Seat No.	

M.Sc. (Biotechnology) (Semester – I) (New) (CBCS) Examination, 2017
MICROBIOLOGY

Day & Date: Tuesday, 18-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *1)* ***Section- I compulsory****.*
2) Answer any ***four*** *questions from* ***section-II.***

Section - I

Q.1 A) Multiple Choice Questions: **07**

1) Example for DNA viruses
   a) Adeno virus
   b) Papova virus
   c) Herpes virus and cauliflower moisaic
   d) All of the above

2) On Mac Conkey's medium *E. coli* forms
   a) Colourless colonies
   b) Greenish pigmentation
   c) Pink coloured colonies
   d) Medusa head appearance

3) AIDS is caused by
   a) Retrovirus b) Prion c) Rhabdovirus d) Parvovirus

4) Cell-well is
   a) Thick in Gram positive than Gram negative
   b) Thick in Gram negative than Gram positive
   c) Equal in both
   d) Absent in Gram negative cell

5) Temperature in pasteurization is
   a) 62.8 ^{o}C b) 35.7 ^{o}C c) 68.2 ^{o}C d) 60.8 ^{o}C

6) Yeast extract is an excellent source of
   a) Vitamin A b) Proteins c) Vitamin B d) Carbohydrates

7) The micro-organisms that grow at high salinity are
   a) Osmophiles
   b) Halophiles
   c) Both a and b
   d) None of these

B) Define the following terms: **07**

1) Negative staining
2) Pathogen
3) Guild
4) Gram positive bacteria
5) Autoclave
6) PHYLIP
7) TEM

Section- II

Q.2 What is metagenomics? Explain how it can be applied in microbial taxonomy. **14**

Q.3 Explain in detail the advantage of microbial diversity in biotechnological applications. **14**

Q.4 Give a detailed account of classification of microorganisms based on the G+C content, DNA, RNA homology and protein profiling. **14**

Q.5 **Answer any two from the following:** **14**

a) With an appropriate example explain the fungal associations with plants.
b) Explain with a labeled diagram the lysogenic cycle.
c) Describe the importance of serial dilution in microbes from a sample.

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

a) Plant viruses
b) Moist heat sterilization
c) Photosynthetic microbes

SLR-RD – 107

Seat No.	

M.Sc. (Biotechnology)(Semester – I) (New) (CBCS) Examination, 2017
CONCEPT OF BIOCHEMISTRY

Day & Date: Thursday, 20-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Note: 1) Section- I compulsory.
2) Answer ANY FOUR questions from Section-II.

Section- I

Q.1 A) Multiple Choice Questions: **07**

1) The prostaglandins and structurally related molecules are called as eicosanoids contain _____ carbon atoms.
   a) 10 b) 20 c) 30 d) 40

2) While conversion of protocollagen to collagen, vitamin _____ plays role of coenzyme in hydroxylation of proline & lysine.
   a) A b) B c) C d) D

3) The deficiency of enzyme hypoxanthine guanine phosphoriboy ltranfernsferase result in _____ which is an inborn disorder.
   a) Lesch-Nyhan syndrome b) Marasmus
   c) Promes disease d) Alkaptonuria

4) The first stable four carbon compound of C4 pathway is _____
   a) Erythrose b) Acety 1 COA
   c) Glyveraldehyde d) Oxaloacetic acid

5) The regulatory committed step in biosynthesis of fatty acid is the formation of _____
   a) Malony COA b) Acety COA
   c) Malony ACP d) Acetoacetic acid

6) Increased concentration if calcium ions in blood occurs under the influence of a hormone secreted by _____ gland
   a) Thyroid b) Parathyroid c) Pancreatic d) Pitutary

7) A thermodynamic reaction can occur spontaneously only if the ΔG is _____.
   a) At equilibrium b) Negative c) Positive d) Maximum

B) Define the following terms: **07**

i) Vitamin
ii) Metabolism
iii) Secondary messenger
iv) Entropy
v) Hormone
vi) Gluconeogenesis
vii) Protein stability

Section- II

Q.2 Illustrate the reactions, energetic and regulation of 'pentose phosphate pathway'. **14**

Q.3 Explain C3 and C4 pathways. **14**

Q.4 Give the general classification and role of plant hormones. **14**

Q.5 Answer any Two of the following: **14**

i) Illustrate biosynthesis of nucleotides.
ii) Explain structure and role of cAMP.
iii) Describe Z scheme of noncyclic phosphorlation.

