell-Cell Interaction
iii) Blastulation
iv) Mitosis
v) Lysosomes
vi) Desmosomes
vii) Integrins.

SECTION – II

2. Add a brief note on structural organizations of prokaryotic cells. **14**

3. Write an essay on G-protein coupled receptors and secondary messenger. **14**

4. Discuss in brief working of Actin and Myosin. **14**

5. Answer **any two** of the following : **14**

i) Cell organelles
ii) Tight and Gap junction
iii) Glucose Regulation by cell signaling.

6. Write short notes on **any two** of the following : **14**

i) Embryonic development
ii) Role of IP3 and calcium in Voltage gated channels
iii) Cell-Matrix Interaction.

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SLR-MK – 88

Seat No.	

M.Sc. – I (Semester – II) Examination, 2016
(New CBCS)
BIOTECHNOLOGY
Enzyme Technology (Paper – VI)

Day and Date : Friday, 1-4-2016 Max. Marks : 70

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

Instructions *: 1) Section **I** is **compulsory**.*
*2) From Section **II** attempt **any four**.*
*3) **All** questions carry **equal** marks.*
*4) Figures to the **right** indicate **full** marks.*
*5) Draw **neat** and labeled diagram.*

SECTION – I

1. A) Rewrite the following sentence by choosing the correct answer. **7**

I) _____ is the inhibitor of ATcase.
A) ATP B) GTP C) CTP D) TTP

II) _____ is the inhibitor of Na^+K^+ ATPase.
A) Methotrexate B) Digitoxigenin
C) Na^+ D) K^+

III) A sigmoidal plot of substrate concentration ([S]) verses reaction velocity (V) may Indicate _____
A) Michaelis-Menten kinetics B) Co-operative binding
C) Competitive inhibition D) Non-competitive inhibition

IV) In reversible non-competitive inhibition enzyme activity
A) Vmax is increased
B) Km is increased
C) Km is decreased
D) Concentration of active enzyme is reduced

V) An allosteric inhibitor of pyruvate dehydrogenase is
A) Acetyl CoA B) ATP C) FADH D) Pyruvate

P.T.O.

VI) A coenzyme required in carboxylation reactions is
A) Lipoic acid B) Coenzyme A
C) Biotin D) All of these

VII) In Lineweaver-Burk plot, the y-intercept represents
A) Vmax B) Km C) 1/Vmax D) 1/Km

B) Define the following terms. **7**

I) Allosteric enzymes

II) Turn over number

III) Clinical significance of SGOT and SGPT

IV) Activation energy

V) Abzymes

VI) Feedback inhibition

VII) Metabolic engineering.

SECTION – II

2. Explain in detail enzyme inhibition with their kinetics. **14**

3. Give the IUB nomenclature system and classification of enzyme with at least two examples. **14**

4. Describe in detail bisubstrate reactions with its types and kinetics. **14**

5. Explain in detail structure function relationship of enzyme fatty-acid synthetase. **14**

6. Answer **any two** of the following. **14**

a) Write in brief about biosensor.

b) Derive Michaelis and Menten equation.

c) Write on hill plot. Add a note on cooperativity.

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Seat No.	

M.Sc. I (Semester – II) (New CBCS) Examination, 2016
BIOTECHNOLOGY
Paper – VII : Molecular Cell Processing

Day and Date : Monday, 4-4-2016 Total Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

Note : *1) Section **I** is **compulsory**.*
*2) Answer **any four** questions from Section **II**.*
*3) Figures to the **right** indicate **full** marks.*
*4) Answer to the Section **I** and Section **II** are to be written in the **same** answer book.*

SECTION – I

1. A) Rewrite the sentence after choosing the correct answer from the given alternative : **7**

1) _____ Histone protein seals the nucleosome.

A) H1 B) H2A

C) H2B1 D) None of these

2) One complete helical turn of Z form of DNA has _____ nucleotides.

A) 9 B) 10 C) 11 D) 12

3) The strand that is transcribed to RNA is known as

A) Sense strand B) Anti sense strand

C) Downstream D) Upstream

4) RNA polymerase I is located in the

A) Nuclei B) Nucleoplasm

C) Nuclear matrix D) Nucleolus

5) The detail of genetic was deciphered by

A) Nirenberg and Khorana B) Watson and Crick

C) Fredirick Griffith D) Avery and Mc Cleod

P.T.O.

6) Polysome is a complex of multiple

A) Centrosome B) Nucleosome

C) Ribosome D) Repliosome

7) The product of Lac y gene is

A) Transacetylase B) Permease

C) Peptidase D) Lactase

B) Define the following terms : **7**

1) PRIBNOW BOX
2) Solenoid
3) Introns
4) Cot curve
5) TATA binding protein
6) Origin
7) Operon.

