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Set P

M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018 Biotechnology MICROBIOLOGY

		MIGROD		.001	
Time	21/2	2 Hours		Max. Marks:	70
Instr	u c ti	ions: 1) All questions are compulsory. 2) Figures to the right indicate fu	ll m	arks.	
Q.1		noose the correct option and rewrite Influenza virus binds to of th a) Omp c) Polysaccharides	e h b)		14
	2)	Electron microscope was discovered a) Ernst Ruska c) Stanley	b)	Robert Hook Michael Tswett	
	3)	The number of ascospores in an ascua) 2 c) varies with species	b)	-	
	4)	A variant of bacterial strain with bioch called as a) Morphovar c) Serover	b)	cal and physiological differences is Biovar Virovar	
	5)	In Gram's staining method a) Gram's lodine c) Basic Fuchsin	b)	n be used as a secondary stain. Congo Red Malachite Green	
	6)	A protein called as bacteriorhodopsina) Alkalophilesc) Halophiles	b)	roduced by Barophiles Metallophiles	
	7)	Archae bacteria showlin cell membrane. a) Ether c) Covalant	b)	ge between fatty acids and glycerol Ester Ionic	
	8)	The method for preservation of biolog temperature is called asa) Liquid nitrogen method c) Lyophilization	 b)	component by dehydrating at lower Cryopreservation Sub culturing	
	9)	HIV infects its host by attacking a) Epithelial c) RBCs	,	cells. Neural Cells T4 helper	
	10) The symbiotic association between fu as a) Lichens c) Mycorrhiza	b)	and roots of higher plants is called Rhizopus Fungirrhiza	

	 11) Serial dilution technique was discovered by a) Robert Koch b) Fransisco Red c) Joseph Lister d) Louis Pasteur 	 i
	12) Out of the following cannot be used for vira a) Embryonatedegg b) Diploid cell line c) Live animal d) Continuous ce	
	13) The vegetative stage of fungi showsnat a) Haploid b) Diploid c) Triploid d) Polyploid	ture.
	14) is specifically present in bacterial end a) Peptidoglycan b) Lipopolysaccha c) Calcium dipicolinic acid d) Proteins	
Q.2	 A) Answer the following any four:- Define lysogenic phage with 2 examples. Write molecular adaptations of xerophiles. Mechanism of action of UV radiation on living cells. Define mycotoxins with 2 examples. Write the composition of crystal violet stain with function and Auxochrome. 	on of chromophore
	 B) Write note on (Any Two):- 1. Write a note on Bergey's Manual. 2. Write traditional methods of prokaryotic identification. 3. Explain structure of influenza virus 	06
Q.3	 A) Answer the following (Any Two):- 1. How to isolate the bacteria from mixed population? 2. Write short note on basidiomycetes. 3. Describe mangnetotactic bacteria. B) Answer the following (Any One):- 1. Give Industrial application of fungi. 2. Write a note Numerical taxonomy. 	08
Q.4	 Give account on molecular adaptations in psychrophi Describe capsule staining. Explain isolation of viruses 	
	B) Answer the following (Any One):-1. Write a note on Thermophiles.2. Explain PHYLIP software.	04
Q.5	 Answer the following (Any Two):- a) Give a brief account of photosynthetic bacteria. b) Explain lytic cycle using examples of T₄. c) Explain in detail about Polyphasic Taxonomy. 	14

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M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018

		Biotech CONCEPT OF E	
Time	: 2½	½ Hours	Max. Marks: 70
Instr	ucti	ions: 1) All questions are compulsory. 2) Figures to the right indicate fu	ıll marks.
Q.1	M (nutrient molecules are converted into a) Anabolism	b) Catabolism
	2)	c) MetabolismThe last of the 20 amino acid to be foa) Threoninec) Tyrosine	d) Bioenergetics und was b) Tryptophan d) Histidine
	3)	Complete oxidation of a glucose mole a) 32 c) 36	ecule to CO2 yields ATP. b) 24 d) 38
	4)	Electrons are carried between photos soluble protein. a) Pheophytin c) Plasticyanin	b) Ferodoxin d) Cytochromes
	5)	Rubisco catalyzes the condensation of form a) Glycerin c) 3-phophoglycolate	b) 2-phophoglycolate d) Serine
	6)	The double bond is introduced into th catalyzed by a) mixed function oxidase c) reductase	•
	7)	Glycogen storage Cori disorders is al a) type IIa c) type IIIa	
	8)	The light-absorbing pigments of thyla arranged in functional arrays called _ a) chlorophyll c) photosystem	
	9)	Rubisco catalyzes the condensation of form 3-phospholgycerate anda) 2-phosphoglycolate c) glycealdehyde 2 phosphate	b) 3-phosphoglycolate
	10		ation of malate in bundle-sheath cells is ls, where it is converted to PEP by an by b) phosphate kinase d) pyruvate phosphate dikinase