Q.6 Answer any TWO of following : **14**

i) Give names and role of water soluble vitamins.
ii) Describe structural levels in protein. Add a note on protein stability.
iii) Describe the laws of thermodynamics. Explain the concept of ' free energy'.

SLR-RD – 108

Seat No.	

M.SC.(Biotechnology) (Semester – I) (New) (CBCS) Examination, 2017
INHERITANCE-BIOLOGY

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instruction :-

*1) Part-**I**, Questions-**1** is **compulsory**.*
*2) Attempt any-**4** question 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 sentence after choosing the correct answer from the given alternatives: **07**

1) The first human syndrome attributed to chromosomal disorder is _____.
   a) Down's Syndrome b) Turner's Syndrome
   c) Patau's Syndrome d) Edward's Syndrome

2) The linkage of the genes in a chromosome is represented in the form of _____.
   a) Genetic Maps b) Linkage map
   c) Chromosome Map d) All of these

3) One centimorgan is equal to _____ recombinations.
   a) 1% b) 10% c) 100% d) 0.1%

4) Theory of Biogenesis was proposed by _____.
   a) Thales b) Louis Pasteur
   c) Dobzhansky d) Oparin

5) The molecular level of transformation was observed by _____.
   a) F. Griffith b) O. Avery c) J. Lederberg d) L. Tatum

6) A diploid cell missing a single chromosome is _____.
   a) Trisomic b) Nullisomic c) Monosomic d) Tetrasomic

7) Restricted transduction was first discovered in _____.
   a) Phageλ b) P22 c) T1 phage d) attλ

B) Define the following: **07**

1) Back cross
2) Complementary
3) Speciation
4) Homologous
5) Temperate organs
6) Merozygote
7) Hfr

Part- II

Answer Any Four of the following:

Q.2 Explain the principles and characteristics of linkage in Drosophila as proposed by T.H. Morgan and the factors affecting it. **14**

Q.3 Write in detail about the structural changes in chromosomes. **14**

Q.4 Explain in detail the mechanism of transduction with a neat labeled diagram. **14**

Q.5 Answer any two from the following: **14**

a) Explain 9:3:4 ratio with the help of suitable examples.
b) Describe the morphological structure of Lampbrush chromosome with neat diagram.
c) Explain the inheritance pattern of mitochondria.

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

a) Mary Lyon's Hypothesis
b) Microsatellites
c) Darwinism

SLR-RD – 109

Seat No.	

M.Sc. Biotechnology (Semester – I) (New) (CBCS) Examination, 2017
BIOSTATISTICS & BIOINFORMATICS

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

Time: 10.30 AM to 01.00 PM

Instruction :-1) *Part-**I**, Questions-1 is compulsory.*
*2) Attempt **any four** question 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-1

Q.1 A) Rewrite the sentence after choosing the correct answer from the given alternatives: **07**

1) _____ is one of the protein information resource.
a) NCBI b) PIR c) DDBJ d) EBI

2) The primary database of protein is _____.
a) Swiss prot b) TrEmbl c) Both a & b d) None

3) BLAST is _____ sequence aligment tool.
a) Multiple b) Pairwise c) Both a & b d) None

4) _____ is one of the homology modeling method.
a) Parsimony b) Likelihood c) Neighbor joining d) All

5) A set of all possible data values for a subject under consideration is called _____.
a) Descriptive statistics b) a sample c) a population d) Statistics

6) The number of occurrences of a data value is called _____.
a) The class limits b) The frequency
c) The cumulative frequency d) Ogive

7) An organization of observed data into tabular form in which classes and frequencies are used is called.
a) The bar chart b) The pie chart
c) The histogram d) Frequency polygon

B) Definitions: **07**

1) Genome
2) MSA
3) Global alignment
4) Constant
5) Mean
6) Histogram
7) Population

Part- II

Answer Any Four of the following:

Q.2 Write a note on nucleotide sequence database. **14**

Q.3 Add a note on method of sequence alignment. **14**

Q.4 Define table. Explain the components of table. **14**

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

a) Write a note on composite databases.
b) Add a note on homology modeling.
c) Obtain median for the following data

Marks	20	9	25	50	80	40
No. of students	6	4	16	7	2	8

Q.6 Write short notes on any two: **14**

a) Applications of phylogenetics.
b) Advantages & disadvantages of standard deviation.
c) Types of distribution in probability.

