			MICROBIOLOG	Ϋ́	
Day & Time:	& Date : 10.3	e: Tl 0 Al	hursday, 16-11-2017 M to 01.00 PM		Max.
Instru	uction	ns:	1) Section-I compulsory.		
			2) Answer any four questions from sec	tion	-11.
			Section - I		
Q.1	A)	Μι 1)	 Itiple Choice Questions: Protein particles which can infect are c a) Virons c) Nucleoids 	alle b) d)	ed Prions None of these
		2)	Peptone water medium is an examplea) Synthetic mediumc) Differential medium	for b) d)	Semisynthetic medium None of these
		3)	Temperature required for pasteurization a) Above 150 [°] C c) 110 [°] C	n is b) d)	s Below100 ⁰ C None of these
		4)	Separation of a single bacterial colonya) Isolationc) Pure culturing	is d b) d)	called Separation All of these
		5)	Which virus was first observed? a) Hepatitis Virus c) Herpes Virus	b) d)	TMV None of these
		6)	Example of anaerobic medium a) Wilson blair medium c) Robertson's cooked meat	b) d)	Mac-conkey medium EMB medium
		7)	Bacteria which need oxygen for growtha) Thermophilic bacteriac) Facultative anaerobic bacteria	n ar b) d)	e called Microaerophilic bacteria Mycobacteria

Biotechnology

Define the following terms: B)

- 1) Xerophiles
- 2) Mycotoxins
- 3) Lichens

Seat

No.

- 4) ssRNA
- 5) Gram negative bacteria
- 6) Pour plate method
- 7) Type strain

Section – II

- Q.2 How are the viruses classified? Add a note on different methods of isolation 14 and cultivation of viruses.
- What is symbiotic association? What is its influence on the ecosystem? 14 Q.3

Set

SLR-ME-93

Ρ M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2017

Max. Marks: 70

- ese
- ey medium
- ium
- philic bacteria d) Mycobacteria
- 07

Q.4	Explain the different methods of microbial isolation? How does it help in the classification of microorganism?	14
Q.5	 Answer any two from the following: a) What is molecular evolution with regards to origin of new genes and proteins? b) What is antagonism? What is influence in discovery of antibiotics? c) Explain with suitable example what are fastidious microorganisms? 	14
Q.6	Write short notes on any two of the following : a) Extremophiles	14

- b) Taxonomic ranksc) Culture collection centres

Seat No.		Set F)
	ſ	M.Sc. (Semester - I) (CBCS) Examination Oct/Nov-2017 Biotechnology CONCEPT OF BIOCHEMISTRY	
Day & [Time: 1	Date: 0.30 /	Saturday, 18-11-2017 Max. Marks: 7	0
Instruc	tions	: 1) Section- I is compulsory. 2) Answer any four questions from Section-II.	
		Section - I	
Q.1 A	λ) Μ 1)	ultiple Choice Questions: 0 In Ramchandran plot, the angles represent the bond angles angles represent the bond angles in C-C bond. b) phi a) psi b) phi c) gamma d) dolta	7
	2)	c) gamma u) dena During synthesis of cAMP, the cyclization of ATP molecule occurs in presence of enzyme. a) Transaldolase b) Transketolase c) ATP synthase d) Adenylatecyclase	
	3)	The Phosphate and ribose groups are donated by, during the bio synthesis of nucleotides.a) PRPPb) Orotate d) HGPRT	
	4)	Elevated level of is used as a diagnostic tool for pregnancy.a) Leutinizing hormoneb) vasopressionc) Human chorionic gonadotropind) somatostatin	
	5)	Retinol, retina and retinoic acid are the vitamers of vitamina) Ab) B1c) B5d) B12	
	6)	The deficiency of enzyme hypoxanthine guanine phosphoribosyl transferase result in, which is an inborn disorder.a) Lesch - Nyhan syndromeb) Marasmusc) Pomes diseased) Alkaptonuria	
	7)	A thermodynamic reaction cannot occur spontaneously only if the ΔG is	
		c) Positive b) Negative d) Maximum	
В	 b) D 1) 2) 3) 3) 4) 5) 6) 7) 	efine the following terms:0Secondary messengerRedox potentialHormoneVitaminStandard free energyGluconeogenesisProtein stability	7

Page **1** of **2**

SLR-ME-94

Section – II

Q.2	Add a detail account on 'Inborn errors of amino acid metabolism'.	14
Q.3	Describe phtosystem I and photosystem II.	14
Q.4	Give the general classification hormones. Explain in detail the mechanism of action of any one hormone.	14
Q.5	 Answer any Two of the following: a) Describe biological coupled reactions. Add a note on 'redox potantial'. b) Describe structure & role of fat soluble vitamins. c) Explain structure and role of cAMP. 	14
Q.6	 Answer any TWO of following : a) Describe concept of protein stability. b) Illustrate biosynthesis of nucleotide. c) Describe hormonal control of menstrual cycle. 	14

Seat	
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M.Sc.(Semester - I) (CBCS) Examination Oct/Nov-2017 Biotechnology INHERITANCE-BIOLOGY

Day & Date: Tuesday, 21-11-2017 Time: 10.30 AM to 01.00 PM

Instructions: 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:
 - 1) Females have a pair of identical chromosome called X chromosomes hence they are called as _____
 - a) Homomorphic b) Heteromorphic
 - c) Automorphic d) Gynandromorphic

2) The ideal DNA markers for genetic mapping and population studies are

a) Minisatellites

b) Microsatellites

- c) LINES
 - d) SINES
- 3) Gene interaction that involves the masking of the gene effect is
 - a) Supplementary Genes
 - c) Epistasis
- b) Complementary Genes
- d) Pleiotropy