,	11) is the substrate for suc	crose synthesis.	
	a) UTP glucose	b) UDP glucose	
	c) ADP glucose	d) ATP glucose	
,	A genetic lack of hypoxanthine-guan result in	ine phosphoribosyltransferase activity,	
	a) Lesch-Nyhan syndromec) cori disease	b) phenylketonuriad) pome disease	
	13) is an example of lipid so a) ADH	oluble hormone. b) oxytocin	
	c) insulin	d) cortisol	
	14) is an example of non	reducing sugar.	
	a) Sucrosec) Ribose	b) Glucose d) Fructose	
Q.2	 a) Answer the following any four:- 1) Draw the structure of chloroplast. 2) Define secondary messenger. 3) Write a note on compensation poi 4) Give two examples inhibitors of E 5) Write a note on exocrine and ender 	nt. TC.	08
I	 b) Write notes on. (Any Two) 1) Write notes on Pheromones. 2) Write notes on Laws of thermodyr 3) Write notes on Phenylketonuria un 		06
Q.3	 a) Answer the following. (Any Two) 1) Explain z scheme of electron trans 2) Describe synthesis of starch in pla 3) Write a note on auxin phytohormo 	ants.	08
ĺ	b) Answer the following. (Any One)1) Write a detailed account on struct2) Explain in detail chemical classific	•	06
Q.4	 a) Answer the following. (Any Two) 1) Write in detail free energy change 2) Explain in detail fatty acid biosynth 3) Write a note on inhibitors of electr 	nesis.	10
I	b) Answer the following. (Any One)1) Write a detailed account on sickle2) Write a note on energy rich bonds		04
; !	Answer the following. (Any Two) a) Write a detail account on structure an b) Explain in detail pentose phosphate p c) Write a note on C3 cycle of CO2 fixat	pathway.	14

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M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018 Biotechnology INHERITANCE BIOLOGY

		Biotech INHERITANC	
Time:	2½	∕₂ Hours	Max. Marks: 70
Instru	ıcti	ions: 1) All questions are compulsory. 2) Figures to the right indicate ful	I marks.
Q.1		ultiple choice questions:- Females have a pair of identical sex c hence they are called as a) Homomorphic c) Automorphic	
	2)	The ideal DNA markers for genetic ma	apping and population studies are
		a) Minisatellites c) LINES	b) Microsatellitesd) SINES
	3)	Gene interaction that involves the mas	sking of the gene effect is
		a) Supplementary Genes c) Epistasis	b) Complementary Gened) Pleiotropy
	4)	The term Organic Evolution was coine a) H. Spencer c) Aristotle	ed by b) A.I. Oparin d) Plato
	5)	The production of toxic substance Par particles called a) Kappa particles c) Beta particles	ramecin is controlled by cytoplasmic b) Alpha particles d) Delta particles
	6)	is a very efficient meta) Transduction c) Conjugation	,
	7)	is a disease caused duea) Mycoelonic Epilepsyc) Down's syndrome	to mutation in mt DNA. b) Bleeder's disease d) None of these
	8)	The first human syndrome attributed to a) Down's syndrome c) Patau's Syndrome	o chromosomal disorder is b) Turner's Syndrome d) Edward's Syndrome
	9)	The linkage of the genes in a chromos	some is represented in the form of
		a) Genetic Maps c) Chromosome Maps	b) Linkage Mapsd) All of these
	10	One centimorgan is equal to a) 1% c) 100%	recombinations. b) 10% d) 0.1%

	11) Theory of Biogenesis was proposed Ia) Thalesc) Dobzhansky	oy b) Louis Pasteur d) Oparin	
	12) The molecular level of transformationa) F. Griffithc) J. Lederberg	was observed by b) O. Avery d) L. Tatum	
	13) A diploid cell missing a single chromoa) Trisomicc) Monosomic	osome is b) Nullisomic d) Tetrasomic	
	14)Restricted transduction was first disconsisteda) Phage λc) T1 phage	by ered in b) P22 d) att λ	
Q.2	 A) Answer the following any four:- 1. Define phenotype 2. Define genetic polymorphism 3. Define C-value paradox 4. Write any two significance of polyposition. 5. Define Hfr. 	bloidy	08
	B) Answer the following any two:-1. Law of Co-Dominance with examp2. Structure of sex chromosome3. Competency and the factors which		06
Q.3	 A) Answer the following (Any Two):- 1. Explain in detail about lamp brush 2. Explain Griffith's transformation ex 3. Write about LINES and its significant 	pt with diagram.	80
	B) Answer the following (Any One):- 1. Explain the Mendel's Laws of inhe 2. Write in details about Hardy Weink	•	06
Q.4	 A) Answer the following (Any Two):- 1. Describe Heterochromatin and Eu 2. Describe in detail supplementary 0 3. Write a note on Aneuploidy and dis 	Gene interaction with example.	10
	B) Answer the following (Any One):-1. Explain process of linkage with exact 2. Explain Generalized transduction values.	•	04
Q.5	 Answer the following (Any Two):- a) Explain in details about extrachromos b) Explain in details about ABO Blood gr c) Explain in detail Darwin's theory of Explain 	oup in man and its application.	14

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M.Sc. (Semester - I) (CBCS) Examination Nov/Dec-2018

			otechnology S AND BIOINFORMATICS
Time	: 2½	∕₂ Hours	Max. Marks: 70
Instr	uct	ions: 1) All questions are compu 2) Figures to the right indic	· · · · · · · · · · · · · · · · · · ·
Q.1		ultiple choice questions:- The phylogenic lineage evolving called	g with the same speed from common ancestor
		a) Lock & Keyc) Mutation	b) Evolutiond) Molecular clock
	2)	of the following is n a) Mean c) Range	ot a measure of central tendency. b) Mode d) Median
	3)	method is based of which are closely related on section a) Fold recognition c) Threading	on an experimentally determined structures quence level. b) Homology modeling d) Ab intio
	4)	The middle value of an ordered a) Mean c) Mode	array of numbers is the b) Median d) Midpoint
	5)	a) PIR c) OWL	84 by National biomedical research foundation. b) Swiss Prot d) MIPSx
	6)	called	portional to the frequency of items shown is
		a) Bar hartc) Histogram	b) Pie chart d) Polygon
	7)	structure. a) Clustal c) PAUP	m for molecular dynamic simulation for protein b) Phylip d) Gromacs
	8)	Considering probability distribut distribution is classified asa) Variable model c) Left skewed	tion, if mode is greater than median the b) Constant model d) Right skewed
	9)	method of BLAST is sequence. a) Blastp c) Blastn	s queries nucleotide database with nucleotide b) Tblastn d) Blastx
	10	a) Arranging values in columns isa) Matrixc) Cells	called b) Graph d) Tabulation