SLR-RD – 115

Seat No.	

M. Sc. (Biotechnology) (Semester –II) (New) (CBCS) Examination, 2017
CELL BIOLOGY

Day & Date: Wednesday, 19-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *1) All questions of **Section I** are compulsory.*
*2) Answer any **Four questions** from **section II.***
*3) All question **carry** equal **marks**.*
*4) Draw neat and labeled **diagrams** wherever **necessary**.*

Section-I

Q.1 A) Rewrite the sentence after choosing the correct from the given **07**

1) _____ is restricted to inner mitochondrial membrance.
   a) Sphingomyelin b) Sphingolipids
   c) PhosphotidyIserine d) Cardiolipin

2) In prokaryotic cell _____ is absent.
   a) Chromatin with histone b) Cell wall
   c) Plasma membrance d) Plasmid

3) Cellular organelles contain hydrolytic enzymes are called as _____.
   a) Mesosomes b) Peroxisomes
   c) Lysosomes d) Ribosomes

4) Microfilament is mainly composed by _____ protein.
   a) Myosin b) Actin c) Tubulin d) Keratin

5) Clathrin-coated pits are used to _____.
   a) Bring desired substances from the environment into the cell in vesicles
   b) Extrude bulk fluids form the cell
   c) Allow desired molecules directly into the cytoplasm
   d) Pass wastes in vesicles to the outside

6) In the cAMP pathway, the G protein stimulates
   a) Phospholipase C b) The endoplasmic reticulum
   c) Calmodulin d) Adenylyl cyclase

7) In most cases protein kinases _____
   a) Bind cGMP
   b) Hydrolyze proteins
   c) Add phosphate groups to proteins
   d) Polymerize amino acids

B) Define the terms **07**

1) Cytoskeleton
2) Tight Junction
3) Prokaryotic cell
4) Membrane diffusion
5) Motor proteins
6) Extracellular matrix
7) Apoptosis

Section-II

Answer any four the following

Q.2 Explain structure of G-protein- Coupled receptors and their signal transduction pathway. **14**

Q.3 Explain chemical composition and Structure of plasma Membrane. **14**

Q4 Describe Structural and function capitalization of Cell organelles-mitochondria **14**

Q5 Answer any two from the following **14**

a) Add a note on 'communicative junction between cells'.
b) Write a note on 'Micro tubular Motor protein'.
c) Describe 'Intermediary filaments'.

Q.6 Write short notes on (any two) **14**

a) Add a note on 'Calcium binding Protein'.
b) Explain Inter grins family protein.
c) Explain Golgi complex and its function.

Seat No.	

M. Sc. (Biotechnology) (Semester –II) (New) (CBCS) Examination, 2017
ENZYME TECHNOLOGY

Day & Date: Friday, 21-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *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

Q.1 A) Rewrite the following sentence by choosing the correct answer. **07**

1) De novo synthesis of an enzyme, promoted by the substrate on which it acts, is characterized bt the term
   a) Induction b) Activation
   c) Gratuity d) Depression

2) Out of total enzymes present in the cell mitochondria above has
   a) 4% b) 70% c) 95% d) No enzymes

3) Enzymes, vitamins and hormones can be classified into a single category of biological chemicals because all of them.
   a) Aid in regulating metabolism
   b) Are synthesized in organism
   c) Are proteins
   d) Enhance the oxidation metabolism

4) An enzyme which requires a biological change in order to become active is called
   a) Transferase b) Zymogen
   c) Hydrogenase d) Trypsin

5) On top of active site, allosteric enzyme contain
   a) Inhibitors b) Substrate
   c) Allosteric Site d) Polypeptide chain

6) Irreversible modification require synthesis of
   a) Enzymes b) Carbohydrates
   c) Vitamins d) Proteins