SECTION – II

2. Explain in detail about the replication in prokaryotes and DNA proof reading with a neat labeled diagram. **14**

3. Explain the structure of Lac operon and write a note on negative regulation. **14**

4. Explain in detail the packing and organization of eukaryotic genome with a neat labeled diagram. **14**

5. Briefly write about the enzymes involved in DNA replication with their application. **14**

6. Answer **any two** from the following : **14**

A) Explain about the Cot curve analysis.

B) Write about promoters in prokaryotes.

C) Write about different types of RNA.

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Seat No.	

M.Sc. – I (Semester – II) (Biotechnology) (New) (CBCS) Examination, 2016
(Paper – VIII) : IMMUNOLOGY AND IMMUNE TECHNIQUES

Day and Date : Wednesday, 6-4-2016 Max. Marks : 70
Time : 10.30 a.m. to 1.00 p.m.

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

PART – I

1. A) Rewrite the sentence after choosing the correct answer from the given alternatives. **7**

1) Active immunisation is done by using _____
   a) Immune sera b) Readymade antibodies
   c) Vaccines d) None of these

2) Interleukin 2 is produced by _____
   a) T_H cells b) B cells
   c) Macrophages d) None of these

3) _____ plays a major role in mounting immune response to antigens in the blood stream.
   a) Thymus b) Bone marrow
   c) Lymphnode d) Spleen

4) Phenomenon of phagocytosis is first determined by _____
   a) Louis Pasture b) Elie Metchnikoff
   c) Edward Jenner d) Alexander Flemming

5) Fluorescein isothiocynate is used in _____
   a) Immuno-fluorescence b) ELISA
   c) Agglutination d) Complement fixation

6) In alternate pathway binding of _____ stabilises the C3bBb (C_3convertase).
   a) Properdin b) Lectin c) Serine protease d) C_1
7) Rheumatoid arthritis _____ autoimmune disease.
   a) Organ-specific b) Organ non-specific
   c) Haemolytic d) None of these

B) Definitions : **7**

I) Enlist primary and secondary organs.
II) Define phagocytosis and opsonization.
III) Give functions of complement system.
IV) Define and explain redundancy and synergy.
V) Isograft and xenograft.
VI) Give examples of any four organ specific autoimmune diseases.
VII) Precipitation and agglutination.

PART – II

Answer **any four** of the following :

2. Write an account on classical complement pathway. **14**

3. Write an account on mechanism of antibody production against TI and TD antigens. **14**

4. Explain principle of antigen-antibody interactions. **14**

5. Answer **any two** : **14**
   I) ELISA
   II) Immunogical basics of graft rejection
   III) General structure, cultural characters, life cycle, pathogenicity, laboratory diagnosis and prophylaxis of HIV.

6. Answer **any two** : **14**
   I) Give structure and function of antibody.
   II) Explain mechanism of phagocytosis and apoptosis.
   III) General structure, cultural characters, life cycle, pathogenicity, laboratory diagnosis and prophylaxis of *Plasmodium malariae*.

SLR-MK – 95

Seat No.	

M.Sc. (Biotechnology) (Part – II) (Semester – III) (CGPA) Examination, 2016
Paper – I : ADVANCED ANALYTICAL TECHNIQUES

Day and Date : Tuesday, 29-3-2016 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

***Note** : 1) Section – **I compulsory**.*
*2) Answer **any four** questions from Section – **II**.*

SECTION – I

1. A) Rewrite following sentence by using correct option. **7**

i) _____ is a radioactive compound.

a) Radium b) Potassium uranylsulphate

c) Thorium d) Uranium

ii) Distance between front surface of the lens and surface of specimen is known as

a) Working distance

b) Focal length

c) Resolving distance

d) Focal path

iii) Which of the following is most suitable gas to use as a carrier gas in GLC ?

a) Methane b) Carbon dioxide

c) Oxygen d) Helium

iv) Characteristic feature of any form of chromatography is

a) Use of molecules that are soluble in water

b) Use of an inert carrier gas

c) Calculation of R_f value for the separated molecules

d) Use of mobile and stationery phase for separation of molecules

v) Confocal microscope was invented by

a) Galelio b) E. Ruska

c) Marvin Minsky d) Fisher

vi) _____ spectrum of a substance is a fingerprint for its identification.

a) IR b) UV

c) VISIBLE d) AAS

vii) Determination of precise spacing at atoms within a large protein is possible only through use of

a) Electron microscopy

b) Ramchandran plot

c) Phase contrast microscopy

d) X-ray diffraction

B) Define the following terms : **7**

i) Radioactivity.

ii) Scanning electron microscope.

iii) Beer-Lambert's law.

iv) LASERS.

v) Chromatofocussing.

vi) Ion exchange chromatography.

vii) Redox reaction.

