Total No. of Printed Pages: 13

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A

M.Phil./Ph.D./URS-EE-2019

SUBJECT: Life Science

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Sr.	No						

10093

Time : 11/4 Hours	Max. Marks: 100	Total Questions: 100
Roll No. (in figures)	(in words)	
Name	Father's Name	
Mother's Name	Date of Examination	n
	X / Si	
(Signature of the Candidate)	109	(Signature of the Invigilator)

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SEAL

	 Name the plant in Muatard 	which auxin was f (2) Oats	irst discovered: (3) Rice	(4) P
	2. Human placenta i			(4) Pea
	3. Which of the follo	owing is a large ribo	(3) Amnion ozyme?	(4) Allantois and Chorion
	(1) Hairpin ribozy(3) Twort ribozyn		(2) Hammerhead(4) Hepatitis delt	
. 4	 Which cellular cor Chromatin 	mponent is consider (2) Ribosomes	red to be a nano(assen	nbler) ? (4) mRNA
5	(2) The distance in	oping? of regions that ove base pairs between dmarks in the genes	rlap from one place to n two markers to put together seque	the next in a library
6	. Which one of the	following is often a sisms and does not a	used to establish familiaccumulate mutations	ily trees for organisms it is quickly? (4) Mitochonderial DNA
7.	Which of the follow (1) 2H	ving is used to quan	tify proteins with mas	ss spectroscopy? (4) 1251
8.	What could be use from bacterials celis (1) A peptide tag (3) PEST sequence			ion of eukaryotic proteins
9.	What term describe	es the process of ced functions or alte	creating random muta	ations in a gene and then resulting protein product?
10.	(1) Erythropoietin (3) Insulin	cosylation sites int	ad significantly incre o the protein? (2) Calmodulin (4) Glucose isomera	ased clinical activity after
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11.	viruses? (1) BrdU- enrichment (2) Suppressive subtraction hybrid (3) Stable isotope probing (4) DNA sequencing	
12.	Which genera of microorganisms h (1) Mycobacterium (3) Rhodococcus	nave the most diverse pathways for bioremediation? (2) Pseudomonas (4) Methylobium
13.	What is DNA coated onto when tra (1) Silver (3) Gold	(2) Aluminium (4) Calcium
14.	During DNA polymerase reaction (1) 3'OH group of the nucleotide a (2) 3'OH group of the nucleotide a (3) 5'OH group of the nucleotide a (4) 5'OH group of the nucleotide a	at the 3' end at the 5'end at the 5'end
15.	(1) EF-Tu is involved in the recognized (2) Release factors are not tRNAs	gnition and binding of the START codon but proteins that recognize STOP codons the enzymatic activity of peptidyltranferase sukaryotes
16.	Wobble pairing occurs between: (1) 1 st nucleotide of codon and 3r (2) 1 st nucleotide of anticodon and 3r (3) 3 rd nucleotide of codon and 1 (4) 3 rd nucleotide of anticodon and 1	d 3rd nucleotide of codon st nucleotide 0 anticodon
17.	An ultraviolet spectrophotometer of DNA or RNA. This is because (1) The absorption spectrum for lacety (2) Purines and pyrimidines absorption spectrum for lacety (3) Purines and pyrimidines absorption spectrum for lacety (4) Purines absorption spectrum for lacety (4) Purines absorption spectrum for lacety (4) Purines absorption spec	DNA or RNA is triphasic

(3) Boyle's law provides the concentration as long as path length is known

(4) Nucleic acids emit fluorescent light when activated with ultraviolet light MPH/PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(A)

- **18.** The E.coli genome is typical of many prokaryotic genomes. Which of the following statements is correct?
 - (1) All transcriptional units are transcribed in a clockwise direction
 - (2) The E. Coligenome codes for antibiotic resistance genes
 - (3) The protein coding potential of prokaryotic genomes correlates with their C-values
 - (4) Prokaryotic genomes do not code for monocistronic mRNAs
- **19.** High salt concentrations were used in the DNA isolation and the RNA isolation laboratories to:
 - (1) Degrade histones

- (2) Buffer the solutions
- (3) Prevent nucleic acids degradation
- (4) Promote nucleic acid precipitation
- **20.** Proteins have the same molecular mass and have identical net charge at pH 7. The best way to separate them would be to use:
 - (1) SDS- polyacrylamide gel electrophoresis
 - (2) native gel electrophoresis
 - (3) cation exchange chromatography
 - (4) anion exchange chromatography
- **21.** Which one of the following techniques is used demonstrate the presence of DNAse sensitive sites in euchromatin?
 - (1) Automated DNA sequencing
- (2) Southern blot analysis
- (3) Northern blot analysis
- (4) DNA fingerprinting
- **22.** In the yeast two hybrid-technology, the bait domain forms a non-covalent association with:
 - (1) The activation domain of a transcription activator
 - (2) The DNA binding domain of a transcription activator
 - (3) Reporter gene products
 - (4) An unknown interacting protein
- 23. Messenger RNAs were not visible as discrete bands in your RNA gel because
 - (1) The concentration of rRNA was too high
 - (2) The molecular weight of mRNAs varies tremendously
 - (3) mRNAs are much less stable than rRNAs.
 - (4) mRNAs were not extracted
- **24.** What is the name of the region between the start site of transcription and the first ATG?
 - (1) Promoter

- (2) 3' untranslated region
- (3) Start site for translation
- (4) 5' untranslated region

- 25. What happens when tryptophan levels are high in bacteria?
 - (1) Some transcription of the 5'end of the trp operon occurs
 - (2) The trp repressor protein is tetramer that contains 4 molecules of trp
 - (3) The binding of trp decreases the affinity of the trp repressor for the operator
 - (4) Translation of he leader peptide is terminated
- 26. What component is not involved in mRNA splicing?
 - (1) 28 rRNA
 - (2) Consensus sequence at the 5' and 3' ends of the introns
 - (3) 2'OH group of the ribose sugar at splice site
 - (4) Spliceosome
- 27. Which tropical fruit crop has been successfully engineered to be protected against a lethal virus?
 - (1) Passion fruit
- (2) Papaya
- (3) Mango
- (4) Guava
- 28. Which of the following fatty acids has the lowest melting point?
 - (1) fatty acids with sites of unsaturation with cis double bonds
 - (2) fatty acids with sites of unsaturation with trans double bonds
 - (3) fatty acids with no sites of unsaturation
 - (4) fatty acids with longer hydrophobic tails
- 29. Which of the following gene have been introduced into the transgenic fish?
 - (1) Human or rat gene for growth hormone
 - (2) Chicken gene for delta crystalline protein
 - (3) E. coli gene for β-galactosidase
 - (4) 1, 2, 3
- 30. DNA is microinjected into the fertilized egg:
 - (1) after the fusion of male and female nuclei
 - (2) before the fusion of male and female nuclei
 - (3) at the time of fusion of male and female nuclei
 - (4) Both (2) and (3)
- 31. Which of the following statements is false?
 - (1) Continuous variation produces a spread of variation within a population
 - (2) Discontinuous variation is the result of genetics alone
 - (3) Blood group is an example of discontinuous variation
 - (4) Discontinuous variation is influenced by the environment

32.	Karyoplast is: (1) cells devoid of cell wall (2) nuclei	Was a constraint of the property of the fillers
22	(3) nuclei with only some residual plas(4) cell with nucleus	
33.	fermentor?	k vortex and to improve aeration efficiency in
	(1) Impeller (2) Baffles	(3) Sparger (4) Both (1) and (2)
34.	Which of the following microorganisms (1) Saccharomyces cerevisiae (3) Saccharomyces uvarum	s help in the ethanol production? (2) Zygomonasmobilis (4) 1, 2, 3
35.	In animal cell culture, particularly mam (1) uptake of new genetic material (2) phenotypic modifications of cells in (3) both (1) and (2) (4) release of genetic information	malian cell culture, transformation means:
36.	Cells which have undergone transforma (1) anchorage independent (3) stable	(2) anchorage dependent (4) unstable
37.	The ability of the component cells of ca (1) redifferentiation (3) either (1) or (2)	llus to form a whole plant is known as: (2) dedifferentiation (4) Regeneration
38.	(2) organism over a short time to suppre	ng time to suppress/destroy a population
39.	The heavily polluted zone of water reser (1) pleosaprophytic zone (3) Sclerosaprophytic zone	voir is known as : (2) mesosaprophytic zone (4) Micosaprophytic zone
40.	Which of the following is selectively eff (1) Cycloheximide (3) Herbicidin (1) and (2)	
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41.	Which of the following accumulates from (1) Pseudomonas aeruginosa (3) Pseudomonas putida	1 factory waste? (2) Thiobacillus (4) Zoogloearamigera	
42.	The phospholipids present in cytoplasm (1) phosphoglycerides (3) polyisoprenoid branched chain lipids	(2) polyisoprenoid	
43.	Which were the investigators lived at the (1) Koch and Pasteur (3) Van Leeuenhoek and Ricketts	(2) Darwin and Woese	
44.	Large parasites such as helminthes may la (1) basophils (3) eosinophils	(2) monocytes (4) Macrophages	
45.	cells		
46.	Passive immunization is done for: (1) tuberculosis (3) Measles	(2) diphtheria(4) Mumps	
47.	7. Major Histo Compatibility Complex (MHC) is a collection of genes arrayed on: (1) chromosome 21 in man, chromosome 6 in mice (2) chromosome 6 in man, chromosome 21 in mice (3) chromosome 17in man, chromosome 6 in mice (4) chromosome 6 in man, chromosome 17 in mice		
48.	environment? (1) microcosm-	et up to simulate conditions of a particular (2) mibridization	
		(4) rhizosecretion T-Y)/(A)	
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	그 이 경기 오늘 이 얼룩하는 호텔은 보이 있으면 이 일을 하고 있는 사람들이 없었다. 그 전에 가지 않는 것 같다.		0.7 T
49	Transplastomics: (1) targets genes in the chloroplast (2) provides exceptionally low yields of protein products (3) produces genes that are released in pollen (4) offers little opportunity for practical use		
50.	In an -helix hydrogen bonds are: (1) within a single chain (2) between chains that run side by side (3) between polar amino acid and water (4) only between amino acids of opposite charge		
51.	Glycogen is a branched polymer of glucose. It has: (1) no reducing ends (2) no non-reducing ends (3) one reducing end and several non-reducing ends (4) one non-reducing end and several reducing ends		
52.	 Codon bias can be overcome by which scenario? (1) Genetically engineering host organisms to express rarer tRNAs (2) Genetically engineering the gene so that the codons are recognized abundant tRNAs (3) Genetically engineer the gene to remove the codons for rare tRNAs (4) Both (1) and (2) are suitable scenarios. 	by .	more
53.	Why are gene libraries constructed? (1) To find new genes. (2) To compare genes to other organism. (3) To create a "bank" of all the genes in an organism. (4) All of the above.		
54.	Which property is measured with a scanning microscope? (1) Magnetism (2) Electric resistance (3) Light absorption (4) All of the above	,	
55.	Which agency is responsible for regulation of all transgenic technology? (1) FDA (2) EPA		