7) Number of substrate molecules converted in to product by one molecule of enzyme active site per unit time is called

a) Turnover number
b) Substrate number
c) Reaction number
d) None of above

B) Define the following terms: **07**

1) Phosphorylase
2) Enzyme inhibitors
3) Importance of V max
4) IUB system
5) Ribonuclease
6) ES complex
7) CO-enzymes

Section-II

Q.2 Define different methods of immobilization with appropriate examples. **14**

Q.3 What is feedback regulation in enzyme kinetics? How does it affect the enzyme activity. **14**

Q4 Elaborate the clinical importance of enzymes for different applications. **14**

Q5 Answer any two of the following: **14**

a) Note on Lysozyme and ribonuclease
b) Micro encapsulation and entrapment method
c) Significance of V max and K m

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

a) Describe the importance of end point kinetic assay.
b) Explain the importance of Hill and Scat chard plot in ligand binding.
c) Define the kinetics of allosteric enzymes.

Seat No.	

M. Sc. (Biotechnology) (Semester –II) (New) (CBCS) Examination, 2017
MOLECULAR CELL PROCESSING

Day & Date: Monday, 24-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

N.B. : *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

Q.1 A) Rewrite the following sentence by choosing the correct answer. **07**

1) _____ statements is true of DNA damage.
   a) Most DNA damage is repaired by the cell
   b) All DNA damage results in diseases such as cancer
   c) All DNA damage is caused by physical agents
   d) Most DNA damage is advantageous to the cell

2) RNA primer necessary for replication _____
   a) The RNA primer is necessary for the activity of DNA ligase.
   b) The RNA primer create the 5' and 3' ends of the stand.
   c) DNA polymerase can only add nucleotides to RNA molecules.
   d) DNA polymerase can only add nucleotides to an existing strand.

3) The common demonization occurs during DNA damage_____
   a) Thymine dimer b) Adenine dimer
   c) Guanine dimer d) None

4) During the process of transcription, _____ of the following is produces.
   a) H_2O b) ATP c) mRNA d) DNA

5) DNA repair mechanism is absent in _____
   a) Nuclear genome b) Mitochondrial genome
   c) Chloroplast genome d) Both b & c

6) The peptide chin grows on _____ site
   a) A b) P c) E d) Both a & b

7) Transcription termination occurs by _____
   a) Rho-dependent
   b) Rho-independent
   c) Sigma factor
   d) Both a & b

B) Define the following terms: **07**

1) Topoisomer
2) Activators
3) SOS repair
4) 50 S ribosome
5) RNA polymerase
6) Nitrosylation
7) Arthur Kornberg enzyme

Section-II

Answer any four of the following:

Q.2 Write a note on base excision and recombination repair with nest labeled diagram. **14**

Q.3 Write a note on different types of intron splicing and add a note on spliceosome. **14**

Q4 Describe the structure, assembly and function of each subunit of DNA pol III with neat Labeled diagram. **14**

Q5 What is oriC? Explain the eukaryotic DNA replication with neat labeled diagram. **14**

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

a) Write a note on different types RNA molecules.
b) Explain the recombination process
c) Write a note on post transcription modification of eukaryotic mRNA.

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

a) Prokaryotic gene structure
b) Eukaryotic ribosome subunits
c) Translation initiation factors

SLR-RD-118

Seat No.	

M.Sc.(Biotechnology) (Semester– IV) (New) (CBCS) Examination, 2017
Molecular Medicine

Day & Date: Monday, 24-04-2017 Max. Marks: 70

Time: 10.30 AM to 01.00 PM

Instructions :

1) *All question of Section 1 are compulsory.*
2) *Answer any Four questions from section II*
3) *All questions carry equal marks.*
4) *Draw neat and labeled diagrams wherever necessary.*

SECTION – I

Q.1 A) Rewrite the sentences after choosing the correct answer from the given. **07**

1) The α-globin gene of haemoglobin is located on chromosome number……..
   A) 11 B) 12
   C) 16 D) 18

2) ..... gene is mutated in cystic fibrosis
   A) CFTR B) Actin
   C) Cadherin D) Fibrin

3) …….. is defined as compounded that demonstrates the desired biological activity on molecular target.
   A) Lead B) Genome
   C) Mercury D) Iron

4) SCID is an example of ……. gene therapy
   A) Ex-vivo B) In-vivo
   C) In-situ D) All of these.