The organic evolution was coined by _____

- a) H. Spencer b) A.I. Oparin d) Plato
- c) Aristotle
- The production of toxic substance Paramecin is controlled by cytoplasmic particles called _____
 - b) Alpha particles a) Kappa particles
 - c) Beta particles d) Delta particles
- 6) _____ is a very efficient method of mapping in bacteria.
 - a) Transduction
 - c) Conjugation d) Transfection
- _____ is a disease caused due to mutation in mt DNA. 7) _
 - a) Mycoelonic Epilepsy
- b) Bleeder's disease

b) Transformation

- c) Down's syndrome
- d) None o these

07

Max. Marks: 70

Set

SLR-ME-95

B) Define the following:

- 1) Reciprocal cross
- 2) Supplementary Gene.
- 3) Genetic Drift
- 4) Atavistic organ
- 5) Sexduction
- 6) Competency
- 7) Conjugation

Part – II

Answer Any Four of the following:

Q.2	Discuss the genetics of ABO blood group system in man with its characteristic features and its applications.	14
Q.3	Write in detail about the Euploidy and its significance.	14
Q.4	State the Hardy Weinberg equilibrium and add a note on its significance and factors affecting gene frequency.	14
Q.5	 Answer any two from the following: a) Explain 9:7 ratio with the help of suitable example. b) Describe the morphological structure of polytene chromosome with neat diagram. c) Explain the inheritance pattern in chloroplast of Mirabilis jalapa. 	14
Q.6	 Write short notes on any two of following: a) Heterochromatin and its types b) Lamarckism c) Microsotallitas 	14

c) Microsatellites

Set

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Seat	
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M.Sc.(Semester - I) (CBCS) Examination Oct/Nov-2017 Biotechnology BIOSTATISTICS AND BIOINFORMATICS

Day & Date: Thursday, 23-11-2017 Time: 10.30 AM to 01.00 PM

B)

Instructions: 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 07 alternatives:

1)		is one of the nucleotide	data	base.			
-	a)	GenBank	b)	PIR			
	c)	PMC	d)	RCSB			
2)	Th	e structural database of protein is					
,	a)	Swiss prot	b)	TrEmbl			
	c)	Blocks	d)	PDB			
3)	FA	STA was developed by					
,	a)	Needleman & Wunch	b)	Smith & Waterman			
	c)	Lipman & Pearson	d)	None			
4)		is one of the homology m	nodel	ing tool.			
,	a)	BLAST	b)	Omega			
	C)	Swiss model	d)	All			
5)	Sta	atistical results are					
,	a)	Absolutely true	b)	Not true			
	c)	True on average	d)	Universally true			
6)	Fre	equency of the variables is always _					
	a)	In percentage	b)	A fraction			
	c)	An integer	d)	None			
7)		is not a measure of c	entra	al tendency.			
	a)	Mean	b)	Variability			
	c)	Median	d)	mode			
De	fine	e the following:					
1)	Tra	anscriptomics					
2)	Ali	gnment					
3)	Molecular dynamics						
4)							
5)	Va	Variable					
6)	Me	edian					
()	Ch	chi square test					

Max. Marks: 70

Part - II

Answer Any Four of the following:

Q.2Define Bioinformatics. Add a note on its importance.14Q.3Add a note on types of protein databases.14Q.4Write a note on regression and correlation.14Q.5Answer any two from the following:14Q.6Write a note on multiple converse enclosis elignment14

- a) Write a note on multiple sequence analysis alignment.
- **b)** Add a note on Phylogenetics analysis software's.
- c) Represent the following data by means of Pie-diagram:-

Name of College	No. of students
Engineering	440
Arts	220
Agriculture	120
Home science	80
Fine Arts	60

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

- a) Protein structure prediction.
- b) Advantages & disadvantages of median.
- c) Applications of sampling techniques.

Set

Seat	
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M.Sc.(Semester - I)(CBCS) Examination Oct/Nov-2017 Biotechnology **CLINICAL BIOINFORMATICS**

Day & Date: Thursday, 23-11-2017

Time: 10.30 AM to 01.00 PM

Instructions: 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 07 alternatives:
 - 1) The ______ technology has been available and can generate about 100 million reads per run on a single sequencing machine.
 - b) Standford a) California
 - c) Illumina d) All of above
 - 2) A wide variety of microarray analysis tools are available through Bioconductor written in the _____ programming language. a) C
 - b) Java c) Perl d) R
 - 3) FastQC next generation sequencing tool is tool on _____ platform. a) Illumina b) FASTQ
 - c) GNU Glib d) CASAVA
 - 4) The first pathogen genome _____ that of was sequenced by traditional Sanger methods.
 - a) Hemophilic influenza
 - c) Staphylococcus aureus
- b) Staphylococcus epidermidis
 - d) Neisseria meningitides
 - 5) _____ _____ is the total number of metabolites present within an organism, cell or tissue. a) Proteome
 - b) Metabolome
 - d) Pharmacogenomics
 - 6) _ ____ is a joint scientific project between the European Bioinformatics Institute and the Wellcome Trust Sanger institute. a) NCBI b) Ensembl
 - c) Swiss Prot d) BioMart
 - 7) International Statistical Classification of Diseases is developed by
 - a) Sanger
 - c) ICHI

c) Genome

b) WHO d) ICF

Max. Marks: 70

B) Define the following:

- 1) Transcriptomics
- 2) Microarray
- 3) Pathology informatics
- 4) Medical coding
- 5) Metabolomics
- 6) HGP
- 7) Pharmacogenomics

Part – II

Answer Any Four of the following:

Q.2	Write a detailed note on various platforms and applications of NGS.	
Q.3	Define medial bioinformatics. Add a note on disease under its study.	14
Q.4	Explain the challenges and applications o Human Genome Project.	14
Q.5	 Answer any two from the following: a) Add a note on R scripting with its applications. b) Write note host-pathogen interactions? c) Explain the international classification of diseases. 	14
Q.6	Write short notes on any two of following: a) Genome mapping b) Genetic diseases	14

c) Systems biology

Biotechn CELL BIO	ology LOG	y Y	
riday, 17-11-2017		Max. Mark	s: 70
M to 01.00 PM			
1) All questions of Section I are co	ompuls	sory.	
2) Answer any Four questions from	m sec	tion II.	
3) All question carry equal marks.			
4) Draw neat and labeled diagram	is whe	ever necessary.	
Sectior	1 - I		
write the sentence after choosing	g the	correct from the given	07
In prokaryotic cells i	s com	imonly present.	
a) Histone	b)	Plasmid	
c) Nuclear envelope	d)	Nucleus	
N-acetylneuraminic acid is also ca	lled as	S	
a) Muramic acid	b)	Guanylase cyclase	
c) Ascorbic acid	d)	Sialic acid.	
The arrangement of microtubules i	in euk	aryotic flagella is referred to as	
a) Undulating	b)	Basal	
c) 9+2	d)	Ciliary	
Many surface proteins are anchore	ed by	•	
a) Nonpolar fatty acids	b)	Nonpolar amino acids	
c) Polar amino acids	d)	Polar fatty acids	
The surrounds the cell substances between the cells.	like a	belt, preventing the passage of	
a) Tight junction	b)	Gap junction	
c) Desmosome	d)	Hemidesmosome	
Binding of epinephrin to a G protei cyclase to produce large amount c	n-linko	ed receptor causes adenylyl	
a) A-kinase	b)	cAMP	
c) phospholipase C	d)	inositol triphosphate	
If gametes have 8 chromosomes, thave chromosomes.	the ce	Il resulting from syngamy will	
a) 8	b)	4	
c) 2	d)	16	
fine the terms			07
Apoptosis			•••
Dynein			

Day & Date: Frie Time: 10.30 AM

Seat

No.

Instructions: ²

- 3
- 4

Q.1 A) Rew 1) Ir

- С
- 2) N
 - а
 - С
- 3) T
 - _ а
- 4) N
 - а
- 5) T S
 - а
- 6) E С
 - а С
- 7) If h
 - а
 - С

B) Defi

- 1) A
- 2) D
- 3) Desmosomes
- 4) Plasma membrane
- 5) Intracellular Protein trafficking
- 6) Protein Tyrosine Kinase.
- 7) Cell cycle check points.

SLR-ME-98

M.Sc. (Semester - II) (New) (CBCS) Examination Oct/Nov-2017

Ρ

Set



Section - II

Answer any four the following

Q.2	Write about microfilaments and its motor protein activity in muscle contraction and relaxation.	14
Q.3	Explain difference between somatic cell division and sex cell division.	14
Q4	Describe Structural and function capitalization of Cell organelles-chloroplast.	14
Q5	 Answer any two from the following a) Add a note on 'Tight junction'. b) Write a note on 'ATP dependent Membrane transport'. c) Explain Ras-MAP Kinase pathway 	14
Q.6	 Write short notes on (any two) a) Add a note on 'G-protein-Coupled receptors'. b) Describe 'Calcium as an intracellular messenger'. 	14

c) Explain 'Fluid Mosaic Model'.

		07
	Pag	e 1 of 2

M.Sc. (Semester - II) (Old) (CBCS) Examination Oct/Nov-2017 Biotechnology **CELL BIOLOGY** Max. Marks: 70

Day & Date: Friday, 17-11-2017 Time: 10.30 AM to 01.00 PM

Instructions: 1) All questions of Section I is compulsory.

- 2) Answer any Four questions from section II.
- 3) All question carry equal marks.
- 4) Draw neat and labeled diagrams wherever necessary.
- 5) Figures to the right indicate full marks.

Section - I

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

- The main function of Centrosome is _ a) Secretion
 - b) Osmoregulation
 - c) Protein Synthesis
- d) Formation of Spindle Fiber

b) Gap junction

- 2) is a type of adhering junction between animal cells.
 - a) Tight junction
 - d) GTP c) ATP

Protoplasm found inside the nucleus is known as _

- a) Amyloplast b) Nucleopalsm d) Elaioplast
- c) Cytoplasm
- Plasmo-desmata occurs in _____
 - a) Plants
 - c) Bacteria d) All of the above

is a type of adhering junction between animal cells. 5) _

a) Tight junction

a) Immunoglobulin

c) ATP

b) Calcium gated channel

b) MHC proteins

d) All of the above

b) Animals

d) GTP

Receptors that are recognized by immune system are ____

- c) T receptors
- 7) Gap junctions are formed by
 - a) The fusion of plasma membranes to form a single membrane.
 - b) The insertion of protein complexes that form tunnel between cells
 - c) Gap in the cell wall of plants
 - d) None of the above

B) Define the terms

- 1) Endoplasmic Reticulum
- 2) Cell-matrix Interaction
- 3) Gastrulation
- 4) Meiosis
- 5) Lysosomes
- Apoptosis
- 7) Selectins

Seat No.