(2) EPA

(4) All of the above

(3) NIH

MP

56.	(3) KINAI	(4) All of the above
57.	Which ion channel is defective in peop (1) Sodium transporter (3) Chloride transporter	(4) Calcium transporter
58.	(1) DNA sequencing(3) RAPD	hniques can be used to identify pathogens? (2) Ribotyping (4) All of the above
59. 60	 Prion proteins bind to cells and in Prion proteins bind to DNA poly Prion proteins induce normal cel Prion proteins induce an immune The Alu element found in the human A 7S L scRNA homologue A good RNA polymerase III ten About 300 bp long repeat 	lular proteins to refold into the prion form. e response against the "self". n genome is:
6	S- are synthesized from pri-mixive (1) P and Q (2) Q and S (3) P and S	As by an RNase III enzyme drosha in the cytoplasm As by an enzyme dicer in the nucleus
	 62. The primer of the lagging strand d (1) 3' to 5'exonuclease activity of (2) DNA primase (3) 5' to 3' exonuclease activity of (4) 3' to 5' exonuclease activity of 	f DNA poll

63.	A restriction endonuclease has the indicates the cut site. This sequence is chromosome. 'x' =	recognition sequence G/AATTC, where "I' found, on average, once every 'x' resides in a
	(1) 146 base-pairs	(2) 200 base-pairs
	(3) 256 base-pairs	(4) 4096 base-pairs
64.	An allosteric activator:	
	(1) increases the binding affinity	(2) decreases the binding affinity
	(3) stabilizes the R state of the protein	
65.	 IP3 initially causes Ca2+to be released in (1) mitochondria (2) lysosome (3) the endoplasmic reticulum (4) the plasma membrane (from extrace) 	
66.	A protein that binds two ligands in a nor	-cooperative manner will show :
	(1) asigmodial binding curve	(2) a hyperbolic binding curve
	(3) a linear Scatchard Plot	(4) both (2) and (3)
67.	Why do fluorescence spectrometers ofte. (1) So a reference solution can be used. (2) To compensate for beam attenuation. (3) To compensate for power fluctuation. (4) (2) and (3)	by the monochromator
68.	The nucleophile in serine proteases is:	
	(1) Serine (2) water	(3) both (1) and (2) (4) Asparagine
69.	What is shielding in NMR?	
	(1) Using a curved piece of metal to block	ck an opponents attack
	(2) Putting metal around an Rf source	
	(3) When the magnetic moment of an ate surrounding nuclei	om blocks the full induced magnetic field from
	(4) Blocking parts of a molecule from R	fradiation
70.	Column efficiency is measured in terms of	of number of plates which is:
	(1) inversely related to the square of the	
	(2) directly related to the square of the po	eak width

(3) inversely related to the cube root of the peak width

(4) .directly related to the square of the peak width

71.	Name the regulatory component (1) Cyclin (2) CDK	of the cell cycle: (3) DNA	(4) APC
72.	What is the origin of the cancero (1) Monoclonal (2) Polyclo	us cells ? nal (3) Stem cells	(4) Mesodermal cells
73.	Name the group of species whi way?		nd biotic resources in a similar
	(1) Guild (2) Ecads	(3) Biomes	(4) Community
74.	Two genes are 70cM apart, calc (1) 50% (2) 100%	ulate the recombination (3) 25%	frequency? (4) 70%
	What is a petite mutant? (1) Defective mitochondrial fur (2) Plastid function mutant (3) Dwarfism (4) Maternal effect genes		
76.	Which of the following chromo (1) Deletion (2) Duplic		pseudodominance? (4) Translocation
77.	Which of the following compou	nds is NOT found in tea	nrs?
	(1) Lysozyme (2) Lactof	erin (3) IgA	(4) IgE
78.	Name the group of pattern re signaling receptor?	cognition molecules wh	nich functions exclusively as a
	(1) eRP (3) MBL	(2) Toll-like (4) LPS	receptor
79.	Name the nerve stimulator which (1) Bradikinins (2) Prosta	th is responsible for the glandin (3) Histamine	pain of the inflammation. es (4) Kinins
80.	Which of the following phylum (1) Plantae (2) Mollu	has a water vascular sy sca (3) Echinode	stem ? rmata (4) Hemichordata
81.	component?		alginic acid in their cell wall
	(1) Green algae (2) Red a	gae (3) Lichens	(4) Brown algae
82.	Which of the following spores (1) Zoospores (2) Oomy		ores (4) Hepdnaspores
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83.	3. What is the standard free energy change of ATI	What is the standard free energy change of ATP?		
	(1) Small and negative (2) La	arge and positive		
	(3) Large and negative (4) Si	nall and positive		
84.	Which of the following act as a storage form of	high energy phosphate?		
	등 보고 있는 사용이 있는데 그 경기 등에 가장 하면 보고 있는데 보고 있다. 그리고 있는데 보고 있는데 보고 있는데 보고 있는데 보고 있는데 보고 있는데 보고 있다. 그는 데 없는데 보고 있는데 보	nosphoenolpyruvate		
		lycerol phosphate		
85.		ent in the soil that can be utilized by the		
03.	plants.	the son that can be attributed by the		
	(1) Chresard (2) H	umus		
		apillary water		
86.	6. What is the entropy of the early succession com	imunity?		
00.	(1) Medium (2) Low (3) H			
07				
87.				
	(1) Climatic (2) Edaphic (3) D	isclimax (4) Subclimax		
88.				
	(1) Exchange of homologous segments (2) D	NA glycosylase		
	(3) Nucleotide excision repair (4) Ph	notoreactivation		
89.	Genes related through descent from a common	ancestral gene are called:		
	(1) Orthologous (2) Homologous (3) H	eterologous (4) Paralogous		
90.). Which of the following are correct?			
	(1) classicalMendelian traits are qualitative in r	nature		
	(2) qualitative traits show discontinuous variati	ons		
	(3) qualitative traits are referred to as metric tra	nits		
	(4) Both (1) and (2)			
91.				
	dominant trait at a given locus having two	alleles is 84%. The frequency of the		
	recessive allele in the population is: (1) 0.4 (2) 0.32 (3) 0.	16 (4) 0.8		
92.				
	(1) antibiotic yields are generally higher when	cens enter the stationary phase		
	(2) the precursors are often toxic to the cells(3) antibiotic yields are generally higher when	cell growth slows		
	(4) 1, 2, 3	previous stantilica		

ct 30

93.	How does CO2 help in the cell metabolis (1) It participates in the de novo synthes (2) Helps in the cells respiration (3) For monitoring pH of the culture (4) (2) and (1)		
94.	In case of Baculoviruses, the foreign gen (1) is inserted downstream of polyhedrir (2) is inserted downstream of viral origin (3) is inserted between the polyhedrin pr (4) is inserted uptream of viral origin of	n promoter n of replication comoter and downstr	ream sequences
95.	A purified DNA sample of leaf con approximate percentage of purine residue (1) 30% (2) 40%		of guanine. Calculate the
96.	What are protamines? (1) Large size DNA (2) Sequences that are unique (3) Histone like protein found in fish special (4) Highly repetitive DNA	erm	CHEST OF HOME AND
97.	Name the protein, which maintained the (1) HSP (2) SMC	condensed structure (3) Collagen	of chromosomes. (4) Elastin
98.	Name the effect which shows the chang specific environmental condition. (1) Pleiotropy (2) Linkage	ge in expression of a (3) Phenocopy	(4) Penetrance
99.	What is tautonym? (1) These are the repeated sequences (3) Identical name of genus and species		
100.	Identify the disease which causes excess (1) Duncan muscular dystrophy (3) Hunter syndrome	ive production of ur (2) Lesch-Nyhan s (4) Hemophilia	