5) MHC Antigen in human is known as…….
   A) HLA B) ALC
   C) ASB D) HSB

6) Stem cell exhibits…… properties.
   A) Only potency
   B) Potency and self renewable
   C) Potency and non renewable
   D) Only self-renewable
7) In DNA fingerprinting…….repeated sequences of DNA is used.
   A) Variable number of tandem repeats
   B) Verified number of tandem repeat
   C) Versatile number of transverse repeat
   D) Variable number of transverse repeat.

B **Define the terms** **07**

1) Stem cells.
2) Gene therapy
3) Amniocentesis.
4) DNA fingerprinting.
5) Microarray.
6) Plasmids
7) Sickle cell anemia

PART - II

Answer any four of following

Q2 Write a brief account on Stem cells and its properties. **14**

Q3 Explain in detail Cystic fibrosis with labeled diagram **14**

Q4 Write a note on gene therapy and its types. **14**

Q5 **Answer any TWO of the following.** **14**

i) Explain in details prenatal diagnosis and its methods.
ii) Explain the methods of structure based drug discovery.
iii) Describe in details route of administration of drugs.

Q6 **Write short notes on any TWO of the following** **14**

i) Write a note on induced pluripotent stem cells.
ii) Describe alzheimer's disease.
iii) Explain in-vivo and ex-vivo gene theraphy

SLR-RD – 127

Seat No.	

M.SC. – II (Semester – III) (New) (CBCS) Examination, 2017
BIOTECHNOLOGY
Advanced Analytical Techniques

Day & Date: Tuesday, 19-04-2017 Max. Marks: 70

Time: 02.30 AM to 05.00 PM

NOTE :

1) *Section-**I** Compulsory*
2) *Answer any four questions from Section- **II***

Section-I

Q.1 A) Rewrite the sentence using correct alternative given below. **07**

1) In circular dichorism, the differential absorption of _____ light analyzed.
   a) Polarized b) Reflected c) Inhibited d) Deviated

2) Radioactive decay is measured in a _____.
   a) Secintillation counter b) AAS
   c) UV Spectrometer d) Autoradiography

3) The first working microscope was designed by _____.
   a) Robert Hook b) Kepler c) Leeuwenhoek d) Watson

4) In Western Blotting technique _____ is transferred to the membrane.
   a) DNA b) RNA c) Protein d) None

5) Paper chromatography is a type of _____ chromatography.
   a) Planar b) Column c) TLC d) All of the above

6) The working range of a pH meter is in between_____.
   a) 8-14 b) 0-14 c) 0-7 d) 1-7

7) The nuclear fraction is sedimented at _____.
   a) 10,000 b) 1000 c) 8000 d) 12,000

B) Define the following terms: **07**

i) Numerical Aperture
ii) RCF
iii) Mobile phase in Chromatography
iv) Capillary electrophoresis
v) Electromagnetic Radiation
vi) Scintillation
vii) Electrode

Section- II

Q.2 Comment on the different types of Rotors with the help of suitable diagrams. **14**

Q.3 Write a note on the methods of measurement of Radioactivity? Give their advantages and restrictions. **14**

Q.4 Give the principle, instrumentation, working and applications of UV-Vis Spectroscopy. **14**

Q.5 **Answer any TWO of the following:** **14**

i) Explain the technique of SDS-PAGE.
ii) Write a note on GC-MS.
Iii) Explain the technique of NMR.

Q.6 **Write short notes on ant TWO of the following:** **14**

i) Applications of radio isotopes in Biological sciences.
ii) Support material used in the technique of Chromatography.
iii) Use of centrifuges for molecular weight determination.

SLR-RD – 129

Seat No.	

M.SC.(Biotechnology)(Semester – III) (New) (CBCS) Examination, 2017
Research Methodology and IPR

Day & Date: Saturday, 22-04-2017 Max. Marks: 70

Time: 02.30 AM to 05.00 PM

Instruction :-

1) Part-I, Questions 1 is compulsory.
*2) Attempt **any four** question 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.