SLR-ME-102

Set

Section - II

Q.2	Add a brief note on cell senescence and Programmed cell death.	14
Q.3	Add a note on cell cycle and role of cyclins and cdks during cell division.	14
Q4	Explain in detail cell structure and organization of prokaryotic and eukaryotic cells.	14
Q5	 Answer any two from the following a) Cell cytoskeleton b) Tight and Gap junction c) Blastulation and Gastrulation cell cleavage. 	14
Q.6	 Write short notes on (any two) a) Desmosomes and Hemidesmosomes. b) WNT Singling pathway. c) Cell-Matrix Interaction 	14

M.Sc. (Semester - II) (Old) (CBCS) Examination Oct/Nov-2017 **Biotechnology** ENZYME TECHNOLOGY

Day & Date: Monday, 20-11-2017 Time: 10.30 AM to 01.00 PM

Instructions: 1) Section I is compulsory.

- 2) Answer any Four questions from section II.
- 3) All question carry equal marks.
- 4) Draw neat and labeled diagrams wherever necessary.
- 5) Figures to the right indicate full marks.

Section – I

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

- 1) In competitive enzyme activity inhibition
 - a) The structure of inhibitor generally resembles that of the substrate.
 - b) Inhibitor decreases apparent Km
 - c) Km remains unaffective
 - d) Inhibitor decreases V max without affecting Km
- 2) 1 international unit is _____ µkayal.
 - a) 6 b) 60
 - c) 0.6 d) 600
- 3) Ternary complex is not formed in ____
 - a) Ordered bi bi reaction c) Ping pong bi bi reaction
- b) Random bi bi reaction
- 4) The isoenzymes of LDH
 - a) Differ only in a single amino acid
 - b) Differ in catalytic activity
 - c) Exist in 5 forms depending on M and H monomer contents
 - d) Occur as monomers

5) The subunit composition of lactate dehydrogenase of heart is _____.

- b) M_2H_2 a) M₄
- c) HM_3 d) H₄
- 6) In Na ⁺K⁺ ATPase catalytic activity and ion binding sites are present in ____ subunit.

b) β

b) k-1+k2/k-1

d) k-1+k2/k1

- a) α
- d) None of these c) Both α and β
- 7) Km=
 - a) k1+k2/k-1
 - c) k1+k-1/k-1

- d) All of these

Seat No.

Set

Max. Marks: 70

B) Define the terms

- 1) Turn over number
- **2)** K_m
- 3) Ribozyme
- 4) SGPT
- 5) Metabolic engineering
- 6) Cooperativity7) Allosteric enzyme

Section - II

Q.2	Explain in detail structure function relationship of enzyme Lysozyme.	14
Q.3	Define immobilization of enzyme? Write the methods of immobilization.	14
Q.4	Explain IUB nomenclature system. Discuss in detail enzyme classification each with two examples.	14
Q.5	What is enzyme inhibition? Explain in detail enzyme inhibition with their Kinetics?	14
Q.6	 Write any two of the following:- a) Explain in detail structure function relationship of enzyme ribonuclease. b) Write a note on bio-sensor. 	14

SLR-ME-104 Set

Seat	
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M.Sc. (Semester - II) (Old) (CBCS) Examination Oct/Nov-2017 Biotechnology MOLECULAR CELL PROCESSING

Day & Date: Wednesday, 22-11-2017

Time: 10.30 AM to 01.00 PM

Instructions: 1) All questions of Section I is compulsory.

- 2) Answer any Four questions from section II.
- 3) All question carry equal marks.
- 4) Answer to the Section I and Section II are to be written in the same answer book.

Section - I

A) Rewrite the sentence after choosing the correct from the given Q.1 1) The phenomenon of genetic transformation was studied by a) Oswald Avery b) Frederick Griffith c) Korenberg d) Watson and Crick The biologically important form of DNA that is naturally found in most living system is a) A-DNA b) B-DNA c) Z-DNA d) E-DNA The organisms which have only RNA is called _ a) Ribotids b) Ribonucleotides c) Genetic RNA d) Non genetic RNA The length of 10 nucleotides is 34 A0 its length in mm is _____. a) 340 mm b) 3.4 mm c) 0.34 mm d) All of these 5) DNA replication occurs as _____ a) Conservative b) Semi conservative c) Dispersive d) Semi discontinuous The synthesis of lagging strand takes places as _____ a) Continuous b) Discontinuous c) Bidirectional d) None of these The replicon in E. Coli is called _____ b) Ori-C a) Ori-A c) Ori-B d) Ori-D Define the terms 07 B) 1) Palindromes 2) Primers 3) DNA helicase 4) B-DNA. 5) Replisome. 6) Shine-Dalgarno Sequences. 7) TATA Box

Max. Marks: 70

Section-II

Q.2	Explain in detail replication of eukaryotic DNA with a note on the different enzymes.	14
Q.3	Write in detail about the different DNA repair mechanism.	14
Q.4	Describe briefly the process of RNA synthesis in eukaryotes.	14
Q.5	Explain the structure of Lac operon and write a note on positive regulation.	14
Q.6	Write any two from the following:-a) Write a note on activators.b) Write a note on tryptophan operon.	14

c) Write about promoters in prokaryotes.

07

SLR-ME-105

Seat	
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M.Sc. (Semester - II) (Old) (CBCS) Examination Oct/Nov-2017 Biotechnology IMMUNOLOGY AND IMMUNO TECHNIQUES

Day & Date: Friday, 24-11-2017 Time: 10.30 AM to 01.00 PM

a) Type I

B)

Instructions: 1) All questions of Section I are 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 same answer.