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1. Which of the following accumulates fr	om factory waste?
(1) Pseudomonas aeruginosa	(2) Timobacinas
(2) Pagudomonas nutida	(4) Zoogloearamigera
(3) I secution of the cytoplas	m membrane of the archaeo-bacteria is:
2. The phospholipids present in cytopias	(2) polyisoprenoid
(1) phosphoglycerides(3) polyisoprenoid branched chain lip	
(3) polyisoprenoid oraniened at	the same time?
3. Which were the investigators lived at	(2) Darwin and Woese
(1) Koch and Pasteur	(4) Berg and Hooke
(3) Van Leeuenhoek and Ricketts	
4. Large parasites such as helminthes m	ay be killed extracellularly by the action of: (2) monocytes
(1) basophils	(4) Macrophages
(3) eosinophils	
5. Which of the following is correct for	CD8 I cells ?
(1) CD8 T cells only recognize virus	s-infected cens
(2) CD8 T cell receptor recognizes	epitopes that are also commonly recognized by B
cells CD8 T cells uno	dergo positive selection only, whereas CD4 T cells
undergo negative selection only	
(4) Both (2) and (3)	
- : done for:	
	(2) diphtheria
(1) tuberculosis	(4) Mumps
(3) Measles	x (MHC) is a collection of genes arrayed on:
7. Major Histo Compatibility Complete (1) chromosome 21 in man, chrom	osome 6 in mice
(1) chromosome 21 in man, chromo	osone 21 in mice
(2) chromosome of it man, chrome (3) chromosome 17in man, chrom	osome 6 in mice
(4) chromosome 6 in man, chromo	osome 17 in mice
(4) chromosome on man, or a	ry set up to simulate conditions of a particular
8. Which one is a small laborato	Ty set up to see a s
environment?	(2) mibridization
(1) microcosm-(3) bioremediation	(4) rhizosecretion
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			i	makasa kadasa W W. A.
(1) (2) (3) (4)	offers little oppo	onally low yields of phat are released in portunity for practical u	Officia	Princip Dobas (1)
(1) (2) (3) (4)	between polar ar	hain that run side by side mino acid and water mino acids of opposit	e charge	
	nme the regulatory Oyclin	component of the component (2) CDK	ell cycle: (3) DNA	(4) APC
12. W	That is the origin o	f the cancerous cells (2) Polyclonal	(3) Stelli cells	(4) Mesodermal cells
40 N	ome the group of	species which explo	oit the abiotic and b	iotic resources in a similar
W	ay?	(2) Ecads	(3) Biomes	(4) Community
14. T	wo genes are 70c 1) 50%	M apart, calculate the (2) 100%	e recombination freq (3) 25%	(4) 70%
(2) Plastid function (3) Dwarfism (4) Maternal effection	ochondrial function on mutant		-dadominance?
	(1) Deletion	(2) Duplication	aberration shows pse (3) Inversions	
		(2) Lactoterin	NOT found in tears (3) IgA	
	signaling recepto (1) eRP	of pattern recognit r?	(2) Toll-like rec(4) LPS	h functions exclusively as a eptor

19.	Name the nerve stimulator which is responsible for the pain of the inflammation. (1) Bradikinins (2) Prostaglandin (3) Histamines (4) Kinins
20.	Which of the following phylum has a water vascular system? (1) Plantae (2) Mollusca (3) Echinodermata (4) Hemichordata
21.	In a population that is in equilibrium, the proportion of individuals showing the dominant trait at a given locus having two alleles is 84%. The frequency of the recessive allele in the population is: (1) 0.4 (2) 0.32 (3) 0.16 (4) 0.8
22.	Antibiotics are typically produced in fed batch reactors because: (1) antibiotic yields are generally higher when cells enter the stationary phase (2) the precursors are often toxic to the cells (3) antibiotic yields are generally higher when cell growth slows (4) 1, 2, 3
23.	How does CO2 help in the cell metabolism during cell culture? (1) It participates in the de novo synthesis of purines and pyrimidines (2) Helps in the cells respiration (3) For monitoring pH of the culture
	(4) (2) and (1)
24.	In case of Baculoviruses, the foreign gene: (1) is inserted downstream of polyhedrin promoter (2) is inserted downstream of viral origin of replication (3) is inserted between the polyhedrin promoter and downstream sequences (4) is inserted uptream of viral origin of replication
25.	A purified DNA sample of leaf contains 20.0 mole of guanine. Calculate the approximate percentage of purine residues? (1) 30% (2) 40% (3) 60% (4) 20%
26.	 (1) Large size DNA (2) Sequences that are unique (3) Histone like protein found in fish sperm (4) Highly repetitive DNA
MPH	I/PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(B) P. T. O.

27.	Name the protein, which maintained the	condensed structure of chromosomes.	
	(1) HSP (2) SMC	(3) Collagen (4) Elastin	
28.	specific environmental condition.	e in expression of alleles of the gene due to a (3) Phenocopy (4) Penetrance	
	(2)		
29.	What is tautonym?(1) These are the repeated sequences(3) Identical name of genus and species	(2) It is a name of fish(4) It is a name of the genus	
30.	Identify the disease which causes excess (1) Duncan muscular dystrophy (3) Hunter syndrome	ive production of uric acid. (2) Lesch-Nyhan syndrome (4) Hemophilia	
31.	Name the plant in which auxin was first (1) Muatard (2) Oats	discovered: (3) Rice (4) Pea	
32.	Human placenta is derived from: (1) Allantois (2) Chorion	(3) Amnion (4) Allantois and Chorion	
33.	Which of the following is a large ribozy (1) Hairpin ribozyme (3) Twort ribozyme	me? (2) Hammerhead ribozyme (4) Hepatitis delta virus	
34.	Which cellular component is considered (1) Chromatin (2) Ribosomes	to be a nano(assembler)? (3) DNA (4) mRNA	
35.	 (1) Determination of regions that overlap from one place to the next in a library (2) The distance in base pairs between two markers (3) The use of landmarks in the genes to put together sequencing data (4) The relative order of specific markers in a genome 		
36.	present in all organisms and does not ac (1) rRNA (2) Fibrinopeptide	es (3) Hemoglobin (4) Mitochonderial DNA	
37.	Which of the following is used to quant	tify proteins with mass spectroscopy? (3) 35S (4) 1251	

38.	What could be used to increase the sta	bility and purification of eukaryotic pro	teins
	from bacterials celis.? (1) A peptide tag (3) PEST sequence	(2) A protein fusion(4) A signal sequence	
39.	selecting for improved functions or altered (1) Indirect evolution (3) Translational evolution	eating random mutations in a gene and ed specificity of the resulting protein prod (2) Protein mutagenesis (4) Directed evolution	uet .
40.	Which enzyme described in the book has engineering more glycosylation sites into (1) Erythropoietin (3) Insulin	ad significantly increased clinical activity of the protein? (2) Calmodulin (4) Glucose isomerase	after
41.	Glycogen is a branched polymer of gluc (1) no reducing ends (2) no non-reducing ends (3) one reducing end and several non-reducing end and several reducing end	educing ends	
42.	 Codon bias can be overcome by which so (1) Genetically engineering host organic (2) Genetically engineering the gene so abundant tRNAs (3) Genetically engineer the gene to rest (4) Both (1) and (2) are suitable scenarios 	sms to express rarer tRNAs that the codons are recognized by move the codons for rare tRNAs	more
43.	Why are gene libraries constructed?(1) To find new genes.(2) To compare genes to other organism(3) To create a "bank" of all the genes(4) All of the above.	m. in an organism.	
44.	Which property is measured with a scan (1) Magnetism (3) Light absorption	(2) Electric resistance (4) All of the above	
45.	(1) FDA (2) EPA	(3) NIH (4) All of the above	ve P. T. O.
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46.	Which of the following introduce mutation (1) TILLING (3) RNAi	ons in plant genes? (2) Transposon insertions (4) All of the above	
47.	Which ion channel is defective in people (1) Sodium transporter (3) Chloride transporter	(2) Potassium transporter(4) Calcium transporter	
48.	Which of the following molecular technol (1) DNA sequencing (3) RAPD	iques can be used to identify pathogens? (2) Ribotyping (4) All of the above	
49.	How do prions cause disease? (1) Prion proteins bind to cells and index (2) Prion proteins bind to DNA polyme (3) Prion proteins induce normal cellul (4) Prion proteins induce an immune re	ar proteins to refold into the prion form.	
50.	 The Alu element found in the human genome is: (1) A 7S L scRNA homologue (2) A good RNA polymerase III template (3) About 300 bp long repeat (4) All of the above 		
51.	P- are synthesized as long pri-miRNAs Q are transcribed by RNA polymeras R are synthesized from pre-miRNAs S- are synthesized from pri-miRNAs b (1) P and Q (2) Q and S (3) P and S (4) R and S	e II by an RNase III enzyme drosha in the cytoplasm y an enzyme dicer in the nucleus	
52	 The primer of the lagging strand durin (1) 3' to 5'exonuclease activity of DN (2) DNA primase (3) 5' to 3' exonuclease activity of DN (4) 3' to 5' exonuclease activity of DN 	A pol III IA poll	

	서울등 등로 있는데 하는 것이 많은 이번에 보는 전에 가는 다른 다른 사람이 있는데 그를 받는다. 그는 사람이 되었다.
53.	A restriction endonuclease has the recognition sequence G/AATTC, where "I" indicates the cut site. This sequence is found, on average, once every 'x' resides in a chromosome. 'x' =
6	(1) 146 base-pairs (2) 200 base-pairs (3) 256 base-pairs (4) 4096 base-pairs
54.	An allosteric activator: (1) increases the binding affinity (2) decreases the binding affinity (3) stabilizes the R state of the protein (4) both (1) and (3)
55.	IP3 initially causes Ca2+to be released into the cytoplasm from: (1) mitochondria (2) lysosome (3) the endoplasmic reticulum (4) the plasma membrane (from extracellular to intracellular)
56.	A protein that binds two ligands in a non-cooperative manner will show: (1) asigmodial binding curve (2) a hyperbolic binding curve (3) a linear Scatchard Plot (4) both (2) and (3)
57.	Why do fluorescence spectrometers often use double-beam optics? (1) So a reference solution can be used (2) To compensate for beam attenuation by the monochromator (3) To compensate for power fluctuations in the radiation source (4) (2) and (3)
58.	The nucleophile in serine proteases is: (1) Serine (2) water (3) both (1) and (2) (4) Asparagine
59.	 What is shielding in NMR? (1) Using a curved piece of metal to block an opponents attack (2) Putting metal around an Rf source (3) When the magnetic moment of an atom blocks the full induced magnetic field from surrounding nuclei (4) Blocking parts of a molecule from Rf radiation
60.	Column efficiency is measured in terms of number of plates which is: (1) inversely related to the square of the peak width (2) directly related to the square of the peak width (3) inversely related to the cube root of the peak width (4) .directly related to the square of the peak width