SECTION – II

2. Explain in detail about the technique of separation of proteins in denaturing condition and enlist its applications. **14**

3. Write principle, instrumentation, working and application of UV-visible spectroscopy. **14**

4. Explain principle of chromatography and write in detail about a chromatographic technique used for separation of volatile substances. **14**

5. Write an essay on electron spin resonance spectroscopy. **14**

6. Write short notes on **any two** of the following : **14**
   i) Immunoblotting.
   ii) Ion exchange chromatography.
   iii) pH electrode.

7. Write short notes on **any two** of the following : **14**
   i) Ultracentrifuge.
   ii) Electron microscope.
   iii) Isoelectric Focussing.

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SLR-MK – 98

Seat No.	

M.Sc. (Part – II) (Semester – III) (CGPA) Examination, 2016
BIOTECHNOLOGY
Paper No. – IV : Plant Biotechnology

Day and Date : Tuesday, 5-4-2016 Total Marks : 70

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

Instructions *: 1) Part – **I**, Question **1** is **compulsory**.*

*2) Attempt **any four** questions from Part – **II**.*

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

*4) Answers to the Part – **I** and Part – **II** are to be written in **same** answer Booklet **only**.*

PART – I

1. A) Rewrite the sentence after choosing the correct answer from the given alternatives : **7**

   1) CaMv stands for
      a) Calcium caulimovirus b) Cauliflower mosaic virus
      c) Cadherin mosaic virus d) All of the above

   2) RNA is
      a) DNA containing virus b) RNA containing virus
      c) Protein containing virus d) Both DNA and RNA containing virus

   3) Cybrids are
      a) Cytoplasmic hybrids b) Genomic hybrids
      c) Protoplast d) None of the above

   4) A Cell without cell wall is known as
      a) Protoplast b) Plasmolysed cell
      c) Both a) and b) d) None of the above

   5) Meristem culture helps in developing
      a) hybrid plants b) virus free plants
      c) disease resistant plants d) tall plants

P.T.O.

6) Totipotency refers to
   a) the ability of a plant cell to arrest the growth of a plant
   b) the ability of a plant cell to develop disease in plant
   c) the ability of a plant cell to develop into a complete plant
   d) the ability of a plant cell to develop into a callus

7) npt II gene is an
   a) Selectable marker gene b) Reporter gene
   c) A gene from animal cell d) All of the above

B) Define the following terms : **7**

1) Phytohormones
2) Micronutrients
3) Male Gametophyte
4) Molecular Farming
5) Secondary Metabolites
6) Ri Plasmid
7) Cloning in plants.

PART – II

Answer **any four** of the following :

2. Discusses in brief Agro bacterium mediated gene transfer in plants. **14**

3. What do you mean by micro-propagation, explain one with suitable example. **14**

4. Discuss in brief about vector less gene transformation in plant. **14**

5. What are plant hormones ? Explain their types and mechanism action and role. **14**

6. Answer **any two** of the following : **14**
   a) Somaclonal variation with their types
   b) Shikimate Pathway in plants
   c) Selectable and reporter marker genes.

7. Answer **any two** of the following : **14**
   a) Somatic embryogenesis in plants
   b) Protoplast Isolation
   c) Oleosin portioning.

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SLR-MK – 99

Seat No.	

M.Sc. (Part – II) (Semester – IV) Examination, 2016
BIOTECHNOLOGY
(C.G.P.A.)
Paper – I : Animal Biotechnology

Day and Date : Wednesday, 30-3-2016 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

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

PART – I

1. A) Rewrite the sentence after choosing the correct answer from the given alternatives. **7**

1) When synthetic media are devoid of serum in culture medium, it is called _____

a) specific media b) serum-free media
c) serum-dependent media d) all of these

2) Two important enzymes used in tissue disaggregation are _____ and _____.

a) collagenase and trypsin b) cellulase and trypsin
c) cellulase and collagenase d) amylase and cellulase

3) The cell lines which grow through a limited number of cell generations and have a limited life are called _____

a) infinite cell lines b) transformed cell lines
c) finite cell lines d) continuous cell line

4) The animal cells are very sensitive to temperature, therefore by using a thermostate temperature of bioreactor medium should be maintained at

a) 37°C b) 40°C c) 35°C d) 45°C

P.T.O.