Q.1 A) Rewrite the sentence after choosing the correct answer from the given alternatives **07**

1) The sampling error usually _____ with Increase in sample size.
a) Part b) totally c) probability d) decreases

2) A review of literature require_____
a) Planning b) Clear writing c) good writing d) All of these

3) Symbol of TATA of is _____
a) Copyright b) Patent c) Trademark d) All of the above

4) World Intellectual Property Organization was established in
a) 14 March, 1959 b) 14 July, 1967
c) 14 August 1965 d) 14 October, 1960

5) _____ provide and promote an effective system of plant variety protection.
a) WIPO b) UPOV c) Patent d) All of the above

6) _____ is not one of seven major parts to the research report.
a) Result b) Abstract c) Method d) Footnotes

7) _____ of the following is not an essential element of report writing.
a) Research Methodology b) Reference
c) Conclusion d) None of these

B) Definitions: **07**

1. Applied research
2. Testing for Significance
3. ISSBN
4. Epistemology
5. Plagiarism
6. WIPO
7. Farmer's right

Section- II

Answer **any four** of the following

Q.2 Explain in detail Objectives of research and Characteristics of Research. **14**

Q.3 What is sampling? Explain in detail types of Sampling. **14**

Q.4 Explain the author instructions of IJBT for preparation of manuscript. **14**

Q.5 **Answer any two from the following:** **14**

a) Write a note on Chi square tests and its applications.
b) Write a note on types of technology transfer.
c) Write a note computer and internet application in research.

Q.6 **Write short notes on (any two)** **14**

a) Copyright
b) Procedure of patenting.
c) Advantages and disadvantages of PBR.

SLR-RD– 136

Seat No.	

Biotechnology(Semester –IV) (New) (CBCS) Examination, 2017
BIOINFORMATICS
ANIMAL BIOTECHNOLOGY AND STEM CELL TECHNOLOGY

Day & Date: Wednesday, 19-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *1)Section – I* ***compulsory***
2) Answer any four questions from section-II

SECTION-I

Q.1 A) Multiple Choice Questions **07**

1) The cell line used for the production of Polio vaccine was_____
   a) Primate Kidney cell line b) CHO cell line
   c) Dog kidney cell line d) Mouse Fibroblast cell line

2) The Virus commonly used to infect cell cultures for the production of interferons is _____
   a) Corona virus b) Sendai virus
   c) Polio virus d) Small pox virus

3) A heterologous protein for its expression in the milk of a transgenic animal should be under the control of the gene coding for _____
   a) Preproinsulin b) Lac Z c) β globin d) βlactoglobin

4) Aminopterin is used during the production of hybridoma cells because it _____
   a) Blocks the Salvage pathway.
   b) Prevents the growth of B cells.
   c) Prevents the growth of myeloma cells.
   d) Blocks the synthesis of Ig by B cells.

5) First cloned animal was _____
   a) Dolly sheep b) Dog c) Mule d) Cat

6) Transgenic goats have been used to produce the protein used to dissolve blood clots for _____
   a) Amyloid precursor
   b) a1-antitrypsin (AAT)
   c) Casein
   d) A variety of human tissue type Plasminogen activator.

7) The Father of Animal cell culture was _____.
   a) Ross Harrison b) Whatson

c) Johnson d) Chris Harris

B) Define the following terms: **07**

a) Contact inhibition
b) Continuous cell line
c) Feeder layers
d) Asepsis
e) Cryopreservation
f) Organ culture
g) Stem cell

Section-II

Q.2 Briefly explains the design of an animal cell culture bioreactor and types. **14**

Q.3 Define Organotypic culture and write in detail haw they are made. **14**

Q4 Describe in detail the types of grafts used for organ transplantation and its applications. **14**

Q5 Answer any two from the following **14**

a) Methods of Preservation of cell cultures.
b) Serum free media.
c) CO2 incubator

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

a) Primary culure.
b) Mode of cell and tissue delivery.
c) Applications of animals cell culture in day life.

SLR-RD– 137

Seat No.	