	11) is method at PDBsum for analysis of protein three dimens	ional
	structures. a) Procheck b) Dali	
	c) Prosite d) Emotif	
	12) is the fundamental statistical indicator. a) Median b) Variance	
	c) Standard Deviation d) Variable	
	 is a graphical way of comparing two sequences in two dimens matrix methods. 	ional
	a) Dynamic b) Dot plot	
	c) Clusteringd) Progressive14) Distribution which has outliers with relatively lower values is considered	l ae
	·	as
	a) Negatively skewedb) Experimentally skewedc) Exploratory skewedd) None of these	
Q.2	,	08
	 What is primary structure of protein? Define population. 	
	3) What is sequence homology?	
	4) Define linear regression.5) What is Global alignment?	
	b) Write notes on any two:-	06
	 Explain the molecular docking methods. Write a note on Frequency Distribution. 	
0.0	3) Add a note on hypothesis testing.	20
Q.3	a) Answer the following. (Any Two)1) Explain the functions of NCBI.	08
	2) Add a note on skewness and kurtosis.3) Write in detail about the steps of homology modeling.	
	b) Answer the following. (Any One)	06
	 Explain the secondary database of proteins. Describe in detail measure of dispersion. 	
Q.4	a) Answer the following. (Any Two)	08
	 Explain the protein secondary structure prediction methods. Write a note on correlation and regression. 	
	3) Add a note on Multiple sequence alignment.	
	b) Answer the following. (Any One)1) Explain the merits and demerits of Chi-square test.	06
	2) Write a note on molecular mechanics.	
Q.5		14
	a) Write in detail about the Nucleic acid sequence database.b) Explain the molecular modeling and its packages in detail.	
	c) Calculate mean deviation for the following data:-	
	9.2 9.6 10 11 12 9.8 10.2 9.9 12.7 10.6	

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M.Sc. (Semester - II) (CBCS) Examination Nov/Dec-2018

		Biotechno CELL BIO	•		
Γime	: 2½ H	ours		Max. Mark	s: 70
		 s: 1) All questions of Section - I are concept. 2) All questions carry equal marks. 3) Answer any Four questions from 4) Draw neat and labeled diagrams. SECTION 	Se wh	ction – II. erever necessary.	
7 4	a\				07
Q.1	•	write the sentences after choosing. Which of the following signals directs a) A lys-asp-glu-leu (KDEL) sequen b) Attached carbohydrate with termi c) Dolichol phosphate d) Attached carbohydrate with termi	s a p ce ii nal	orotein to the lysosomes? In the protein mannose-6-phospate	07
	2)	At the end of spermatogenesis each a) Only one spermatid c) Four spermatids	b)	nary spermatocyte gives rise to Two spermatids Three spermatids	
	3)	In the lancelet, the zygote undergoes of uniform size, called aa) Morula	•	avage forming a solid ball of cells Blastula	
		c) Gastrula	ď)	Coelom	
	4)	Which of the following cytoskeletal s intracellular transport? a) Intermediate filaments c) Actin filaments	b)	cures provides tracks for guiding Microtubules Myosin	
	5)	Which of the following statements at a) They are involved in signal casca b) They bid to and are regulated by c) They become activated when bot d) They must be active before the c	out ides gua und	G proteins is false? nine nucleotides o GDP	
	6)	In desmosomes, cadherins link to a) Integrins c) Plasmodesmata	b)	of an adjacent cell. Intermediate filaments Connexons	
	7)	Just prior to cell division, the diploid chromatids. a) 46 c) 92	b)	an body cell contains 23 122	
	1) 2) 3) 4) 5)	efine the terms:- Cell organelles Kinesin Cell cycle check points Ras kinase Calmodulin Meiosis			07

7) Monospermy

SECTION - II

Q.2	Answer any four of the following:- Explain in detail cascade event of Fertilization and a note on cleavage.	14
Q.3	Explain in detail cell structure and organization of Eukaryotic cell.	14
Q.4	Explain in detail signal transduction by Protein Tyrosine kinase pathway.	14
Q.5	 Answer any two from the following: a) Add a note on Process of Blastulation. b) Write a note on 'Microtubular Motor Protein'. c) Add a note on Gap Junction. 	14
Q.6	 Write short notes on. (Any two) a) Explain role of Cyclins and Cdks in cell cycle. b) Describe cell organelle 'Lysosome'. c) Explain role of 'G-protein-Coupled receptor'. 	14

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M.Sc. (Semester - II) (CBCS) Examination Nov/Dec-2018 Biotechnology FNZYME TECHNOLOGY

	ENZYME TECH	
Time: 2½ H	ours	Max. Marks: 70
Instruction	s: 1) Section I is compulsory. 2) Answer any four questions from s	section II.
	SECTION	N – I
alt	write the sentences by choosing conternatives: To synthesize abzymes for hydrolysis	<u>-</u>
	used as a transition state analogue. a) Hydroxyester c) Phenol	b) δ –lactone d) Phosphonate ester
2)	Fatty acid synthesis is an example of a) Abzyme c) Catmab	of b) Ribozyme d) Multienzyme complex
3)	To study enzyme kinetics by using Ha	
	a) [S/V] Vs V₀c) [1/S] Vs V₀	b) [1/V] Vs [1/S] d) [1/V] Vs S ₀
4)	The enzymatic reaction is stopped aft time, in kinetic study by thea) Continuous c) Indirect	
5)	The amino acids have be activity of lysozyme. a) Glu35 & Asp 52 c) Asp52 & Tyr21	been found to be critical for catalytic b) Glu35 & His195 d) His195 & Tyr21
6)	, .	blood, is an indication of liver damage. b) SGOT d) Trypsin
7)	The ratio of bound to unbound ligand bound ligand concentration ina) Eddie Hofstee c) Hills	
1) 2) 3) 4) 5) 6)	fine the terms:- Turnover number Multienzyme complex Metabolic engineering Biosensor Cooperativity Modulator Covalent modification	07