5) The process of bubbling gas through the culture is referred as _____
   a) aeration b) sparging c) diffusion d) oxygenation

6) _____ of the cells represents the capability of their existence, survival and development.
   a) Viability b) Survival c) Senescence d) Aging

7) A foreign DNA that is introduced during transgenesis is called _____
   a) oncogene b) cistronic gene
   c) transgene d) transfection gene

B) Definitions. **7**

1) Cell hybridization
2) Established cell lines
3) Organ culture
4) Contact inhibition
5) Closed cultures
6) Cell cloning
7) Transgenic animals.

PART – II

Answer **any four** of the following :

2. Give an account on equipments and materials required for animal cell culture laboratory. **14**
3. Define cell line. Describe in brief its development and maintenance. **14**
4. Describe the commercial applications of animal tissue culture. **14**
5. What is mammalian cloning ? Explain it with an example. **14**
6. Answer **any two** from the following : **14**
   1) Describe in brief different methods of cell separation.
   2) Describe the different characteristics of cells in culture.
   3) Describe the basic aseptic techniques used in animal cell culture.
7. Write short notes on (**any two**) : **14**
   1) CO_2 incubator
   2) Cell senescence
   3) Control of contamination.

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SLR-MK – 100

Seat No.	

M.Sc. (Part – II) (Semester – IV) (CGPA) Examination, 2016
BIOTECHNOLOGY
Paper – II : Industrial and Environmental Biotechnology

Day and Date : Friday, 1-4-2016 Max. Marks : 70
Time : 2.30 p.m. to 5.00 p.m.

Instructions : *1)* ***All*** *questions of Section* ***I*** *are* ***compulsory.***
2) Answer ***any four*** *questions from Section* ***II.***
3) ***All*** *questions carry* ***equal*** *marks.*
4) ***Draw*** *neat and labelled diagrams* ***wherever*** *necessary.*

SECTION – I

1. A) Rewrite the sentence after choosing the correct answer from the given alternatives : **7**

1) _____ is common example of white rot fungi involved in lignocellulose conversion.

a) *Fusarium oxysporum*

b) *Phanerocheate chrysporium*

c) *Penicillium chrysogenum*

d) *Aspergillus niger*

2) Why protein is collection of globular protein such as _____

a) β-lactoglobulin b) α-lactalbumin

c) Both a) and b) d) Zeta albumin

3) _____ microorganism is involved rennet production in dairy industry for cheese production.

a) *Fusarium oxysporum* b) Mucor

c) *Aspergillus oryzae* d) *Aspergillus niger*

P.T.O.

4) _____ is/are primary metabolite.

a) Alcohol b) Amino acid

c) Antibiotics d) Both a) and b)

5) Industrial production of Acetone-Butanol by microorganism process was started in _____

a) Brazil b) United State

c) England d) Europe

6) _____ is used as a best source of carbon citric acid production.

a) Fructose b) Sucrose

c) Galactose d) Maltose

7) _____ metabolite directly involved in normal growth, development and reproduction.

a) Primary b) Secondary

c) Both a) and b) d) Tertiary

B) Define the terms : **7**

1) Biotransformation

2) Phytase

3) Lignin

4) Whey

5) Halocompounds

6) Phophorylation

7) Submerged Fermentation.

SECTION – II

Answer **any four** of the following :

2. Elaborate production of biomass by methane or methanol utilizing bacteria. Add a note on risk factors involved in it. **14**

3. What are the perspectives of biotransformation ? Explain biotransformation with Lipases. **14**

4. Explain Solid waste treatment process with the reference to acrobic and anaerobic waste treatment process. **14**

5. Explain concept of secondary metabolic and write note on synthesis of penicillin. **14**

6. Answer **any two** from the following : **14**
   a) Give a detailed account of Bio-surfactants.
   b) Explain role of enzymes used in paper and pulp processing.
   c) Explain the process of algal biomass production and give the advantages of microbial biomass production.

7. Write short notes on **(any two)** : **14**
   a) Hydroxylation and Dihydroxylation
   b) Extracellular polysaccharides
   c) Primary metabolites.

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SLR-MK – 101

Seat No.	