M. Sc. (Biotechnology) (Semester –IV) (New) (CBCS) Examination, 2017
INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

Day & Date: Friday, 21-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *1)**section-I compulsory.***

*2) **Answer any Four questions from section II***

Section-I

Q.1 A) Multiple Choice Questions **07**

1) The method for preservation of biological component by dehydrating it at lower temperature is called as_____
   a) Cryopreservation b) Lyophilisation
   c) Freezing – drying d) Both B & C

2) The Production of algal biomass can be done by using_____
   a) Fluidized bioreactor b) Fixed bed bioreactor
   c) Pulsed bioreactor d) Photo bioreactor

3) _____ acts as a nitrogen source in fermentation medium
   a) Molasses b) Hydrocarbons
   c) Acid wood hydrolysate d) Corn steep liquor

4) Out of following _____ is found to be most carcinogenic
   a) PAH b) Heavy metals
   c) Textile dyes d) Air Pollutants

5) Phenyl acetic acid acts as a precursor for the production of _____
   a) Penicillin V b) Penicillin G
   c) Penicillin M d) Cyclosporin

6) In Bioreactors _____are used to prevent vortex formation
   a) Spargers b) Impellers
   c) Baffles d) Both B & C

7) Amylase is a starch hydrolyzing enzyme can be obtained by using_____
   a) A. oryzae *b) S. Cerevisiae*
   c) B. licheniformis d) Both A & C

B) Define the following terms: **07**

1) Bioreactor
2) Production medium
3) Production Strain

4) Downstream processing
5) Bioremediation
6) Bioindicators
7) Xenobiotic

Section-II

Q.2 Give brief account of chromatographic techniques for purification of desired product from fermented broth **14**

Q.3 Write in details about treatment of the industrial effluent with labeled diagrams **14**

Q4 Discuss the on energy source involved in fermentation process **14**

Q5 Answer any two of the following **14**

a) Batch Fermentation
b) Citric acid production
c) Solid liquid separation

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

a) Non-conventional energy sources
b) Biosensor
c) Effect of heavy metals on environment

Seat No.	

M. Sc. (Biotechnology) (Semester – IV) (New) (CBCS) Examination,2017

PLANT BIOTECHNOLOGY

Day & Date: Monday, 24-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *1)* ***Section-I compulsory.***

2) ***Answer any four question from section-II***

SECTION- I

Q.1 A) Choose the correct alternative given in the bracket. 07

1) A recombinant DNA molecule is produced by joining together
   a) One mRNA with a DNA segment
   b) One mRNA with a tRNA segment
   c) Two mRNA molecules
   d) Two DNA segment

2) Which group of enzymes are popularly called “Molecular stichers”
   a) Restriction b) Ligases
   c) RNA polymerase d) DNA polymerase

3) Expression vectors are those
   a) Produce protein products
   b) Used for genomic libraries
   c) Used for chromosome synthesis
   d) Used for finger printing

4) Cell without cell wall Is Known as
   a) Protoplast b) Plasmolysed cell
   c) Both a and b d) None of the above

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

6) Meristem culture helps in developing
   a) Hybrid plants b) Virus free plants
   c) Disease resistant plants d) Tall plants

7) 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

B) Define the following terms **07**

1) Auxin
2) Macro-nutrients
3) Female Gametophyte
4) Molecular scissor
5) Secondary Metabolites
6) Ti Plasmid
7) Biolistic

SECTION-II

Q.2 Discuses in brief Vector mediated gene transfer in plants with suitable example? **14**

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

Q.4 Discuss in brief protoplast isolation, culture and its application in plant biotechnology? **14**

Q.5 Answer any Two of the following: **14**

1) Discuses Somaclonal variation with their types.
2) Shikimate Pathway in plants
3) Selectable and reporter marker genes.

Q6 write short notes on any Two of the following: **14**

1) Somatic embryogenesis in plants
2) Vector less gene transformation.
3) Phytohormones

SLR-RD – 139

Seat No.	