61	1. Which one of the following techniques sensitive sites in euchromatin?	ues is used demonstrate the presence of DNAse -
	(1) Automated DNA sequencing(3) Northern blot analysis	(2) Southern blot analysis(4) DNA fingerprinting
62		the bait domain forms a non-covalent association
	 The activation domain of a transc. The DNA binding domain of a transc. Reporter gene products An unknown interacting protein 	ription activator anscription activator
63.		varies tremendously
64.	What is the name of the region between ATG?	veen the start site of transcription and the first
	(1) Promoter(3) Start site for translation	(2) 3' untranslated region(4) 5' untranslated region
65.	What happens when tryptophan levels at (1) Some transcription of the 5'end of t (2) The trp repressor protein is tetrament	he trp operon occurs r that contains 4 molecules of trp inity of the trp repressor for the operator
	What component is not involved in mR1 (1) 28 rRNA (2) Consensus sequence at the 5' and 3' (3) 2'OH group of the ribose sugar at sp (4) Spliceosome	NA splicing?
	Which tropical fruit crop has been succeed lethal virus? (1) Passion fruit (3) Mango	cessfully engineered to be protected against a (2) Papaya (4) Guava
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68	 Which of the following fatty acids has the lowest melting point? (1) fatty acids with sites of unsaturation with cis double bonds (2) fatty acids with sites of unsaturation with trans double bonds (3) fatty acids with no sites of unsaturation (4) fatty acids with longer hydrophobic tails
69	 Which of the following gene have been introduced into the transgenic fish? (1) Human or rat gene for growth hormone (2) Chicken gene for delta crystalline protein (3) E. coli gene for β-galactosidase (4) 1, 2, 3
70	DNA is microinjected into the fertilized egg: (1) after the fusion of male and female nuclei (2) before the fusion of male and female nuclei (3) at the time of fusion of male and female nuclei (4) Both (2) and (3)
71.	viruses? (1) BrdU- enrichment (2) Suppressive subtraction hybridization
72.	(3) Stable isotope probing(4) DNA sequencingWhich genera of microorganisms have the most diverse pathways for bioremediation?
	(1) Mycobacterium (2) Pseudomonas (3) Rhodococcus (4) Methylobium
73.	What is DNA coated onto when transforming plant cells with a particle gun? (1) Silver (2) Aluminium (3) Gold (4) Calcium
74.	During DNA polymerase reaction the nucleophile is the: (1) 3'OH group of the nucleotide at the 3' end (2) 3'OH group of the nucleotide at the 5'end (3) 5'OH group of the nucleotide at the 5'end (4) 5'OH group of the nucleotide at the 3'end

- **75.** Which of the following statements concerning protein synthesis is correct?
 - (1) EF-Tu is involved in the recognition and binding of the START codon
 - (2) Release factors are not tRNAs but proteins that recognize STOP codons
 - (3) A ribosomal protein provides the enzymatic activity of peptidyltranferase
 - (4) EF-Tu and EF-G are used in eukaryotes
- **76.** Wobble pairing occurs between:
 - (1) 1st nucleotide of codon and 3rd nucleotide of anticodon
 - (2) 1st nucleotide of anticodon and 3rd nucleotide of codon
 - (3) 3rd nucleotide of codon and 1 st nucleotide 0 anticodon
 - (4) 3rd nucleotide of anticodon and 1 st nucleotide of codon
- 77. An ultraviolet spectrophotometer can be used to measure the concentration and purity of DNA or RNA. This is because:
 - (1) The absorption spectrum for DNA or RNA is triphasic
 - (2) Purines and pyrimidines absorb ultraviolet light
 - (3) Boyle's law provides the concentration as long as path length is known
 - (4) Nucleic acids emit fluorescent light when activated with ultraviolet light
- 78. The E.coli genome is typical of many prokaryotic genomes. Which of the following
 - (1) All transcriptional units are transcribed in a clockwise direction
 - (2) The E. Coligenome codes for antibiotic resistance genes
 - (3) The protein codi. 3 potential of prokaryotic genomes correlates with their C-values
 - (4) Prokaryotic genomes do not code for monocistronic mRNAs
- 79. High salt concentrations were used in the DNA isolation and the RNA isolation
 - (1) Degrade histones

- (2) Buffer the solutions
- (3) Prevent nucleic ac ds degradation
- (4) Promote nucleic acid precipitation
- 80. Proteins have the same molecular mass and have identical net charge at pH 7. The best way to separate them would be to use:
 - (1) SDS- polyacrylamide gel electrophoresis
 - (2) native gel electrophoresis
 - (3) cation exchange chromatography
 - (4) anion exchange chromatography

81.	1. Which of the following class of algae consists of component?	alginic acid in their cell wall
	(1) Green algae (2) Red algae (3) Lichens	(4) Brown algae
82.		ores (4) Hepdnaspores
83.	3. What is the standard free energy change of ATP? (1) Small and negative (2) Large and (3) Large and negative (4) Small and	
84.	4. Which of the following act as a storage form of high er (1) Glucose-6-phosphate (2) Phosphoe (3) Phosphagens (4) Glycerol	enolpyruvate
85.	plants.	ne soil that can be utilized by the
	(1) Chresard (2) Humus (3) Gravitational water (4) Capillary	water
86.	6. What is the entropy of the early succession community (1) Medium (2) Low (3) High	? (4) Very high
87.	7. Name the type of community which is maintained by the (1) Climatic (2) Edaphic (3) Disclimation	
88.	8. Name the repair system for UV mediated damage of D (1) Exchange of homologous segments (2) DNA gly (3) Nucleotide excision repair (4) Photoreac	cosylase
89.		al gene are called: gous (4) Paralogous
90.	 Which of the following are correct? (1) classicalMendelian traits are qualitative in nature (2) qualitative traits show discontinuous variations (3) qualitative traits are referred to as metric traits (4) Both (1) and (2) 	
91.	 Which of the following statements is false? (1) Continuous variation produces a spread of variatio (2) Discontinuous variation is the result of genetics ale (3) Blood group is an example of discontinuous variat (4) Discontinuous variation is influenced by the environment 	ion

92.	Karyoplast is:(1) cells devoid of cell wall(2) nuclei	
93.	 (3) nuclei with only some residual plass (4) cell with nucleus Which of the following is used to check fermentor? (1) Impeller (2) Baffles 	vortex and to improve aeration efficiency in a
94.		()
95.	In animal cell culture, particularly mamn (1) uptake of new genetic material (2) phenotypic modifications of cells in (3) both (1) and (2) (4) release of genetic information	nalian cell culture, transformation means:
96.	Cells which have undergone transformati (1) anchorage independent (3) stable	on frequently become: (2) anchorage dependent (4) unstable
97.	(2) aithou (1) (0)	us to form a whole plant is known as: (2) dedifferentiation (4) Regeneration
98.	Inundation involves use of a/an: (1) large number of organisms over a short time to suppress/destroy a population (2) organism over a short time to suppress/destroy a population (3) large number of organisms over a long time to suppress/destroy a population (4) organism over a long time to suppress/destroy a population	
99.	The heavily polluted zone of water reserve (1) pleosaprophytic zone (2)	
	Which of the following is selectively effect (1) Cycloheximide ((3) Herbicidin (1) and (2) (etive against dicot weeds? 2) Anisomycin 4) Both (2) and (3)
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SUBJECT: Life Science

			In l	Sr. No. 10127
Time: 11/4 Hours		Max. Marks: 100 (in words)	10(Total Questions : 100
Roll No. (in figures)		Father's Name Date of Examinati		
Mother's Name		Date of Examination		Signature of the Invigilator)
(Signature of the	Candidate)	INTO INTO DIVI	-	INSTRUCTIONS BEFORE

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates must return the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfairmeans / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
- 5. The candidate must not do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers must not be ticked in the question booklet.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

1.	Which one of the following techniques is used demonstrate the presence of DNAse - sensitive sites in euchromatin?
	 (1) Automated DNA sequencing (2) Southern blot analysis (3) Northern blot analysis (4) DNA fingerprinting
2.	In the yeast two hybrid-technology, the bait domain forms a non-covalent association with:
	 The activation domain of a transcription activator The DNA binding domain of a transcription activator Reporter gene products An unknown interacting protein
3.	Messenger RNAs were not visible as discrete bands in your RNA gel because (1) The concentration of rRNA was too high (2) The molecular weight of mRNAs varies tremendously (3) mRNAs are much less stable than rRNAs. (4) mRNAs were not extracted
4.	What is the name of the region between the start site of transcription and the first ATG?
	 (1) Promoter (2) 3' untranslated region (3) Start site for translation (4) 5' untranslated region
5.	What happens when tryptophan levels are high in bacteria? (1) Some transcription of the 5'end of the trp operon occurs (2) The trp repressor protein is tetramer that contains 4 molecules of trp (3) The binding of trp decreases the affinity of the trp repressor for the operator (4) Translation of he leader peptide is terminated
6.	What component is not involved in mRNA splicing? (1) 28 rRNA (2) Consensus sequence at the 5' and 3' ends of the introns (3) 2'OH group of the ribose sugar at splice site (4) Spliceosome
7.	Which tropical fruit crop has been successfully engineered to be protected against a lethal virus? (1) Passion fruit (2) Papaya (3) Mango (4) Guava

more

by

- 8. Which of the following fatty acids has the lowest melting point?
 - (1) fatty acids with sites of unsaturation with cis double bonds
 - (2) fatty acids with sites of unsaturation with trans double bonds
 - (3) fatty acids with no sites of unsaturation
 - (4) fatty acids with longer hydrophobic tails
- 9. Which of the following gene have been introduced into the transgenic fish?
 - (1) Human or rat gene for growth hormone
 - (2) Chicken gene for delta crystalline protein
 - (3) E. coli gene for β-galactosidase
 - (4) 1, 2, 3
- 10. DNA is microinjected into the fertilized egg:
 - (1) after the fusion of male and female nuclei
 - (2) before the fusion of male and female nuclei
 - (3) at the time of fusion of male and female nuclei
 - (4) Both (2) and (3)
- 11. Glycogen is a branched polymer of glucose. It has:
 - (1) no reducing ends
 - (2) no non-reducing ends
 - (3) one reducing end and several non -reducing ends
 - (4) one non-reducing end and several reducing ends
- 12. Codon bias can be overcome by which scenario?
 - (1) Genetically engineering host organisms to express rarer tRNAs
 - (2) Genetically engineering the gene so that the codons are recognized abundant tRNAs
 - (3) Genetically engineer the gene to remove the codons for rare tRNAs
 - (4) Both (1) and (2) are suitable scenarios.
- **13.** Why are gene libraries constructed?
 - (1) To find new genes.
 - (2) To compare genes to other organism.
 - (3) To create a "bank" of all the genes in an organism.
 - (4) All of the above.
- 14. Which property is measured with a scanning microscope?
 - (1) Magnetism