b) Type II

Section – I

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

1) Erythroblastosis fetalis, hemolytic disease of newborn caused by

	c) Type III	d)	Type IV
2)	In cell mediated immunity a) Perforins c) Fragmentins	will b) d)	perform role in target cell killing. Granzymes All of these
3)	Systemic Lupus erythematosus is a) Organ-specific c) Hemolytic	b) d)	_ type of autoimmune disease. Organ non-specific None of these
4)	 antibody is synthesised during a) Ig M c) Ig A 	g pr b) d)	imary immune response is Ig G Ig D
5)	Forssman antigen is example of a) Microbial c) Auto	b) d)	_ antigen. Heterophile None of these
6)	Class I MHC molecules, peptide bind a) α 1 and α 2 c) α 1 and β 2	ding b) d)	cleft is formed by domains. α 1 and α 3 α 2 and α 3
7)	test is used for diagno	sis	of enteric fever.
	a) Tuberculin c) Widal	b) d)	Weil-Felix VDRL
De	finitions:-		
1)	Give general properties of cytokines	•	
2) 3)	Functions of complement system.		
4)	Hypersensitivity and autoimmunity		
5) 6)	Give names of secondary lymphoid	orga	INS.
\mathbf{U}_{I}			

7) Define and Give examples of genetically engineered vaccines

Max. Marks: 70

Set

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Section – II

Q.2	Answer any four of the following Write an account on mechanism of organ specific autoimmune diseases.	14
Q.3	Write an account on mechanism of Humoral immunity.	14
Q4	Explain structure of MHC molecules and its function.	14
Q5	 Answer any two :- a) Structure and function of antibody molecule. b) Explain immunoelctrophoresis with two tests. c) General structure, cultural characters, life cycle, pathogenicity, laboratory diagnosis prophylaxis of <i>Mycobacterium tuberculosis</i>. 	14
Q.6	 Answer any two :- a) Immunogical basics of graft rejection. b) Explain Primary Imphoid organs with its function. c) Explain cells of immune system. 	14

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Seat No.	t					Se	et 🗌	Ρ
	М.	Sc. INE	(Semester	- III) (New) (C Biotec AND ENVIRO	BCS) Ex chnology	amination Oct/Nov-2017 / AL BIOTECHNOLOGY	7	
Day & Time	& Da : 02.3	te: T 30 P	hursday, 16-1 M to 05.00 PN	1-2017 /		Max. Ma	arks:	70
Instr	uctic	ons:	1) Section I is 2) Answer an	compulsory. y Four question:	s from sect	ion II.		
				Sec	tion – I			
Q.1	A)	M u 1)	Itiple Choice Starch hydro a) A. oryzac c) B. licheni	e Question: Nyzing enzyme o Formis	can be obta <i>b)</i> d)	ained by using <i>S. Cerevisiae</i> Both A & C		07
		2)	The method at lower temp a) Cryopres c) Freezing	for preservation perature is calle ervation - drying	of biologio d as b) d)	cal component by dehydrating Lyophilisation Both B & C	it	
		3)	The Producti a) Fluidized c) Pulsed bi	ion of algal biom bioreactor foreactor	nass can b b) d)	e done by using Fixed bed bioreactor Photobioreactors		
		4)	acts a) Molasses c) Acid woo	as a nitrogen so s d hydrolysate	ource in fei b) d)	rmentation medium. Hydrocarbons Corn steep liquor		
		5)	Out of follow a) PAH c) Textile dy	ing is fo /es	ound to be b c	most carcinogenic.) Heavy metals I) Air Pollutants		
		6)	Phenyl acetic a) Penicillin c) Penicillin	c acid acts as a V M	precursor b) d)	for the production of Penicillin G Cyclosporin		
		7)	In Bioreactor a) Spargers c) Baffles	rs are us	sed to prev b) d)	vent vortex formation. Impellers Both B & C		

a) Spargec) Baffles

B) Define the following terms:

- 1) Production Strain
- 2) Bioreactor
- 3) Production medium
- 4) Single cell proteins
- 5) Bioremediation
- 6) Bioindicators
- 7) Xenobiotic

07

Seat No.

Section – II

Q.2	Explain the chromatographic techniques use in purification of desired product from fermented broth.	14
Q.3	Write in details about treatment of the industrial effluent with labeled diagrams.	14
Q.4	Discuss the energy source involved in fermentation process.	14
Q.5	 Answer any two from the following: a) Wine production b) Citric acid production c) Solid liquid separation 	14
Q.6	 Answer any two from the following: a) Non-conventional energy sources. b) Types of Air Pollution Control methods. c) Effect of heavy metals on environment. 	14

Ρ

Set

Max. Marks: 70

Seat	
No.	

M.Sc. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017 Biotechnology GENETIC ENGINEERING

Day & Date: Saturday, 18-11-2017 Time: 02.30 PM to 05.00 PM

Instructions: 1) All questions of Section I are compulsory.

- 2) Answer any Four questions from section II.
- 3) All question carry equal marks.

Section - I

- Q.1
 A)
 Rewrite the sentence after using correct alternative given below: 07

 1)
 Restriction enzymes are ______.
 .
 .
 .
 .

 a)
 DNA unwinding enzymes
 b)
 DNA joining enzymes
 .
 .
 - c) DNA cleaving enzymes
- b) DNA joining enzymesd) None of these
- 2) Ti plasmid used in genetic engineering is obtained from _____
 - a) Bacillus thringiensis
 - a) Bacillus thringiensisc) Agrobacterium tumefaciens
- b) Agrobacterium rhizogenesd) Bacillus subtilis
- 3) Who discovered recombinant DNA (rDNA) technology?a) Har Gobind Khoranab) J. D. Watson
 - a) Har Gobind Khoranac) Sutton and Boveri
 - d) Stanely Cohen and Herbert Boyer
- 4) Which of the following is used as vector in gene theraphy for SCID
 - a) Arbovirus b) Rotavirus
 - c) Parvovirus d) Retrovirus
- 5) Get Electrophoresis separate DNA fragments according to their _____.
 - a) Percentage of labelled nucleotides b) Base sequence
 - c) Electrical charge d) Size
- 6) Why is it more difficult to create transgenic animals than transgenic plants?
 - a) Plants and animals use a different genetic code
 - b) Animals cells cannot replicate foreign DNA
 - c) It is more difficult to introduce foreign DNA into animal cells.
 - d) Animal cells cannot transcribe and translate foreign DNA
- 7) Which enzymes are used to cut large segments of DNA into fragments for DNA fingerprinting?
 - a) Reverse transcriptase
 - c) DNA polymerase

B) Define the following terms.