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SECTION - II

Q.2	Describe in detail 'clinical aspects of enzymology.'	14
Q.3	Add a detail account on 'modes of enzyme regulation'.	14
Q.4	Describe various methods of enzyme immobilization.	14
Q.5	 Answer any two of the following: a) Describe graphical procedures in enzymology b) Explain catalysis by Na-K ATPases on the basis of structure function relationship. c) Describe 'methods of study fast enzymatic reactions'. 	14
Q.6	 Answer any two of the following: a) Add an account on chemical modification of enzymes. b) Describe kinetics of allosteric enzymes based on Hill's and Scatchard plot. c) Illustrate the concept of multienzyme complex with examples. 	14

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M.Sc. (Semester - II) (CBCS) Examination Nov/Dec-2018 Biotechnology MOLECULAR CELL PROCESSING

	MOLLOGLAN OLLL I I	NOOLOOM O	
Time: 21/2 H	ours	Max. Marks: 7	70
Instruction	s: 1) All questions of Section I is compuls2) Answer any four questions from Sec3) All questions carry equal marks.4) Draw neat and labeled diagrams wh	nerever necessary.	
	SECTION -	I	
al (1)	ewrite the sentences by choosing correcternatives: DNA polymerase I plays important role of the control of the	_	07
	a) Only i c) Both ii and iii	b) Both i and iiid) Only ii	
2)	In the experiment of Meselson and Stah culture media was a) NH ₄ Cl	b) Glycine	
3)	c) GuanineThe sense strand is also called asa) primer strandc) coding strand	d) Cytosineb) template strandd) antisense strand	
4)	Transcription factor H (TFIIH) has a) Polymerase c) Exonuclease	activity. b) DNA helicase d) Endonuclease	
5)	Calcitonin and CGRP are produced by a respectively. a) Thyroid and neurons of CNS c) Liver and neurons of CNS		
6)	Aminoacyl tRNA synthetase is also calle a) tRNA mutase c) tRNA transferase	ed as b) tRNA ligase d) tRNA isomerase	
7)	Synthesis of is the role of Fa) mRNA c) micro RNA	RNA polymerase III. b) primer d) tRNA	
1. 2. 3. 4. 5. 6.	Fine the terms:- RecA Sigma factor snRNA Satellite DNA Polyadenylation DNA gyrase SOS repair		07

	SECTION - II	
Q.2	Answer any four of the following:- Describe the process of translation in eukaryotes.	14
Q.3	Explain in details the process of replication in prokaryotes.	14
Q.4	Describe the process of transcription in prokaryotes.	14
Q.5	 Answer any two of the following:- a) Describe mechanism of recombination b) Describe prokaryote and eukaryote genome organization. c) What are causes of DNA damage? Explain mismatch repair. 	14
Q.6	 Write notes on (any two):- a) trp operon b) DNA as genetic material c) Characteristics of genetic code. 	14

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M.Sc. (Semester - II) (CBCS) Examination Nov/Dec-2018 Biotechnology MOLECULAR MEDICINE

		WIOLECULAR WIEDICINE	
Time	: 2½	Hours Max. Marks	s: 70
Instr	uctio	ns: 1) All questions of Section I is 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 by choosing correct answer from given alternatives:	07
		 1) Mutation in BTK gene leads to condition known as a) Phenylketonuria b) Haemoglobinopathies c) Agammaglobulinemia d) Marfan syndrome 	
		2) is defined as compound that demonstrates the desired biological activity on molecular target.	
		a) Lead b) Genome c) Mercury d) Iron	
		3) is X linked recessive disease. a) DMD b) CFTR c) BTK d) Marfan	
		 4) Stem cell exhibits properties. a) Only potency	
		 5) The human α-globin gene of haemoglobin is located on chromosome number a) 11 b) 12 c) 16 d) 18 	
		6) Hematopoietic stem cells are a) Pluripotent b) Totipoten c) Unipotent d) Oligopotent	
		7) PAH gene is mutated in a) Phenylketoneuria b) Chagas disease c) Alzheimer's d) Cystic fibrosis	
	B)	Define the terms:- 1) Totipotency 2) Recombination 3) Microarray 4) Lead optimization 5) Magic bullets 6) Down's syndrome 7) Functional cloning	07

SECTION - II

Answer any four of the following:-

Q.2	Define absorption explain in details factor affecting absorption and add a note on pharmacogenetics.	14
Q.3	Explain in detail viral and non viral methods of gene transfer.	14
Q.4	Explain in brief properties, types and applications of adult stem cells.	14
Q.5	 Answer any two of the following:- a) Give an account on phenyketonuria b) Explain in brief agammaglobelinemia c) Give an account on human genome project 	14
Q.6	 Write short notes on (any two):- a) Explain in detail Chorionic villus sampling and its applications b) Give a brief account on blood and blood group antigens. c) Write a brief on Parkinson's disease. 	14

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M.Sc. (Semester - III) (CBCS) Examination Nov/Dec-2018 Biotechnology INDUSTRIAL AND ENVIRONMENTAL BIOTECHNOLOGY