(2) Electric resistance

(3) Light absorption

(4) All of the above

15.	Which agency is responsible for regulation (2) EPA	alation of all transgenic technology? (3) NIH (4) All of the above
16.	Which of the following introduce m (1) TILLING (3) RNAi	(4) All of the above
17.	(1) Sodium transporter (3) Chloride transporter	(4) Calcium transporter
18.	Which of the following molecular (1) DNA sequencing (3) RAPD	techniques can be used to identify pathogens? (2) Ribotyping (4) All of the above
19.	How do prions cause disease? (1) Prion proteins bind to cells and (2) Prion proteins bind to DNA po (3) Prion proteins induce normal (4) Prion proteins induce an immunity	cellular proteins to refold into the prion form.
20	 The Alu element found in the hum (1) A 7S L scRNA homologue (2) A good RNA polymerase III ((3) About 300 bp long repeat (4) All of the above 	template
21	Which of the following class of component? (1) Green algae (2) Red algae	of algae consists of alginic acid in their cell wall ne (3) Lichens (4) Brown algae
22	(1) Zoospores (2) Oomyce	etes (3) Apianospoies (4) Hepatasp
2	What is the standard free energy(1) Small and negative(3) Large and negative	(4) Small and positive
	4. Which of the following act as a s(1) Glucose-6-phosphate(3) Phosphagens	(2) Phosphoenolpyruvate (4) Glycerol phosphate P. T. O.
MF	PH/PHD/URS-EE-2019/(Life Science	ces)(SET-Y)/(C)

25.	Name the term whi	ich is used for the wa	ater present in the so	oil that can be utilized by the
	(1) Chresard(3) Gravitational v	vater	(2) Humus(4) Capillary wate	er
26.	What is the entropy	y of the early success	ion community?	
	(1) Medium	(2) Low	(3) High	(4) Very high
27.	Name the type of c (1) Climatic	ommunity which is r (2) Edaphic		an or his domestic animals. (4) Subclimax
28.		stem for UV mediate omologous segments sision repair		
29.	Genes related throu (1) Orthologous	ugh descent from a co (2) Homologous	ommon ancestral gen (3) Heterologous	
30.	Which of the following are correct? (1) classicalMendelian traits are qualitative in nature (2) qualitative traits show discontinuous variations (3) qualitative traits are referred to as metric traits (4) Both (1) and (2)			
31.	Name the regulator (1) Cyclin	ry component of the (2) CDK	cell cycle: (3) DNA	(4) APC
32.	577 I	of the cancerous cells (2) Polyclonal		(4) Mesodermal cells
33.	Name the group of way?	f species which expl	oit the abiotic and l	biotic resources in a similar
	(1) Guild	(2) Ecads	(3) Biomes	(4) Community
34.	Two genes are 70c (1) 50%	M apart, calculate the (2) 100%	e recombination free (3) 25%	quency? (4) 70%
35.	What is a petite mu (1) Defective mito (2) Plastid function (3) Dwarfism (4) Maternal effective	chondrial function of mutant	f yeast	

36.	Which of the following chromosomal aberration (1) Deletion (2) Duplication (3)	on shows pseudodominance? Inversions (4) Translocation
37.	(1) Lysozyme (2) Lactoferin (3)	IgA (4) IgE
38.	signaling receptor? (1) eRP (2) (3) MBL (4)	Toll-like receptor LPS
39.	Name the nerve stimulator which is responsible (1) Bradikinins (2) Prostaglandin (3)	ole for the pain of the inflammation. Histamines (4) Kinins
40.	Which of the following phylum has a water v (1) Plantae (2) Mollusca (3)	ascular system ? Echinodermata (4) Hemichordata
41.		Rice (4) Pea
42.		Amnion (4) Allantois and Chorion
43.	(0)	Hammerhead ribozyme
	(·1) 11dii piii 11002) 1110	Hepatitis delta virus
44.	(3) Twort ribozyme (4) 4. Which cellular component is considered to b	Hepatitis delta virus
44. 45.	 (3) Twort ribozyme (4) 4. Which cellular component is considered to b (1) Chromatin (2) Ribosomes (3) 5. What is contig mapping? (1) Determination of regions that overlap from the distance in base pairs between two seconds. (2) The distance in base pairs between two seconds. (3) The use of landmarks in the genes to put the distance order of specific markers in the genes. 	Hepatitis delta virus e a nano(assembler)? DNA (4) mRNA om one place to the next in a library markers t together sequencing data a genome
	 (3) Twort ribozyme (4) 4. Which cellular component is considered to b (1) Chromatin (2) Ribosomes (3) 5. What is contig mapping? (1) Determination of regions that overlap from (2) The distance in base pairs between two in (3) The use of landmarks in the genes to put (4) The relative order of specific markers in Which one of the following is often used the present in all organisms and does not accum (1) rRNA (2) Fibrinopeptides (3) 	Hepatitis delta virus e a nano(assembler)? DNA (4) mRNA om one place to the next in a library markers t together sequencing data a genome o establish family trees for organisms it is ulate mutations quickly? Hemoglobin (4) Mitochonderial DNA
45.	 (3) Twort ribozyme (4) 4. Which cellular component is considered to b (1) Chromatin (2) Ribosomes (3) 5. What is contig mapping? (1) Determination of regions that overlap from (2) The distance in base pairs between two in (3) The use of landmarks in the genes to put (4) The relative order of specific markers in Which one of the following is often used the present in all organisms and does not accumant (1) rRNA (2) Fibrinopeptides (3) 47. Which of the following is used to quantify present in all organisms in the genes to put (2) Fibrinopeptides (3) 	Hepatitis delta virus e a nano(assembler)? DNA (4) mRNA om one place to the next in a library markers t together sequencing data a genome o establish family trees for organisms it is ulate mutations quickly? Hemoglobin (4) Mitochonderial DNA

48.	What could be used to increase the sta	ability and purification of eukaryotic proteins
40.	from bacterials celis.?	
	(1) A peptide tag(3) PEST sequence	(2) A protein fusion(4) A signal sequence
49.	selecting for improved functions or alter (1) Indirect evolution (3) Translational evolution	reating random mutations in a gene and then red specificity of the resulting protein product? (2) Protein mutagenesis (4) Directed evolution
50.	Which enzyme described in the book hengineering more glycosylation sites int (1) Erythropoietin (3) Insulin	ad significantly increased clinical activity after o the protein? (2) Calmodulin (4) Glucose isomerase
51.	Which of the following statements is fa	lse?
	(1) Continuous variation produces a sp(2) Discontinuous variation is the result	read of variation within a population
	(2) Discontinuous variation is the result (3) Blood group is an example of disco	ntinuous variation
	(4) Discontinuous variation is influence	ed by the environment
52.	Karyoplast is: (1) cells devoid of cell wall (2) nuclei (3) nuclei with only some residual plas	sma membrane
	(4) cell with nucleus	ck vortex and to improve aeration efficiency in a
53.	fermentor? (1) Impeller (2) Baffles	(3) Sparger (4) Both (1) and (2)
54	(1) Saccharomyces cerevisiae(3) Saccharomyces uvarum	(2) Zygomonasmobilis(4) 1, 2, 3
55	. In animal cell culture, particularly mar	nmalian cell culture, transformation means:
	 (1) uptake of new genetic material (2) phenotypic modifications of cells (3) both (1) and (2) (4) release of genetic information 	in culture
MPI	H/PHD/URS-EE-2019/(Life Sciences)(S	ET-Y)/(C)

56	Cells which have undergone transform(1) anchorage independent(3) stable	(2) anchorage dependent (4) unstable
57	The ability of the component cells of (1) redifferentiation (3) either (1) or (2)	callus to form a whole plant is known as: (2) dedifferentiation (4) Regeneration
58	(1) large number of organisms over a(2) organism over a short time to supp	long time to suppress/destroy a population
59.	The heavily polluted zone of water res (1) pleosaprophytic zone (3) Sclerosaprophytic zone	servoir is known as: (2) mesosaprophytic zone (4) Micosaprophytic zone
60.	Which of the following is selectively (1) Cycloheximide (3) Herbicidin (1) and (2)	effective against dicot weeds? (2) Anisomycin (4) Both (2) and (3)
61.	Which method is better suited for the viruses? (1) BrdU- enrichment (2) Suppressive subtraction hybridizate (3) Stable isotope probing (4) DNA sequencing	ne identification of actively growing bacteria or
62.	Which genera of microorganisms have (1) Mycobacterium (3) Rhodococcus	the most diverse pathways for bioremediation? (2) Pseudomonas (4) Methylobium
63.	What is DNA coated onto when transfer (1) Silver (2) Aluminium	orming plant cells with a particle gun? (3) Gold (4) Calcium
64.	During DNA polymerase reaction the reaction the reaction of the nucleotide at the (2) 3'OH group of the nucleotide at the (3) 5'OH group of the nucleotide at the (4) 5'OH group of the nucleotide at the	e 3' end e 5'end e 5'end
MPH	PHD/URS-EE-2019/(Life Sciences)(SI	ET-Y)/(C) P. T. O