- Restriction enzyme
 Expression Vector
- 3) cDNA library
- 4) DNA chips
- 5) Electroporation
- 6) Biopharming
- 7) Plasmid.

- b) Restriction enzymes
- d) DNA ligase

Section – II

Q.2	Explain in details of the expression vectors used in the cloning?	14
Q.3	Discuss the methods of screening in rDNA technology.	14
Q.4	Describe in details DNA sequencing methods.	14
Q.5	 Answer any two from the following: a) Transgenic animals b) Gene gun c) Genomic Library 	14
Q.6	 Write short notes on. (Any two) a) Shuttle vector b) Bacteriophages vector c) RAPD. 	14

Set M.Sc. (Semester - III) (New) (CBCS) Examination Oct/Nov-2017 **Biotechnology**

Day & Date: Tuesday, 21-11-2017 Time: 02.30 PM to 05.00 PM

Seat

No.

Instructions: 1) All questions of Section - I are compulsory.

- 2) Answer any Four questions from section II.
- All question carry equal marks.
- 4) Draw neat and labeled diagrams wherever necessary.

Section - I

PLANT BIOTECHNOLOGY

Multiple Choice Question: Q.1 A)

- 1) Colchicine is a specific inhibitor of _____
 - a) Spindle fiber
 - c) Protein Metabolism d) Carbohydrate synthesis
- 2) Ti plasmid induceses crown gall disease in
 - a) Dicots b) Monocots
 - c) Grasess

3) Meristem culture helps in developing

- a) Hybrid plants
- c) Disease resistant plants
- 4) Somatic Embryos are
 - a) Embryos developed from zygote after fertilization
 - b) Embryos developed from egg without fertilization
 - c) Embryo like structure developed from the cells of callus
 - d) Embryo developed by ovules
- 5) 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

6) Deficiency of magnesium in plants results in b) Necrosis

- a) Cholorosis
- c) Both a and b
- 7) Gene silencing refers to
 - a) Over-expression of gene
 - c) Protein synthesis
- b) No expression of Trans gene

d) Elongation of internodes

d) All of the above

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07

d) Embryoids

b) DNA Replication

- d) Tall plants
- b) Virus free plants

Define the following terms: 1) Phytohormones 2) 35 S promoter 3) Male Gametophyte 4) Ti Plasmids B)

- 5) Secondary Metabolites
 6) Microprpogating
- 7) Cloning

Section - II

Q.2	Discusses in brief about Plant nutrients with their roles in plants.	14
Q.3	Add a brief note on Basics of tumor formation in plants.	14
Q4	Discuss in brief about vector less (Direct gene transfer) transformation in plant?	14
Q5	 Answer any two from the following a) Application of plant biotechnology b) Answer in detail steps involved in Micropropogation c) Protoplast Isolation 	14
Q.6	 Write short notes on any Two of the following: a) Soma-clonal Variation/ In vitro mutagenesis b) Shoot tip culture c) Molecular Farming 	14

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Seat No. M.Sc. (Semester - III) (Old) (CBCS) Examination Oct/Nov-2017 **Biotechnology** ADVANCED ANALYTICAL TECHNIQUES Max. Marks: 70 Day & Date: Thursday, 16-11-2017

Time: 02.30 PM to 05.00 PM

Q.1

A)

Instructions: 1) Section I is compulsory.

2) Answer any Four questions from section II.

Section - I

Rewrite the sentence after choosing the correct from the given

1) Radioactively labeled nucleotides can be visualized in situ by _____. a) Flow cytometer b) AAS c) UV Spectrometer d) Autoradiography 2) The ______ used in centrifugation is a self forming gradient. a) Ficoll b) Sucrose c) Maltose d) All of the above In electron microscopy the source of illumination is ______ a) Light b) Tungsten filament c) Nichrome wire d) Black Rod 4) The ______ is used as a ligand in affinity chromatography of antibodies. a) Substrate b) Antigen d) All of the above c) PEG 5) The membrane used in blotting of DNA is _____ membrane. a) Dialysis b) Nitrocellulose c) Polyethylene d) All of the above 6) In circular dichorism, the differential absorption of _____ light is analvzed. a) Polarized b) Reflected c) Inhibited d) Deviated The name of the protein staining dye is _____ b) Diphenyle amine a) Safranine

d) Coomasie brilliant blue.

Define the following terms:-B)

c) Basic function

- 1) Refractive index
- 2) RCF
- 3) Stationary phase in Chromatography
- 4) Capillary electrophoresis
- 5) Electromagnetic radiation
- 6) Scintillation
- 7) Electrode

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Section – II

Q.2	Explain the different types of Electron microscopy with suitable diagrams.	14
Q.3	Write a note on the methods of measurement of Radioactivity? Give their advantages and restrictions.	14
Q4	Give the principle, instrumentation, working and applications of Atomic Absorption Spectroscopy.	14
Q5	 Answer any two of the following. a) Explain the technique of SDS-PAGE. b) Write a note on GC-MS. c) Explain the technique of NMR. 	14
Q.6	 Write short notes on any two of the following:- a) Application of radio isotopes in Biological sciences. b) Support material used in the technique of Chromatography. c) Ultracentrifuges 	14