		INDUSTRIAL AND ENVIRC	DNIVIEN I AL BIO I ECHNOLOGY	
Time	: 21/2	≨ Hours	Max. Marks	: 70
Instr	ucti	ons: 1) All questions are compulso 2) Figures to the right indicate	- -	
Q.1		a) Composting c) Pellitization		14
	2)	Out of the following, is a) Fossil fuel c) Geothermal energy	s not the conventional source of energy. b) Mineral oil d) Coal	
	3)	Sulphite waste liquor is the waste of a) Food & dairy c) Paper & Pulp	of industry. b) Alcohol d) Sugar	
	4)	In Bioreactors, are u a) Spargers c) Baffles	used to prevent vortex formation. b) Impellers d) Sensors	
	5)	The production of algal biomass ca a) Fluidized c) Pulsed	an be done by using bioreactor. b) Fixed bed d) Photo	
	6)	Out of the following, is a) PAH c) Textile dyes	found ot be most carcinogenic. b) Heavy metals d) Air Pollutants	
	7)	Treatment with is a) organic solvent c) detergent	s a biological method of cell disruption. b) lysozyme d) alkali	
	8)	For commercial production of Penica) <i>P. candidum</i> c) <i>P. chrysogenum</i>	cillin antibiotic, strain is used. b) <i>P. crostosum</i> d) <i>P. digitatum</i>	
	9)	S. cerevisiae is commercially useda) Tetracyclinec) Acetic acid	I for production of b) Ethanol d) SCP	
	10)) Copepods in water bodies act as _a) detoxifiersc) bioindicators	b) biosensors d) bioemulsifiers	
	11)	Transfer of desired product from o called as a) downstream process c) solvent recovery	b) solid liquid extraction d) solvent stabilization	

	a) 1980 c) 1972	b) 1970 d) 1963	
	13) The method for preservation of biolog	gical component by dehydrating it at	
	 14) The document produced by United None Development (UNCED) is called as		
Q.2	 Define air pollution and give two ex Name the methods used for cell ly Differentiate between renewable a Define bioreactor and write types of Explain steps in lyophilization. 	rsis. Ind nonrenewable energy sources.	08
	 Write note on (Any Two):- Give account on environmental eth Write the importance of nitrogen so Describe xenobiotic. 		06
Q.3	 A) Answer the following (Any Two):- 1. What is batch fermentation? Give of the control of the control of the control of bioprocess. 2. How the amylase enzyme is recoved. 3. Write in short about 'Wildlife Protections. B) Answer the following (Any One):- 1. Eco planning and sustainable devented. 2. Measurement and control of bioprocess. 	rered from fermented broth. ction Act'. elopment.	08 06
Q.4	 A) Answer the following (Any Two):- 1. Explain air and media sterilization. 2. Give brief account on air pollution. 3. Explain heavy metal pollution. B) Answer the following (Any One):- 	·	10 04
	 Explain Microbial Growth Kinetics Give brief account of UN declaration 	on	
Q.5	 Answer the following (Any Two):- a) Write in detail 'Penicillin Production'. b) Explain in detail methods in downstreact c) Write a brief account of Environmenta 		14

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M.Sc. (Semester - III) (CBCS) Examination Nov/Dec-2018 Biotechnology GENETIC ENGINEERING

	GENETIC	ENGINEERING
ne: 2½	∕₂ Hours	Max. Marks: 70
tructi	ions: 1) All questions are compuls 2) Figures to the right indica	
C h 1)	noose the correct option and rev classes of restriction a) 3 c) 2	
2)	pBR322 has of the foll a) Kan ^r c) Act ^r	owing selection marker. b) Tet ^r d) Str ^r
3)	The virus mediated gene transfer called a) Transfection c) Transduction	b) Transformation d) Conjugation
4)	different types of ch Gilbert method. a) 2 c) 1	emical treatments are required in Maxam- b) 3 d) 4
5)	b) Exonuclease III acts on doublc) Exonuclease III acts on single	n of exonuclease III. e stranded DNA in 3' – 5' direction e stranded DNA in 5' – 3' direction e stranded DNA in 5' – 3' direction e stranded DNA in 3' – 5' direction
6)	Vectors designed to replicate in c a) Plasmid vector c) Phasmid vector	cells of two different species are called b) Shuttle vector d) Phagemid vector
7)	The removal of tumor causing ge a) Gene replacement c) Disarming	nes from Ti plasmid is termed as b) Insertional inactivation d) Gene cloning
8)	Reverse transcriptase PCR uses a) tRNA as template c) RNA as template	b) rRNA as template d) mRNA as template
9)	The variation in number of tander called a) VNTR c) PCR	m repeats between two or more individuals is b) RFLP d) Chromosome walking
10) The ability of cells to take up DN a) Transduction	A fragments from surrounding is called b) Transformation

d) Conjugation

c) Transfection

	 will be the transcription product of 3'-AUCCGAGCUAAC-5' v treated with reverse transcriptase. a) 3'GTTAGCTCGGAT5' b) 3'AUCCGAGGAUUG5' c) 5'GTTAGCTCGGAT3' d) 5'UAGGCUCGAUUG3' 	/hen
	12) λ_{gt} 10 vector can be propagate cloned fragments up to a) 20-25 kb b) 6-7 kb c) 10-20 kb d) 15-20 kb	
	13) All the following are thermostable polymerases except a) Taq polymerase b) Pfu polymerase c) DNA polymerase III d) Vent polymerase	
	14) The term 'endonuclease' refers to cutting the DNA sequence froma) Exactly in the middle of the chainb) The ends of the chainc) Anywhere in the chaind) Only within the polynucleotide chain, not at the ends.	
Q.2	 A) Answer the following any four:- 1. Draw the structure of M13 vector. 2. Define ligase with examples. 3. Write a note on cosmids. 4. Define transgenic animals. 5. Draw the structure of TMV. 	08
	B) Write note on any two:-1. Write notes on Restriction endonuclease.2. Write notes on Baculovirus.3. Write notes on c-DNA library.	06
Q.3	 A) Answer the following (Any Two):- 1. Explain electroporation method. 2. Describe preparation primers and probes. 3. Write a note on RFLP. 	08
	B) Answer the following any one:-1. Give a detailed account on bacteriophage.2. Explain in detail genetically engineered biotherapeutics.	06
Q.4	 A) Answer the following. (Any Two) 1. Write in detail Maxam and Gilbert method. 2. Explain direct recombinant screening method. 3. Write a note on CaCl & microinjection method of transformation. 	10
	B) Answer the following any one:-1. Write a note on southern blotting.2. Give a detailed account on phagemids.	04
	 Answer the following. (Any Two) a) Describe in detail gene therapy. b) Explain in detail isolation and purification of vector DNA c) Write a note on Microarray. 	14