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- 65. Which of the following statements concerning protein synthesis is correct?
 - (1) EF-Tu is involved in the recognition and binding of the START codon
 - (2) Release factors are not tRNAs but proteins that recognize STOP codons
 - (3) A ribosomal protein provides the enzymatic activity of peptidyltranferase
 - (4) EF-Tu and EF-G are used in eukaryotes
- 66. Wobble pairing occurs between:
 - (1) 1st nucleotide of codon and 3rd nucleotide of anticodon
 - (2) 1st nucleotide of anticodon and 3rd nucleotide of codon
 - (3) 3rd nucleotide of codon and 1 st nucleotide 0 anticodon
 - (4) 3rd nucleotide of anticodon and 1 st nucleotide of codon
- **67.** An ultraviolet spectrophotometer can be used to measure the concentration and purity of DNA or RNA. This is because:
 - (1) The absorption spectrum for DNA or RNA is triphasic
 - (2) Purines and pyrimidines absorb ultraviolet light
 - (3) Boyle's law provides the concentration as long as path length is known
 - (4) Nucleic acids emit fluorescent light when activated with ultraviolet light
- **68.** The E.coli genome is typical of many prokaryotic genomes. Which of the following statements is correct?
 - (1) All transcriptional units are transcribed in a clockwise direction
 - (2) The E. Coligenome codes for antibiotic resistance genes
 - (3) The protein coding potential of prokaryotic genomes correlates with their C-values
 - (4) Prokaryotic genomes do not code for monocistronic mRNAs
- 69. High salt concentrations were used in the DNA isolation and the RNA isolation laboratories to:
 - (1) Degrade histones

- (2) Buffer the solutions
- (3) Prevent nucleic acids degradation
- (4) Promote nucleic acid precipitation
- **70.** Proteins have the same molecular mass and have identical net charge at pH 7. The best way to separate them would be to use :
 - (1) SDS- polyacrylamide gel electrophoresis
 - (2) native gel electrophoresis
 - (3) cation exchange chromatography
 - (4) anion exchange chromatography

71	Which of the following accumulates from factory waste? (1) Pseudomonas aeruginosa (2) Thiobacillus
	(3) Pseudomonas putida (4) Zoogloearamigera
72	The phospholipids present in cytoplasm membrane of the archaeo-bacteria is: (1) phosphoglycerides (2) polyisoprenoid (3) polyisoprenoid branched chain lipids (4) lecithin
73.	Which were the investigators lived at the same time? (1) Koch and Pasteur (2) Darwin and Woese (3) Van Leeuenhoek and Ricketts (4) Berg and Hooke
74.	Large parasites such as helminthes may be killed extracellularly by the action of: (1) basophils (2) monocytes (3) eosinophils (4) Macrophages
75.	 Which of the following is correct for CD8 T cells? (1) CD8 T cells only recognize virus-infected cells (2) CD8 T cell receptor recognizes epitopes that are also commonly recognized by B cells (3) In the thymus, CD8 T cells undergo positive selection only, whereas CD4 T cells undergo negative selection only (4) Both (2) and (3)
76.	Passive immunization is done for: (1) tuberculosis (2) diphtheria (3) Measles (4) Mumps
77.	Major Histo Compatibility Complex (MHC) is a collection of genes arrayed on: (1) chromosome 21 in man, chromosome 6 in mice (2) chromosome 6 in man, chromosome 21 in mice (3) chromosome 17in man, chromosome 6 in mice (4) chromosome 6 in man, chromosome 17 in mice
78.	Which one is a small laboratory set up to simulate conditions of a particular environment? (1) microcosm- (2) mibridization
MPH/	(3) bioremediation (4) rhizosecretion PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(C) P. T. C

10	
79.	Transplastomics: (1) targets genes in the chloroplast (2) provides exceptionally low yields of protein products (3) produces genes that are released in pollen (4) offers little opportunity for practical use
80.	In an -helix hydrogen bonds are: (1) within a single chain (2) between chains that run side by side (3) between polar amino acid and water (4) only between amino acids of opposite charge
81.	In a population that is in equilibrium, the proportion of individuals showing the dominant trait at a given locus having two alleles is 84%. The frequency of the recessive allele in the population is: (1) 0.4 (2) 0.32 (3) 0.16 (4) 0.8
82.	Antibiotics are typically produced in fed batch reactors because: (1) antibiotic yields are generally higher when cells enter the stationary phase (2) the precursors are often toxic to the cells (3) antibiotic yields are generally higher when cell growth slows (4) 1, 2, 3
83.	How does CO2 help in the cell metabolism during cell culture? (1) It participates in the de novo synthesis of purines and pyrimidines (2) Helps in the cells respiration (3) For monitoring pH of the culture
84.	 (4) (2) and (1) In case of Baculoviruses, the foreign gene: (1) is inserted downstream of polyhedrin promoter (2) is inserted downstream of viral origin of replication
	(3) is inserted between the polyhedrin promoter and downstream sequences(4) is inserted uptream of viral origin of replication
85.	A purified DNA sample of leaf contains 20.0 mole of guanine. Calculate the approximate percentage of purine residues? (1) 30% (2) 40% (3) 60% (4) 20%
MPH	/PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(C)

00.	 (1) Large size DNA (2) Sequences that are unique (3) Histone like protein found in fish sperm (4) Highly repetitive DNA
87.	Name the protein, which maintained the condensed structure of chromosomes. (1) HSP (2) SMC (3) Collagen (4) Elastin
88.	Name the effect which shows the change in expression of alleles of the gene due to a specific environmental condition. (1) Pleiotropy (2) Linkage (3) Phenocopy (4) Penetrance
89.	What is tautonym? (1) These are the repeated sequences (2) It is a name of fish (3) Identical name of genus and species (4) It is a name of the genus
90.	Identify the disease which causes excessive production of uric acid. (1) Duncan muscular dystrophy (2) Lesch-Nyhan syndrome (3) Hunter syndrome (4) Hemophilia
91.	miRNAs: P- are synthesized as long pri-miRNAs (up to 1000 nt) Q are transcribed by RNA polymerase II R are synthesized from pre-miRNAs by an RNase III enzyme drosha in the cytoplasm S- are synthesized from pri-miRNAs by an enzyme dicer in the nucleus (1) P and Q (2) Q and S (3) P and S (4) R and S
92.	The primer of the lagging strand during DNA replication is removed by: (1) 3' to 5'exonuclease activity of DNA pol III (2) DNA primase (3) 5' to 3' exonuclease activity of DNA poll (4) 3' to 5' exonuclease activity of DNA poll
TTT	P. T. O

2	C/AATTC where "I"
93.	A restriction endonuclease has the recognition sequence G/AATTC, where "I" indicates the cut site. This sequence is found, on average, once every 'x' resides in a chromosome. 'x' = (1) 146 base-pairs (2) 200 base-pairs (3) 256 base-pairs (4) 4096 base-pairs
94.	An allosteric activator: (1) increases the binding affinity (2) decreases the binding affinity (3) stabilizes the R state of the protein (4) both (1) and (3)
95.	 IP3 initially causes Ca2+to be released into the cytoplasm from: (1) mitochondria (2) lysosome (3) the endoplasmic reticulum (4) the plasma membrane (from extracellular to intracellular)
96.	A protein that binds two ligands in a non-cooperative manner will show: (1) asigmodial binding curve (2) a hyperbolic binding curve (3) a linear Scatchard Plot (4) both (2) and (3)
97.	Why do fluorescence spectrometers often use double-beam optics? (1) So a reference solution can be used (2) To compensate for beam attenuation by the monochromator (3) To compensate for power fluctuations in the radiation source (4) (2) and (3)
98.	The nucleophile in serine proteases is: (1) Serine (2) water (3) both (1) and (2) (4) Asparagine
99	 Using a curved piece of metal to block an opponents attack Putting metal around an Rf source When the magnetic moment of an atom blocks the full induced magnetic field from surrounding nuclei Blocking parts of a molecule from Rf radiation
100	 Column efficiency is measured in terms of number of plates which is: inversely related to the square of the peak width directly related to the square of the peak width inversely related to the cube root of the peak width directly related to the square of the peak width
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Total No. of Printed Pages: 13

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU

ARE ASI	KED TO DO SO)		SET-Y
M.Phil./Ph.	D./URS-EE	-2019	3E1-1
SUBJECT	: Life Scien	ce	
Second		Sr. No	10152
Time: 11/4 Hours Max	. Marks : 100		al Questions : 100
Roll No. (in figures) (in w	ords)		
Name	Father's Name		
Mother's Name	Date of Examination_	7	
(Signature of the Candidate)		(Signature of	the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

- 1. All questions are compulsory.
- 2. The candidates *must return* the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfairmeans / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- 3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- 4. Question Booklet along with answer key of all the A, B, C & D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
- 5. The candidate *must not* do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers *must not* be ticked in the question booklet.
- 6. There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.
- 7. Use only Black or Blue Ball Point Pen of good quality in the OMR Answer-Sheet.
- 8. Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.