Seat No.			Set	Ρ	
	M.Sc. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017 Biotechnology ANIMAL BIOTECHNOLOGY AND STEM CELL TECHNOLOGY				
Day 8 Time:	& Dat 02.3	e: F 30 F	Friday, 17-11-2017 Max. Marks PM to 05.00 PM	: 70	
Instru	uctio	ns:	 All questions of Section I is compulsory. Answer any Four questions from section II. 		
			Section – I		
Q.1	A)	Μι 1)	altiple choice Questions:-Animal cell cultures are used widely for the production ofa) Insulinb) Somatostatinc) MABSd) Thyroxine	07	
		2)	The first vaccine developed from animal cell culture was fora) Hepatitis Bb) Influenzac) Small Poxd) Polio		
		3)	 Recombinant proteins are a) Proteins synthesized in animals b) Proteins synthesized by transgene in host cells by r DNA technique c) Proteins synthesized in cells that are produced by protoplast fusion. d) Proteins synthesized in mutated cells line 		
		4)	Interferons area) Antibacterial proteinsb) Anti viral proteinsc) Bacteriostatic proteinsd) All of these		
		5)	The production of complete animals from somatic cells of an animal iscalleda) Gene cloningb) Animal cloningc) Cell cloningd) All of these		
		6)	In Bioreactors are used for aeration. a) Spargers b) Impellers c) Baffles d) Both B & C		
		7)	Which of the following has been produced commercially from mammalian culturesa) Insulinb) Renin d) Antibacterial antibody		
	B)	De 1) 2) 3) 4) 5) 6)	efine the following terms:- Suspension culture Scaffolds Scaling up Cell line Cryopreservation Stem cells	07	

Section - II

Q.2	Give brief account on the Bioreactor design of Animal cell culture with the help of a suitable diagram.	14
Q.3	Write in details about the behavior of cells in culture.	14
Q.4	Discuss the concept of Transgenic animal technology and write about the methods used for preparing transgenes.	14
Q.5	 Answer any two from the following a) Hematopoietic Stem cells. b) Regeneration of bone and cartilage. c) Animal cell culture medium 	14
Q.6	 Answer any two of the following :- a) Common cell culture contaminants. b) Significance of Knock out animals. c) Organotypic Culture. 	14

	M.Se	. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017 Biotechnology	
		NDUSTRIAL & ENVIRONMENTAL BIOTECHNOLOGY	
Day o Time	& Date : 02.30	Monday, 20-11-2017 Max. Marks: 7 PM to 05.00 PM	'0
Instr	uctior	 a: 1) All questions of Section - I are compulsory. 2) Answer any Four questions from section II. 	
		Section - I	
Q.1	A)	Multiple Choice Questions:- 0 1) S. Cerevisiae is commercially used for production of a) Tetracycline a) Tetracycline b) Acetic acid c) Alcohol d) Both B & C)7
		 2) The extraction of purification of a biotechnology product from fermented broth is called as a) Downstream processing b) Upstream processing c) Product recovery d) Both A & C 	
		 3) Treatment with, is a Biological method of cell disruption. a) Organic solvent b) Lysozyme c) Detergent d) None of these 	
		 4) Transfer of desired product from one liquid phase to other liquid phase is called as a) Solvent recovery b) Solid liquid extraction c) Liquid –liquid extraction d) Both A & C 	
		 5) Out of following is an example of non-conventional energy sources. a) Petroleum oil b) Sunlight c) Coal d) Natural gas e) Spargers 	
		 6) Dendrotheraml energy is included in type of energy source. a) Conventional b) Renewable c) Non-renewable d) Both A & C 	
		 7) The forest conservation act was passed in by Indian Parliament. a) 1988 b) 1980 c) 1981 d) 1972 	
	B)	Define the following termsC1) Fermentation technology1)2) Continuous fermentation3) Biotransformation4) Upstream Processing5) Environmental ethics6) Biosensor7) Biosorption)7

Seat

No.

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Set

Ρ

Section - II

Q.2	Briefly explains the design of bioreactor and its types.	14
Q.3	Define upstream processing and write in detail production of any two antibiotics.	14
Q.4	Describe about the environment protection and conservation.	14
Q.5	 Answer any two from the following. a) Methods of Preservation of microorganism. b) Continuous fermentation c) Streptomycin production 	14
Q.6	 Answer any two from the following. a) Methods of cell lysis. b) Physical and chemical methods for effluent treatment c) Non-conventional energy sources. 	14

		PLANT BIOTECHNOLOGY	
Day & Time	& Dat : 02.3	ate: Wednesday, 22-11-2017 .30 PM to 05.00 PM	Max. Marks: 70
Instr	uctio	ons: 1) Section-I compulsory. 2) Answer any four question from section-II	
		Section - I	
Q.1	A)	Multiple Choice Question:-1) Epigenetic variation occurs due toa) Tissue culture practicesb) Pre exisc) Both a and bd) None of2) Cvbrids are	07 sting variations f the above
		a) Cytoplasmic hybrids b) Genom c) Protoplast d) None o	ic hybrids f the above
		 3) Totipotency refers to a) The ability of a plant cell to arrest the growth of b) The ability of a plant cell to develop disease in c) The ability of a plant cell to develop into a cond) The ability of a plant cell to develop into a call 	of a plant n plant nplete plant us.
		 4) Green Fluorescence protein is a a) Selectable marker gene b) Reporte c) A gene from animal cell d) All of th 	er gene le above
		 5) Gold / Tungsten nano particles are widely used for fragments in a) Electroporation b) Gene g c) Microinjection d) All of the function 	or coating of DNA un le above
		 6) Protoplasts can be produced from suspension cu or intact tissues by enzymatic treatment with a) Celluloytic enzyme b) Pectino c) Both a & b d) Protease 	Itures, callus tissues lytic enzymes. se
		 7) CaMv is a) DNA containing virus b) RNA containing virus c) Protein containing virus d) Both DNA and RNA containing virus 	
	B)	 Define the following terms 1) Gene gun 2) Haploid plant 3) Embryos 4) Cholchicine 	07

5) Viral vectors 6) Reporter gene 7) Acclimatization

M.Sc. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017 Biotechnology

Seat

No.