M. Sc Biotechnology (Semester – IV) (New) (CBCS) Examination, 2017
ADVANCED PHARMACOGNOSY

Day & Date: Wednesday, 26-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *1)* ***Section-I compulsory.***
2) ***Answer any four question from section-II***

SECTION-I

Q.1 A) Choose the correct alternative given in the bracket. 07

1) Indentify the term used for the study of drugs and their effect on the body:
   a) Pharmacy b) Pharmaceutical
   c) Pharmacology d) Physiotherapy

2) Identify the route of administration for ear drops :
   a) Oral administration b) Parenteral administration
   c) Topical administration d) None of above

3) Identify the term used to describe an injection that is given just under the skin of an animal :
   a) Subcutaneous b) Intramuscular
   c) Intravenous d) Epidural

4) Which of the following is non-probability sampling?
   a) Snowball b) Random c) Cluster d) Stratified

5) A research aims at finding a solution to an immediate problem arising in society is _____.
   a) Fundamental b) Applied
   c) Descriptive d) Historical

6) Characteristics of research is _____.
   a) Inter-disciplinary team approach
   b) Objectivistic approach
   c) Economical in nature
   d) All of these

7) Identify the category of drug which acts relieve pain :
   a) Analgesic b) Antibiotic
   c) Anticoagulant d) Antidiuretic

B) Define the following terms **07**

1) Research
2) Sample
3) Herbal drug
4) Scale up
5) Toxicology
6) Antipoetic ulcer
7) Antechamber

SCTION -II

Q.2 Define Research explain in details of types of Research. **14**

Q.3 Explain in details Infrastructure of herbal drug industry. **14**

Q.4 Diseurs the principle clinical stability stably and safety of herbal drugs. **14**

Q.5 Answer any Two of the following **14**

1) Effect of herbal Medicine
2) Immunomodulators
3) Hepatoprotectives

Q6 any Two of the following **14**

1) Dyes
2) Pigment
3) Preservatives

Seat No.	

M. Sc Biotechnology (Semester – IV) (New) (CBCS) Examination, 2017
MEDICAL BIOTECHNOLOGY AND BIO NANOTECHNOLOGY

Day & Date: Wednesday, 26-04-2017 Max. Marks: 70

Time: 02.30 PM to 05.00 PM

N.B. : *1)* ***Section-I compulsory.***
2) ***Answer any four question from section-II***

SECTION-I

Q.1 A) Choose the correct alternative given in the bracket. 07

1) The identification of bacteria by serologic tests is based on the presence of specific antigens. Which of the following bacterial components is least likely to contain useful antigens?
   a) Ribosomes b) Cell wall
   c) Capsule d) Flagella

2) An outbreak of sepsis caused by Staphylococcus aureus has occurred in the newborn nursery. You are called upon to investigate. According to your knowledge of the normal flora, what is the most likely source of the organism?
   a) Nose b) Colon c) Vagina d) Throat

3) The cogulase test is used to differentiate
   a) Staphylococcus epidermidis form Neisseria meningitides.
   b) Streptococcus aureus form Staphylococcus epidermidis. .
   c) Streptococcus pyogens form Staphylococcus aureus.
   d) Streptococcus pgoyens form Enter Enterococcus faecalis

4) Which of following media is used for culturing Salmonella?
   a) VL-broth b) Sabouraud agar
   c) Slanetz Bartley d) Selenite Broth

5) 1.nanometre$^{=}$_____ cm.
   a) $10^{(-9)}$ b) $10^{(-8)}$ c) $10^{(-7)}$ d) $10^{(-6)}$

6) The most important property of nanomaterials is
   a) Force b) Friction
   c) Pressure d) Temperature

7) Nanotechnology, in other words, is
   a) Carbon engineering b) Atomic engineering
   c) Small technology d) Microphysics

B) Define the following terms **07**

1) Microflora
2) Infection
3) Diagnosis
4) MDR
5) Bactermeia
6) Nanotubes
7) Miscelle

SCTION –II

Q.2 Discuss about the epidemiology study and pathogensis of Staphylococcus aureus diseases. **14**

Q.3 Briefly explains of conventional method for the detection of diseases. **14**

Q.4 Describe the mode action of antibiotics. **14**

Q.5 Answer any Two of the following **14**

1) Interferon
2) Gene therapy
3) Synthesis of nanoparticles by chemical method.

Q6 write short notes on any Two of the following **14**

1) Malaria Disease
2) Application of Phages in therapeutics.
3) Biological application of nanoparticles.