Seat	Sat	D
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M.Sc. (Semester - III) (CBCS) Examination Nov/Dec-2018 Biotechnology PLANT BIOTECHNOLOGY

		PLANT BIOTE	ECHNOLOGY	
Time	: 2½	2 Hours	Max. Marks: 7	70
Instr	ucti	ons: 1) All questions are compulsory. 2) Figures to the right indicate fu		
Q.1		coose the correct option and rewrite Growth hormone producing apical dol a) Auxin c) Ethylene		14
	2)	,		
	3)	Somaclonal variations are the ones _ a) Caused by mutagens c) Caused by gamma rays	b) Produce during tissue culture d) Induced during sexual embryogeny	
	4)	Biolistic method is suitable for a) Constructing recombinant DNA by b) Transformation of Plant cells c) Disarming pathogen vectors d) DNA fingerprinting		
	5)	Hormone pair required for a callus to a) Auxin and cytokinin c) Auxin and absiccic acid	b) Auxin and ethylene	
	6)	A medium which is composed of chera) Natural media c) Synthetic media	mically defined compound is called b) Artificial medium d) Supernatural medium	
	7)	The culturing of cells in liquid agitated a) Liquid culture c) Agar medium	d medium is called b) Micropropagation d) Suspension culture	
	8)	Immobilized cell bioreactors are base a) Cell cultures on solid medium c) Cell entrapped in gels		
	9)	Artificial seeds are a) Seeds produced in laboratory conditions b) Seeds encapsulated in a gel c) Somatic embryos encapsulated in d) Zygotic embryos encapsulated in general conditions.	n gels	
	10) Hairy root cultures for secondary met transforming plant cells witha) Viruses c) Bacillus thuringiensis	etabolite production are induced by b) Agrobacterium tumefaciens d) Agrobacterium rhizogenes	

	11) growth regulator resp	oonsible for fruit ripening.	
	a) Abscisic acid	b) Ethylene	
	c) Gibberellic acid	d) Auxin	
	12) Golden rice is rich in		
	a) Vitamin Ec) Provitamin A	b) Hormones	
	,	d) Growth hormones	
	13) Polyploidy is induced by	b) Mutagania ahamigala	
	a) Irradiationc) Ethylene	b) Mutagenic chemicalsd) Colchicine	
	, •	,	
	14) Polyethylene glycol isa) Fusogenic chemical	 b) Electrofusion stimulant	
	c) Callus stimulant	d) Differentiation stimulation	
Q.2	a) Answer the following any four:-	•	08
	Plant tissue culture.		
	2) The concept of cybrid.		
	3) Callus culture		
	4) Molecular Farming5) Symmetric and asymmetric hybr	ide	
	b) Write note on any two:-	ius	06
	Write a note on Artificial seeds P	roduction.	00
	Explain Industrial and therapeuti		
	biotechnology.		
	Write a note on haploid plant pro	duction.	
Q.3	a) Answer the following. (Any Two)		80
	Write the essential micro and ma Symplete arguments.	acromolecules for plant nutrition.	
	2) Explain organogenesis.3) Explain cell suspension culture.		
	b) Answer the following any one:-		06
	Write a note on Somaclonal variation	ation.	00
	2) Write a note on Somatic hybridiz		
Q.4	a) Answer the following. (Any Two)		10
	1) Concept of organ culture.		
	2) What are viral vectors and expla	in the use of virulence DNA in gene	
	transfer mechanism. 3) Explain micro propagation.		
	b) Answer the following any one:-		04
	Describe gene silencing mechan	ism.	04
	Give detailed account on tissue of the country		
Q.5	Answer the following. (Any Two)		14
	a) Write in detail 'Cryopreservation tec	hnology'.	
	b) Explain various methods of Gene tra		
	c) Explain Protoplast culture in detail.		

Seat No. Set P

M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018

			nnology	
			ND STEM CELL TECHNOLOGY	
Time	e: 2½ H	ours	Max. Mark	s: 70
Instr	ructions	s: 1) Section I is compulsory.2) Answer any four questions fro3) Draw neat labeled diagram when	nerever necessary.	
			ION – I	
Q.1	•	write the sentences by choosing ernatives:	correct answer from given	07
			vas maintained by Roux in b) Plasma clots d) Serum	
	2)	E S Cell lines in culture was first o a) IVF c) Chick Embryo	btained by b) Mouse Blastocysts d) Germ Cells	
	3)	Liquid phase temperature for very	long period of storage of cells is	
		a) -70 °C c) -196 °C	b) -120 °C d) -110 °C	
	4)	aminoacids.	an be improved in sheep by the supply of	
		a) Serinec) Lysine	b) Methionined) Cysteine	
	5)	Neural stem cells cultured in vitro a) Neuronal cells c) Neurospheres	is called b) Glial cells d) EG cells	
	6)	The first human cell line to be grow	wn continuously in the laboratory is	
		a) Hela cell line c) 3T3 cell line	b) MRC – 5 d) HLM cell line	
	7)		I for harvesting human organ for organ	
		transplant. a) Chicken c) Sheep	b) Pig d) Goat	
	1) 2) 3) 4) 5) 6)	fine the terms:- Passage number Organotypic culture Grid Technique Gene Knock Out Cryotubes Cell Lines Hayflick effect		07