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Set Ρ

Section - II

Q.2	Discusses in brief role of Micronutrients and Phyto-hormones in plant growth.	14
Q.3	What do you mean somaclonal variation? Explain in detail mechanism behind somaclonal variation.	14
Q.4	Discuss in brief about Mechanism of DNA transfer and role of virulence gene in Agro bacterium mediated gene transfer.	14
Q.5	 Answer any Two of the following: a) Edible Vaccine production b) Biotic stress resistance in plants. c) CaMV as a cloning vector. 	14
Q.6	 Write short notes on any Two of the following: a) Initiation and maintenance of callus. b) Cell and plant tissue culture lab set up. c) Plant hormones. 	14

) Pl	M to 05.00 PM		
is:	1) Section-I compulsory.	otio	- II
	2) Answer any lour question from se	Clio	1-11
N.A	Section - I		
1)	Indentify the term used for the study body:	/ of	drugs and their effect on the
	a) Pharmacyc) Pharmacology	b) d)	Pharmaceutical Physiotherapy
2)	Identify the route of administration fa) Oral administrationc) Topical administration	or e b) d)	ar drops : Parenteral administration None of above
3)	Identify the term used to describe a the skin of an animal: a) Subcutaneous c) Intravenous	n inj b) d)	jection that is given just under Intramuscular Epidural
4)	Identify the term used to describe a vein of an animal : a) Subcutaneous c) Intravenous	n inj b) d)	jection that is given into the Intramuscular Epidural
5)	A research aims at finding a solution arising in society isa) Fundamentalc) Descriptive	n to b) d)	an immediate problem Applied Historical
6)	 Characteristics of research is a) Inter-disciplinary team approach b) Objectivistic approach c) Economical in nature d) All of these 	l	
7)	Sampling theory helps us to estimate a) Unknown	te _ b)	population. Known

Biotechnology **ADVANCED PHARMACOGNOSY** Max. Marks: 70

Day & Date: Friday, 24-11-2017 Time: 02.30

Instruction

Q.1 A)

c) Particular

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

B)

Define the following terms

d) Universal

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Set

07

M.Sc. (Semester - IV) (New) (CBCS) Examination Oct/Nov-2017

No.

Seat

Ρ

Section – 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 a) Effect of herbal Medicine b) Immunomodulators c) Hepatoprotectives 	14
Q.6	 Write any Two of the following a) Nervine tonic b) Volatile oil c) Natural sweetness 	14

Seat No.					Set	Ρ
	M.S	c. (Semester -	IV) (New) (CBCS) Biotechnolo	Examination Oct/Nov gy	/-2017	
	ME	DICAL BIOTE		BIO NANOTECHNOL	OGY	
Day 8 Time:	02.30	: Friday, 24-11-2) PM to 05.00 PM	017 1	Μ	ax. Marks	s: 70
Instru	uction	s: 1) Section-I co 2) Answer any	ompulsory. y four question from sec	ction-II		
			Section – I			
Q.1	A)	Multiple Choice 1) Arabinose is a) Enteroco c) G-bacteri	• Questions:- a test-tube test used fo cci a	r b) Salmonella d) Neisseriae		07
		 2) Choose the i a) Only som b) Can be us c) Is similar d) Combines 	ncorrect statement abo e G+ bacteria can grow sed to differentiate lacto to McConkey medium s selective and diagnos	ut Endo agar. on it selectively ose fermentation tic properties		
		 3) Choose the c a) It is an in b) Negative c) It is carried d) Uses a set 	correct statement about direct method result means presence ed out in the laboratory ample of patients saliva	Antigen detection of microbe in the patient' using antibodies of anima	s body I origin	
		 4) The third pha a) Detection b) Amplificat c) Breakdow d) Obtaining 	ase of the PCR reaction of amplification produc tion of DNA vn of DNA i isolated DNA	involves t		
		 5) The prefix "nained as a prench was b) Greek wood c) Spanish was d) Latin word 	ano" comes from a ord meaning billion ord meaning dwarf word meaning particle d meaning invisible			
		6) What is the gup carbon lata) Nanorodsc) Nanoshee	general name for the cla ttices? s ets	ass of structures made of i b) Nanotubes d) Fullerrods	rolled	
		 7) What is the to yet theoretical virtually any san a) Stacker c) Assemble 	erm used in the field of al device the "will be ab stable pattern?"	nantechnology to describe le to bond atoms together b) Replicator d) Constructor	e an as rin	

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Define the following :-1) Normal flora 2) Coagulase A 3) Biochemical test B)

- 4) Biosensor
- 5) Penicillin
- 6) Gene therapy7) Nanotechnology

Section - II

Q.2	Briefly explains epidemiology study and pathogenesis of HIV infection.	14
Q.3	Describe the vaccination for prevention of diseases.	14
Q.4	Define the interferon and discuss the induction of interferon and types of inducers.	14
Q.5	 Answer any Two of the following :- a) Drug delivery b) Hydrothermal method c) Salmonella typhi 	14
Q.6	 Write any Two of the following :- a) Diagnosis of parasitic b) Antiviral agents c) Physical method for synthesis of nanoparticles. 	14