M.Sc. – II Biotechnology (Semester – IV) (CGPA) Examination, 2016
STEM CELL TECHNOLOGY AND REGENERATIVE MEDICINE
(Paper – III)

Day and Date : Monday, 4-4-2016 Max. Marks : 70

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

***Instructions** : 1) Section – **I** is **compulsory**.*
*2) From Section – **II** attempt **any four**.*
*3) **All** questions carry **equal** marks.*
*4) Figures to **right** indicate **full** marks.*
*5) Draw **neat** and labeled diagrams.*

SECTION – I

1. A) Rewrite the following sentences by using correct alternative : **7**

1) The culture media containing amino acids is sterilized by
   a) dry heat b) moist heat
   c) filter sterilization d) autoclave

2) In liquid nitrogen, temperature drops upto range of _____ °C.
   a) 0 to –70 b) –180 to –196
   c) 4 to –50 d) 0 to –180

3) _____ factor does not involve in selection of cell line.
   a) Growth characteristics b) Stability
   c) Cell concentration d) Phenotypic expression

4) Stem cells are characterized by
   a) Potency, non-renewal b) Potency, self renewal
   c) Non potent, Self renewal d) Non potent, Non renewal

5) Balance salt solution is composed of
   a) organic acid, glucose b) organic acid, sodium bicarbonate
   c) sodium bicarbonate, glucose d) Inorganic acid, sodium bicarbonate

P.T.O.

6) In many animals, the gene that regulate the development of stem cell are activated
   a) Once
   b) Only twice
   c) Upto 10 times
   d) Over 100 times
7) Specifically _____ cells are harvested from the early embryo.
   a) Inner cell mass
   b) All
   c) Enucleated
   d) Umbilical cord

B) Answer the following terms : **7**
1) Buffer
2) Totipotency
3) Suspension culture
4) Antibiotics
5) Self renewal
6) Cytokine
7) Stromal cell.

SECTION – II

(Attempt **any four**)

2. Explain in detail general laboratory structure of animal tissue culture. **14**

3. Explain in detail hematopoietic stem cell and its clinical application. **14**

4. Write an essay on media composition for animal tissue culture. **14**

5. Explain in detail application of stem cell in different organ regeneration. **14**

6. Answer **any two** of the following : **14**
   1) Explain in detail cell proliferation.
   2) Explain in detail warm trypsinization.
   3) Describe basic properties of stem cell.

7. Answer **any two** of the following : **14**
   1) Explain tissue engineering.
   2) Give an account on modes of cell and tissue delivery.
   3) Write a note on classification of stem cell.

_____

SLR-MK – 102

Seat No.	

M.Sc. (Part – II) (Semester – IV) Examination, 2016
BIOTECHNOLOGY (CGPA)
Genetic Engineering (Paper – IV)

Day and Date : Wednesday, 6-4-16 Total Marks : 70

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

***Instructions**: 1) Part – **I**, Question **1** is **compulsory**.*

*2) Attempt **any four** questions from Part – **II**.*

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

*4) Answers to the Part – **I**, and Part – **II** are to be written in **same** answer booklet only.*

PART – I

1. A) Rewrite the sentence after choosing the correct answer from the given alternatives. **7**

i) _____ are the enzymes that cleave nucleotides one at a time from an end of a polynucleotide chain.

a) Exonucleases b) Endonucleases

c) Polymerase d) Ligase

ii) Molecular weight of S1 nucleases is

a) 32 kd b) 44 kd c) 20 kd d) 58 kd

iii) _____ is the first commercial cloning vector.

a) pSC 101 b) pBR 322 c) pBR 327 d) pBR 313

iv) _____ filamentous phage used as a vector.

a) T4 b) T3 c) M11 d) M13

v) _____ are inherited differences found among the individuals in more than 1% of normal population.

a) Molecular markers b) Mutations

c) Polymorphisms d) Variations

vi) VNTRs are analysed by _____ technique.

a) RFLP b) Electrophoresis

c) DNA sequencing d) RNA blotting

vii) _____ method of DNA sequencing is known as chemical degradation method.

a) Auromated b) Sanger

c) Maxam-Gilberts d) Edmans degradation

B) Define : **7**

a) DNA fingerprinting.

b) Cloning Vector.

c) C DNA Library.

d) Plasmid.

e) Northern Blotting.

f) Primers.

g) Exonucleases.

PART – II

Answer **any four** of the following.

2. Describe the method of Isolation and purification of Vector DNA. **14**

3. Describe RFLP and add a note on its applications. **14**

4. Give details of Sanger's DNA sequencing technique. **14**

5. Explain gene therapy with suitable examples. **14**

6. Answer **any two** of the following. **14**

   a) Explain plant viruses as a cloning vector.

   b) Explain direct screening method for selection of recombinants.

   c) Explain gun method for DNA transfer.

7. Write short notes on **(any two)** : **14**

   a) DNA marker technology used in plants.

   b) Animal viruses as a cloning vector.

   c) Protein blotting.