SECTION - II

Q.2	Write in details about the different type of cell culture media, its growth supplement and its advantages.	14
Q.3	Write in details about Hybridoma technique and its importance.	14
Q.4	Explain in detail culture of cells for production of various biological.	14
Q.5	 Answer any two of the following: a) What is organ culture? Write about the techniques used in organ culture. b) Discuss the importance characteristics of stem cells. c) Write a note on cryopreservation methods. 	14
Q.6	 Answer any two of the following: a) Explain in detail about immunoisolation techniques. b) Write a note on scale up in monolayer culture with diagram. c) Discuss the different types of Tissue culture and its advantages. 	14

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Seat	Set	D
No.	Set	

M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018 Biotechnology

			ADVANCED ANALY		0 ,	
Time	: 2½	źΗ	ours		Max. Marks:	70
Instr	ucti	ons	s: 1) Section – I compulsory. 2) Answer any four questions fro	m s	ection – II.	
			SECT	ON	– I	
Q.1		1) 2) 3) 4) 5) De 1) 2)	The first working microscope was a) Robert Hook c) Leeuwenhoek	al a b) d) a _ b) d) des b) d)	Reflected Deviated AAS Autoradiography igned by Kepler Watson is transferred to the membrane. RNA None chromatography. Column All of the above between 0-14 1-7 rpm. 1000 12,000	07
		,	pH Radioactivity Spectroscopy			
		,	SECTI	ON	– II	
Q.2	Ex	plai	n the scanning Electron microscop	y w	th suitable diagrams.	14
Q.3	Wł	nat	is Radioactivity? Give the working	of S	cintillation counting.	14
Q.4			he principle, instrumentation, worki roscopy.	ng a	and applications of Infra Red	14

Q.5	 Answer any two of the following: a) Explain the technique of Capillary Electrophoresis. b) Write a note GC-MS. c) Write a note on UV – V is Spectrophotometry. 	14
Q.6	Write short notes on any two of the following:-a) X-ray Crystallographyb) Applications of radio isotopes.c) Ultracentrifuges	14

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Seat No.	Set	Р
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M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018

	Biotechno RESEARCH METHOD	— — — — — — — — — — — — — — — — — — —	
Time: 21/2	Hours	Max. Marks	s: 70
Instructi	 ons: 1) Section–1, Question 1 is compul 2) Attempt any four questions from 3) Figures to the right indicate full n 4) Answers to the Section-I and Se booklet only. 	part-II)r
	SECTION	I – I	
	Rewrite the sentences by choosing coalternatives: 1) is a preferred sampling metal a) Area sampling c) Purposive sampling	hod for the population with finite size. b) Cluster sampling	07
	 2) A research problem is not feasible if a) It consists of independent and de b) It has utility and relevance c) It is new and adds something to k d) It is researchable 	pendent variables	
	 3) type of research is designed of a new unique situation that leads the alternatives and later on focusing the alternatives. c) Descriptive 	o narrowing down the number of	
	 4) The technique of extracting useful, not from database is known as		
	5) The term 'Intellectual Property Rightsa) Copyrightsc) Trade dress	s' covers b) Patent d) All of the above	
	 6) In India, the literary work is protected a) Lifetime of author b) 25 years after the death of author c) 40 years after the death of author d) 60 years after the death of author 		
	7) of the following is (are) incGoods.a) Handicraftc) Manufactured	b) Foodstuff d) All of the above	

SLR-VE-85 b) Define the terms:-07 1) Trademark 2) ANOVA 3) Fundamental research 4) Impact factor 5) Sample Size 6) UPOV 7) PBR SECTION - II Answer any four of the following:-Q.2 What is research methodology? Explain in detail objectives of research and 14 types of research. **Q.3** What is sampling? Explain in detail types of sampling. 14 Explain the different guideline for choosing title and abstract for preparation of 14 Q.4 manuscript. Write short notes on any two of the following:-14 Q.5 a) Research Design **b)** Geographical indications. c) Plant variety protection in India. Q.6 Answer any two of the following: 14 a) Write a note on patenting of biological material. b) Write a note on advantages and limitations data collection.

c) Write a note on preparation of power point for oral presentation in

conference.

No. Set P	Seat No.		Set	P
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M.Sc. (Semester - IV) (New) (CBCS) Examination Nov/Dec-2018

	N	ΛEΙ		nnology AND BIO-NANOTECHNOLOGY	
Time:	2½	Ηοι	ırs	Max. Mark	(s: 70
Instru	uctio	ns:	 Section I is compulsory. Answer any four questions from 	om Section II.	
			SECT	ION – I	
Q.1	A)	alt	ewrite the sentences by choosi ternatives: Each of the following organisms infections except:	ng correct answer from given s is an important cause of urinary tract	07
			a) Klebsiellapneumoniae c) Bacteriodesfragilis	b) Escherichia colid) Proteus mirabilis	
		2)		s best diagnosed by serologic means? b) Gonorrhea d) Q Fever	
		3)	The cogulase test is used to diff a) Staphylococcus epidermidis b) Staphylococcus aureus from c) Streptococcus pyogens from d) Streptococcus pyogens from	from Neisseria meningitidis Staphylococcus epidermidis Staphylococcus aureus	
		4)	Attachment of erythrocytes to so a) Interference c) Neutralization	urface of virally infected cell is termed as b) Hemadsorption d) Complement fixation	
		5)	10 nm = m a) 10 ⁻⁸ c) 10 ⁻⁹	b) 10 ⁻⁷ d) 10 ⁻¹⁰	
		6)	Duration during which a specific detachable in blood is known as a) Serology c) Seroconversion	antibody develops and becomes b) Blood culture d) Antibody production	
		7)	substrates in a small amoun		