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1	In a population that is in equilibrium, the proportion of individuals showing the dominant trait at a given locus having two alleles is 84%. The frequency of the recessive allele in the population is: (1) 0.4 (2) 0.32 (3) 0.16 (4) 0.8
2	
3	 How does CO2 help in the cell metabolism during cell culture? (1) It participates in the de novo synthesis of purines and pyrimidines (2) Helps in the cells respiration (3) For monitoring pH of the culture (4) (2) and (1)
4	In case of Baculoviruses, the foreign gene: (1) is inserted downstream of polyhedrin promoter (2) is inserted downstream of viral origin of replication (3) is inserted between the polyhedrin promoter and downstream sequences (4) is inserted uptream of viral origin of replication
5	A purified DNA sample of leaf contains 20.0 mole of guanine. Calculate the approximate percentage of purine residues? (1) 30% (2) 40% (3) 60% (4) 20%
6	What are protamines? (1) Large size DNA (2) Sequences that are unique (3) Histone like protein found in fish sperm (4) Highly repetitive DNA
7.	Name the protein, which maintained the condensed structure of chromosomes. (1) HSP (2) SMC (3) Collagen (4) Elastin
8.	Name the effect which shows the change in expression of alleles of the gene due to a specific environmental condition. (1) Pleiotropy (2) Linkage (3) Phenocopy (4) Penetrance
MPH	/PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(D) P. T. O.

9.	What is tautonym? (1) These are the repeated sequences (2) It is a name of fish (3) Identical name of genus and species (4) It is a name of the genus
10.	Identify the disease which causes excessive production of uric acid. (1) Duncan muscular dystrophy (2) Lesch-Nyhan syndrome (3) Hunter syndrome (4) Hemophilia
11.	Which of the following statements is false? (1) Continuous variation produces a spread of variation within a population (2) Discontinuous variation is the result of genetics alone (3) Blood group is an example of discontinuous variation (4) Discontinuous variation is influenced by the environment
12.	Karyoplast is: (1) cells devoid of cell wall (2) nuclei (3) nuclei with only some residual plasma membrane (4) cell with nucleus Which of the following is used to check vortex and to improve aeration efficiency in fermentor? (1) Impeller (2) Baffles (3) Sparger (4) Both (1) and (2)
14.	Which of the following microorganisms help in the ethanol production? (1) Saccharomyces cerevisiae (2) Zygomonasmobilis (3) Saccharomyces uvarum (4) 1, 2, 3
15.	In animal cell culture, particularly mammalian cell culture, transformation means: (1) uptake of new genetic material (2) phenotypic modifications of cells in culture (3) both (1) and (2) (4) release of genetic information
16.	Cells which have undergone transformation frequently become: (1) anchorage independent (2) anchorage dependent (3) stable (4) unstable
MPH	/PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(D)

17.	The ability of the control (1) redifferentiation (3) either (1) or (2)		(2)	o form a whole dedifferentiati Regeneration		
18.	(2) organism over(3) large number o	f organisms over a s a short time to suppr	ess/d ong ti	estroy a popula me to suppress.	destroy a population	
19.	The heavily pollute (1) pleosaprophyti (3) Sclerosaprophy		(2)	is known as: mesosaprophy Micosaprophy		
20.	Which of the follow (1) Cycloheximide (3) Herbicidin (1)		(2)	ve against dicot Anisomycin Both (2) and (
21.	Name the regulator (1) Cyclin	ry component of the (2) CDK		ycle : DNA	(4) APC	
22.		of the cancerous cell (2) Polyclonal		Stem cells	(4) Mesodermal c	ells
23.	way?	f species which exp (2) Ecads		ne abiotic and b	piotic resources in a (4) Community	similar
24.	(1) Guild Two genes are 70c (1) 50%	M apart, calculate th (2) 100%	e reco		•	
25.	What is a petite mu (1) Defective mito (2) Plastid function (3) Dwarfism (4) Maternal effective	chondrial function on mutant	f year	st		
26.	Which of the follow (1) Deletion	wing chromosomal a		tion shows pset Inversions	udodominance ? (4) Translocation	
27.	Which of the follow (1) Lysozyme	wing compounds is 1 (2) Lactoferin		found in tears?	(4) IgE	
(D)LI	DHD/JIDS_FF_2010	9/(Life Sciences)(SI	T-Y	/(D)		P. T. O.

	28.	Name the group of pattern recognition molecules which functions exclusively as a signaling receptor? (1) eRP (2) Toll-like receptor (3) MBL (4) LPS
	29.	Name the nerve stimulator which is responsible for the pain of the inflammation. (1) Bradikinins (2) Prostaglandin (3) Histamines (4) Kinins
	30.	Which of the following phylum has a water vascular system? (1) Plantae (2) Mollusca (3) Echinodermata (4) Hemichordata
	31.	Which one of the following techniques is used demonstrate the presence of DNAse - sensitive sites in euchromatin? (1) Automated DNA sequencing (2) Southern blot analysis (3) Northern blot analysis (4) DNA fingerprinting
	32.	In the yeast two hybrid-technology, the bait domain forms a non-covalent association with: (1) The activation domain of a transcription activator (2) The DNA binding domain of a transcription activator (3) Reporter gene products (4) An unknown interacting protein
	33.	Messenger RNAs were not visible as discrete bands in your RNA gel because (1) The concentration of rRNA was too high (2) The molecular weight of mRNAs varies tremendously (3) mRNAs are much less stable than rRNAs. (4) mRNAs were not extracted
	34.	What is the name of the region between the start site of transcription and the first ATG? (1) Promoter (2) 3' untranslated region (3) Start site for translation (4) 5' untranslated region
	35.	What happens when tryptophan levels are high in bacteria? (1) Some transcription of the 5'end of the trp operon occurs (2) The trp repressor protein is tetramer that contains 4 molecules of trp (3) The binding of trp decreases the affinity of the trp repressor for the operator (4) Translation of he leader peptide is terminated
N	IPH/	PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(D)

What component is not involved in mRNA splicing? (1) 28 rRNA
(2) Consensus sequence at the 5' and 3' ends of the introns(3) 2'OH group of the ribose sugar at splice site(4) Spliceosome
Which tropical fruit crop has been successfully engineered to be protected against a lethal virus? (1) Passion fruit (2) Papaya (3) Mango (4) Guava
Which of the following fatty acids has the lowest melting point? (1) fatty acids with sites of unsaturation with cis double bonds (2) fatty acids with sites of unsaturation with trans double bonds (3) fatty acids with no sites of unsaturation (4) fatty acids with longer hydrophobic tails
 Which of the following gene have been introduced into the transgenic fish? (1) Human or rat gene for growth hormone (2) Chicken gene for delta crystalline protein (3) E. coli gene for β-galactosidase (4) 1, 2, 3
DNA is microinjected into the fertilized egg: (1) after the fusion of male and female nuclei (2) before the fusion of male and female nuclei (3) at the time of fusion of male and female nuclei (4) Both (2) and (3)
miRNAs: P- are synthesized as long pri-miRNAs (up to 1000 nt) Q are transcribed by RNA polymerase II R are synthesized from pre-miRNAs by an RNase III enzyme drosha in the cytoplasm S- are synthesized from pri-miRNAs by an enzyme dicer in the nucleus (1) P and Q (2) Q and S

(3) P and S (4) R and S

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50	Column efficiency is measured in term	
	(1) inversely related to the square of the	
	(2) directly related to the square of the	
	(3) inversely related to the cube root of	
	(4) directly related to the square of th	
51	. Which of the following class of all component?	gae consists of alginic acid in their cell wall
	(1) Green algae (2) Red algae	(3) Lichens (4) Brown algae
52	. Which of the following spores is motil	e in nature ?
4	(1) Zoospores (2) Oomycetes	(3) Aplanospores (4) Hepdnaspores
53	. What is the standard free energy chang	ge of ATP?
	(1) Small and negative	(2) Large and positive
	(3) Large and negative	(4) Small and positive
54.	. Which of the following act as a storage	form of high energy phosphate?
	(1) Glucose-6-phosphate	(2) Phosphoenolpyruvate
	(3) Phosphagens	(4) Glycerol phosphate
55.	Name the term which is used for the wants.	ater present in the soil that can be utilized by the
	(1) Chresard	(2) Humus
	(3) Gravitational water	(4) Capillary water
56.		
	(1) Medium (2) Low	(3) High (4) Very high
57.	Name the type of community which is a	maintained by the man or his domestic animals.
	(1) Climatic (2) Edaphic	(3) Disclimax (4) Subclimax
58.		
	(1) Exchange of homologous segments	
	(3) Nucleotide excision repair	(4) Photoreactivation
59.		
	(1) Orthologous	(2) Homologous
	(3) Heterologous	(4) Paralogous
MPH/	PHD/URS-EE-2019/(Life Sciences)(SE	T-Y)/(D)

1P

60.	 (1) classicalMendelian traits are qualitative in nature (2) qualitative traits show discontinuous variations (3) qualitative traits are referred to as metric traits (4) Both (1) and (2)
61.	Which of the following accumulates from factory waste? (1) Pseudomonas aeruginosa (2) Thiobacillus (3) Pseudomonas putida (4) Zoogloearamigera
62.	The phospholipids present in cytoplasm membrane of the archaeo-bacteria is: (1) phosphoglycerides (2) polyisoprenoid (3) polyisoprenoid branched chain lipids (4) lecithin
63.	Which were the investigators lived at the same time? (1) Koch and Pasteur (2) Darwin and Woese (3) Van Leeuenhoek and Ricketts (4) Berg and Hooke
64.	Large parasites such as helminthes may be killed extracellularly by the action of: (1) basophils (2) monocytes (3) eosinophils (4) Macrophages
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66.	Passive immunization is done for: (1) tuberculosis (2) diphtheria (3) Measles (4) Mumps
67.	 chromosome 21 in man, chromosome 6 in mice chromosome 6 in man, chromosome 21 in mice chromosome 17in man, chromosome 6 in mice chromosome 6 in man, chromosome 17 in mice
MPH	/PHD/URS-EE-2019/(Life Sciences)(SET-Y)/(D)