	SLR-VI	E-86
	B) Define the terms:- 1) Infection 2) E coli 3) Biochemical test 4) Antibiotic 5) Vaccine 6) Nanotechnology 7) Micelle	07
	SECTION - II	
Q.2	Discuss about the epidemiology study and pathogenesis of <i>Escherichia coli</i> disease.	14
Q.3	Explain in details of methods involved in the diagnosis of diseases.	14
Q.4	Define chemotherapy? Explain the mode of action of antibiotic with suitable example.	14
Q.5	 Answer any two of the following: a) Application of phage in therapeutics b) Gene therapy c) Application of Nanotechnology 	14
Q.6	 Write short notes on any two of the following:- a) Chemical method for synthesis of nanoparticles. b) Recent trends in Nano-biotechnology c) Pathology of Candida sps 	14

Seat No.	Set	Р
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M.Sc. (Semester – IV) (Old) (CBCS) Examination Nov/Dec-2018

141.0	Biotechnol		
AN	IIMAL BIOTECHNOLOGY AND S		
Time: 2½ H		Max. Marks:	70
Instruction	s: 1) Section I is compulsory.		
	2) Answer any four questions from se3) Draw neat labeled diagram where		
	SECTION		
Q.1 A) Re	write the sentences by choosing cor		07
	ternatives:	naintained by Pouv in	
1)	,	b) Plasma clots d) Serum	
2)	E S Cell lines in culture were first obtain	•	
,	a) IVF	b) Mouse Blastocystsd) Germ Cells	
3)	Liquid phase temperature for very long	period of storage of cells is	
	,	b) -120 °C d) -110 °C	
4)	The quality and quantity of wool can be aminoacids.	e improved in sheep by the supply of	
	,	b) Methionined) Cysteine	
5)	Neural stem cells cultured in vitro is ca a) Neuronal cells	alled b) Glial cells	
	,	d) EG cells	
6)	The first human cell line to be grown co	ontinuously in the laboratory is	
	a) Hela cell linec) 3T3 cell line	b) MRC – 5 d) HLM cell line	
7)	,	harvesting human organ for organ	
',	transplant.		
	·	b) Pig d) Goat	
B) De	fine the terms:-		07
•	Passage number		
•	Organotypic culture Grid Technique		
•	Gene Knock Out		
,	Cryotubes		
,	Cell Lines		
7)	Hayflick effect		

SECTION - II

Q.2	Write in details about the different type of cell culture media, its growth supplement and its advantages.	14
Q.3	Write in details about Hybridoma technique and its importance.	14
Q.4	Explain in detail culture of cells for production of various biological.	14
Q.5	 Answer any two of the following: a) What is organ culture? Write about the techniques used in organ culture. b) Discuss the importance characteristics of stem cells. c) Write a note on cryopreservation methods. 	14
Q.6	 Answer any two of the following: a) Explain in detail about immunoisolation techniques. b) Write a note on scale up in monolayer culture with diagram. c) Discuss the different types of Tissue culture and its advantages. 	14

Seat	Set	D
No.	Set	

M.Sc. (Semester - IV) (Old) (CBCS) Examination Nov/Dec-2018

	ME	DIC	Bioted AL BIOTECHNOLOGY		logy DBIO-NANOTECHNOLOGY			
Time: 2½	₂ Ho	urs			Max. Marks	: 70		
Instructi	ions	,	Section I is compulsory. Answer any four questions	from S	Section II.			
			SEC	CTION	-1			
Q.1 A)	al	Rewrite the sentences by choosing correct answer from given alternatives: 1) Each of the following organisms is an important cause of urinary tract infections except:						
		,	Klebsiellapneumoniae Bacteriodesfragilis	,				
	2)	a)	hich of the following disease Pulmonary tuberculosis Actinomycosis	b)	st diagnosed by serologic means? Gonorrhea Q Fever			
	3)	a) b) c)	The cogulase test is used to differentiate a) Staphylococcus epidermidis from Neisseria meningitidis b) Staphylococcus aureus from Staphylococcus epidermidis c) Streptococcus pyogens from Staphylococcus aureus d) Streptococcus pyogens from Enterococcus faecalis					
	4)	a)	tachment of erythrocytes to Interference Neutralization	b)	e of virally infected cell is termed as Hemadsorption Complement fixation			
	5)	a)	nm = m 10 ⁻⁸ 10 ⁻⁹	b) d)	10 ⁻⁷ 10 ⁻¹⁰			
	6)	de [·] a)	rration during which a specif tachable in blood is known a Serology Seroconversion	as b)	Blood culture Antibody production			
	7)	a)b)c)	substrates in a small amou	ly and chip ai unt of s				

B) Define the terms:-07 1) Infection 2) E coli 3) Biochemical test 4) Antibiotic 5) Vaccine 6) Nanotechnology 7) Micelle SECTION - II Q.2 Discuss about the epidemiology study and pathogenesis of Escherichia coli 14 disease. Q.3 Explain in details of methods involved in the diagnosis of diseases. 14 Q.4 Define chemotherapy? Explain the mode of action of antibiotic with suitable 14 example. Q.5 Answer any two of the following: 14 a) Application of phage in therapeutics **b)** Gene therapy c) Application of Nanotechnology Q.6 Write short notes on any two of the following:-14 a) Chemical method for synthesis of nanoparticles. **b)** Recent trends in Nano-biotechnology c) Pathology of Candida sps

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