	(2018년 - 1918년				
68.	Which one is a small laboratory set up to simulate conditions of a particular environment?				
	(1) microcosm- (2) mibridization				
	(3) bioremediation (4) rhizosecretion				
69.	Transplastomics:				
	(1) targets genes in the chloroplast				
	(2) provides exceptionally low yields of protein products				
	(3) produces genes that are released in pollen				
	(4) offers little opportunity for practical use				
70.	In an -helix hydrogen bonds are:				
	(1) within a single chain				
	(2) between chains that run side by side				
	(3) between polar amino acid and water				
	(4) only between amino acids of opposite charge				
71.	Glycogen is a branched polymer of glucose. It has:				
	(1) no reducing ends				
	(2) no non-reducing ends				
	(3) one reducing end and several non-reducing ends				
	(4) one non- reducing end and several reducing ends				
72.	Codon bias can be overcome by which scenario?				
	(1) Genetically engineering host organisms to express rarer tRNAs				
	(2) Genetically engineering the gene so that the codons are recognized by more abundant tRNAs				
	(3) Genetically engineer the gene to remove the codons for rare tRNAs				
	(4) Both (1) and (2) are suitable scenarios.				
73.	Why are gene libraries constructed?				
	(1) To find new genes.				
	(2) To compare genes to other organism.				
	(3) To create a "bank" of all the genes in an organism.				
	(4) All of the above.				
74.	Which property is measured with a scanning microscope?				
	(1) Magnetism . (2) Electric resistance				
	(3) Light absorption (4) All of the above				

75.	Which agency is responsible for regulation (1) FDA (3) NIH	on of all transger (2) EPA (4) All of the	
76.	Which of the following introduce mutation (1) TILLING (3) RNAi	ons in plant gen (2) Transpose (4) All of the	on insertions
77.	Which ion channel is defective in people (1) Sodium transporter (3) Chloride transporter	with cystic fib (2) Potassium (4) Calcium t	transporter
78.	Which of the following molecular technical (1) DNA sequencing (3) RAPD	ques can be us (2) Ribotypin (4) All of the	g
79.	How do prions cause disease? (1) Prion proteins bind to cells and indu (2) Prion proteins bind to DNA polymer (3) Prion proteins induce normal cellula (4) Prion proteins induce an immune res	rase and prever r proteins to re	fold into the prion form.
80.	The Alu element found in the human gen (1) A 7S L scRNA homologue (2) A good RNA polymerase III templa (3) About 300 bp long repeat (4) All of the above		
81.	Name the plant in which auxin was first (1) Muatard (2) Oats	discovered: (3) Rice	(4) Pea
82.	Human placenta is derived from: (1) Allantois (2) Chorion	(3) Amnion	(4) Allantois and Chorion
83.	Which of the following is a large ribozy (1) Hairpin ribozyme (3) Twort ribozyme		nead ribozyme delta virus
84.	Which cellular component is considered (1) Chromatin (2) Ribosomes (PHD/URS-FF-2019/(Life Sciences)(SE	(3) DNA	(4) mRNA

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8	 What is contig mapping? (1) Determination of regions that overlap from one place to the next in a library (2) The distance in base pairs between two markers (3) The use of landmarks in the genes to put together sequencing data (4) The relative order of specific markers in a genome
8	Which one of the following is often used to establish family trees for organisms it is present in all organisms and does not accumulate mutations quickly? (1) rRNA (2) Fibrinopeptides (3) Hemoglobin (4) Mitochonderial DNA
8	7. Which of the following is used to quantify proteins with mass spectroscopy? (1) 2H (2) 33P (3) 35S (4) 1251
8	3. What could be used to increase the stability and purification of eukaryotic proteins from bacterials celis.? (1) A peptide tag (2) A protein fusion (3) PEST sequence (4) A signal sequence
89	What term describes the process of creating random mutations in a gene and then selecting for improved functions or altered specificity of the resulting protein product? (1) Indirect evolution (2) Protein mutagenesis (3) Translational evolution (4) Directed evolution
90	 Which enzyme described in the book had significantly increased clinical activity after engineering more glycosylation sites into the protein? (1) Erythropoietin (2) Calmodulin (3) Insulin (4) Glucose isomerase
91	 Which method is better suited for the identification of actively growing bacteria or viruses? (1) BrdU- enrichment (2) Suppressive subtraction hybridization (3) Stable isotope probing (4) DNA sequencing
92	Which genera of microorganisms have the most diverse pathways for bioremediation? (1) Mycobacterium (2) Pseudomonas (3) Rhodococcus (4) Methylobium
93	What is DNA coated onto when transforming plant cells with a particle gun? (1) Silver (2) Aluminium (3) Gold (4) Calcium
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- 94. During DNA polymerase reaction the nucleophile is the :
 - (1) 3'OH group of the nucleotide at the 3' end
 - (2) 3'OH group of the nucleotide at the 5'end
 - (3) 5'OH group of the nucleotide at the 5'end
 - (4) 5'OH group of the nucleotide at the 3'end
- 95. Which of the following statements concerning protein synthesis is correct?
 - (1) EF-Tu is involved in the recognition and binding of the START codon
 - (2) Release factors are not tRNAs but proteins that recognize STOP codons
 - (3) A ribosomal protein provides the enzymatic activity of peptidyltranferase
 - (4) EF-Tu and EF-G are used in eukaryotes
- 96. Wobble pairing occurs between:
 - (1) 1st nucleotide of codon and 3rd nucleotide of anticodon
 - (2) 1st nucleotide of anticodon and 3rd nucleotide of codon
 - (3) 3rd nucleotide of codon and 1 st nucleotide 0 anticodon
 - (4) 3rd nucleotide of anticodon and 1 st nucleotide of codon
- **97.** An ultraviolet spectrophotometer can be used to measure the concentration and purity of DNA or RNA. This is because:
 - (1) The absorption spectrum for DNA or RNA is triphasic
 - (2) Purines and pyrimidines absorb ultraviolet light
 - (3) Boyle's law provides the concentration as long as path length is known
 - (4) Nucleic acids emit fluorescent light when activated with ultraviolet light
- **98.** The E.coli genome is typical of many prokaryotic genomes. Which of the following statements is correct?
 - (1) All transcriptional units are transcribed in a clockwise direction
 - (2) The E. Coligenome codes for antibiotic resistance genes
 - (3) The protein coding potential of prokaryotic genomes correlates with their C-values
 - (4) Prokaryotic genomes do not code for monocistronic mRNAs
- 99. High salt concentrations were used in the DNA isolation and the RNA isolation laboratories to:
 - (1) Degrade histones

- (2) Buffer the solutions
- (3) Prevent nucleic acids degradation
- (4) Promote nucleic acid precipitation
- **100.** Proteins have the same molecular mass and have identical net charge at pH 7. The best way to separate them would be to use:
 - (1) SDS- polyacrylamide gel electrophoresis
 - (2) native gel electrophoresis
 - (3) cation exchange chromatography
 - (4) anion exchange chromatography

Answer	Key of Ph.D/UR	S (Life Science Gr	oup) Entrance Tes	nce Test 2019	
Q.No.	Code-A	Code-B	Code-C	Code-D	
1	В	D	В	Α	
2	В	С	D	D	
3	С	Α	В	А	
4	В	С	D	С	
5	А	С	А	Α	
6	А	В	А	С	
7	Α	D	В	В	
8	В	А	А	С	
9	D	А	D	С	
10	А	А	В	В	
11	С	Α	С	D	
12	С	А	D	С	
13	C	A	D	В	
14	A	A	D	D	
15	В	A	D	В	
16	C	A	D	A	
17	В	D	C	A	
18	C	В	D	A	
19	D	D	C	A	
20	В	С	D	С	
	В	A	D	A	
21	D	D	A	A	
22	В	A	C	A	
23	D	C	D	A	
24		A	A	A	
25	Α	C	C	A	
26	A	В	C	D	
27	В	С	D	В	
28	A	С	A	D	
29	D	В	D	C	
30	В			- В	
31	D	В	A	D	
32	С	В	A	В	
33	В	С	A	D	
34	D	В	A	A	
35	В	A	A	A	
36	A	A	A	В	
37	Α	A	D	A	
38	A	В	В	D	
39	A	D	D C		
40	С	A		В	
41	D	С	В	A C	
42	С	D	В		
43	А	D	С	D	
44	С	D	В	D	
45	С	D	A	С	
46	В	D	A	D	
47	D	С	A	С	
48	А	D	В	С	
49	А	С	D:	С	
50	А	D	A	A	

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Q.No.	ver Key of Ph.D/UR Code-A	Code-B	Code-C	
51	C C			Code-D
52	D	A C	D	D
53	D	D	C B	A
54	D			С
55	D	D C	D	D
56	D		В	A
57	С	D C	A	С
58	D	C	A	С
59	С	C	A	D
60	D		A	Α
61	A	A	С	D
62	C	В	C	D
63	D	D	С	С
64		В	С	A
65	D	D	Α	C
66	С	A	В	С
67	D	A	С	В
68	С	В	В	D
	С	A	С	Α
69	С	D	D	Α
70	A	В	В	Α
71	A	С	D	С
72	A	С	С	D
73	Α	С	А	D
74	A	A	С	D
75	A	В	С	D
76	A	С	В	D
77	D	В .	D	С
78	В	С	А	D
79	D	D	А	С
80	С	В	А	D
81	D	D	Α	В
82	Α	Α	D	В
83	С	С	A	С
84	- D	D	С	В
85	A	Α	А	А
86	С	С	С	А
87	С	С	В	А
88	D	D	С	В
89	Α	Α	С	D
90	D	D	В	Α
91	Α	D	Α	С
92	D	С	С	С
93	А	В	D	С
94	С	D	D	А
95	Α	В	С	В
96	С	A	D	С
97	В	А	С	В
98	С	A	C	C
99	С	A	С	D
100	В	С	A	В

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