### 19737

# A 120 MINUTES

1	T1		- : - 4 - 1	:41. 40 <u>0</u> -		0		1. 6				
1.	1  ne s	ymbol S assoc	D)	un 405 a	na 60	$\frac{5}{C}$	Sigmons	as for	Sudbarga			
	A)	Size	Б)	Subunit		C)	Siemens	D)	Sveubergs			
2.	Choos A) B) C) D)	se the statement Epithelial-me miRNAs are CSCs play in The character	t which senchyr involved portant ristics of	is NOT transi nal transi d in the re roles in c f CSCs ar	rue ab ition ( egulat cancer re diff	out can EMT) r ion of C relapse erent fre	cer stem cells nay enhance C CSCs propertie e and metastas om normal cel	(CSCs): CSC meta rs. is. ls.	astasis.			
3.	The e	nzyme responsi	ible for	removing	, the p	rimers	after the comp	lementar	ry strand of			
	DNA has been synthesized:											
	A)	DNA polyme	rase	]	B)	RNAs	se H					
	C)	Primase		]	D)	Helica	ase					
4.	A pse A) B) C) D)	udogene is: a gene with n a DNA seque inhibit the fur a DNA seque mutations tha a gene that ex function	o exons ence wit nction o nce rese t prever spress a	h numero f a norma embling a nt its expr protein th	numerous mutations and their expression product normal gene product bling a functional gene but containing numerous ts expression btein that cannot fold properly and consequently unable							
5.	Match Group I with Group II											
		Group I		(	Group II							
	a) Na	lidixic acid			1. RNA polymerase							
	b) Te	tracycline			2. DNA gyrase							
	c) Ery	thromycin			3. DN	VA poly	rmerase					
	d) Rif	àmpin		4	4. 505	s riboso	mal submit					
					5. Am	inoacyl	tRNA					
	A)	a-3, b-4, c-5,	<b>d-</b> 1	]	B)	a-5, b	-1, c-4, d-2					
	C)	a-2, b-5, c-4,	<b>d-</b> 1	]	D)	a-2, b	-5, c-1, d-4					
6	In alm	ost all mamma	lian cel	ls, glucos	se tran	sport o	ccurs by					
	A)	Active transp	ort	., 8	B)	Facili	tated Diffusion	1				
	Ć)	Simple diffus	ion	]	D)	None	of the above					

- 7. A Phage stores its genetic information in single-stranded DNA. When DNA was extracted and analysed from this virus particles, 29 percent of bases were found to be Adenosine residues. What percentage of the bases in this DNA were Guanosine residues?
  - A) 21 B) 29
  - C) 50 D) cannot determine from this information
- 8. Which one of the following is known as Kornberg's enzyme?
  - A) DNA polymerase III B) DNA polymerase II
  - C) DNA polymerase I D) DNA polymerase V
- 9. The fluidity of a phospholipid membrane increases when the fatty acid:
  - A) Chain length increases and degree of unsaturation decreases
  - B) Chain length decreases and degree of unsaturation increases
  - C) Chain length decreases and degree of unsaturation decreases
  - D) Chain length increases and degree of unsaturation increases
- 10. A technique used to follow the movements of molecules in the membrane of living cells:
  - A) NGSB) SDS-PAGEC) FRAPD) X-ray Crystallography
- 11. The map generated by interrupted conjugation is marked off in units of
  - A) Frequency of mutation B) Average number of crossing over
  - C) Length of DNA transferred D) Time required for transfer
- 12. Choose the statements which is/are true?
  - 1. If two transposons in opposite orientation on the same chromosome pair and cross over, the segments between them will be inverted
  - 2. If two transposons in the same orientation on the same chromosome pair and cross over, the segments between them will be deleted
  - 3. If two transposons in opposite orientation on the same chromosome pair and cross over, the segments between them will be deleted
  - 4. If two transposons in the same orientation on the same chromosome pair and cross over, the segments between them will be inverted
  - A) 1&4 B) 1&2 C) 2 & 3 D) 1 only
- 13. In a randomly mating population, a gene P has three alleles, P1, P2, and P3 with frequencies 0.2, 0.3 and 0.5 respectively. The combined frequencies of all heterozygote in this population are:
  - A) 2 B) 1 C) 0.03 D) 0.62

- 14. Haemophilia is caused by X-linked recessive allele. In a particular population the frequency of males with Haemophilia is 1/5000. Calculate the expected frequency of females with Haemophilia:
  - A) 0.0002 B)  $(0.0002)^2$  C) 0.0004 D) 0.0001
- 15. Immediately after the synthesis of mRNA:
  - A) Methyl guanosine is added to 5' end and Poly (A) tail is added to 3' end of mRNA
  - B) Methyl guanosine is added to 3' end and Poly (A) tail is added to 5' end of mRNA
  - C) Methyl cytosine is added to 3' end and Poly (A) tail is added to 5' end of mRNA
  - D) None of the above reactions will happen
- 16. Choose the statements which is/are correct about protein glycosylation:
  - 1) The N-linked glycosylation begins in the ER and continues in the Golgi-complex
  - 2) The N-linked glycosylation takes place exclusively in the Golgi-complex
  - 3) The O-linked glycosylation begins in the ER and continues in the Golgi-complex
  - 4) The O-linked glycosylation takes place exclusively in the Golgi-complex
  - A) 1 only B) 2 & 3 C) 4 only D) 1 & 4

17. During cancer treatment hair loss is a common. The reason behind this is:

- 1) Skin is comparatively more vascularized than other tissues
- 2) The therapeutic agent is a keratin inhibitor
- 3) The therapeutic agent inhibits the proliferating cells in the hair
- 4) The therapeutic agent activates new hair formation

A)	Only 1 is correct	B)	Only 2 & 3 are correct
C)	Only 3 is correct	D)	Only 3 & 4 are correct

- 18. Slow-twitch (type I fibers) are thinner, with a denser capillary web, and appear red owing to the existence of a great amount of-----.
  - A) MyoglobinB) HaemoglobinC) Low glycogen levelsD) High mitochondrial numbers
- 19. When freshly isolated intact mitochondria were incubated with ADP and inorganic phosphate neither the oxygen consumption nor the ATP synthesis could be detected. Addition of succinate resulted in increased oxygen consumption as well as ATP synthesis with time. Subsequent addition of cyanide to this system will result in which

one of the following?

- A) Both oxygen consumption and ATP synthesis are inhibited
- B) Oxygen consumption continues but ATP synthesis is inhibited
- C) Oxygen consumption is inhibited but ATP synthesis continues
- D) Both oxygen consumption and ATP synthesis continue

20.	Saccharose is a synonym for											
	A)	Glucose B)	Sucro	se	C)	Fructose	D)	Starch				
21.	Maximum number of voltage gated calcium channels can be found at:											
	A)	postsynaptic memb	rane of a	n elect	rical syn	napse						
	B)	presynaptic membr	ane of an	electr	ical syn	apse						
	C)	postsynaptic memb	rane of a	chemi	cal syna	apse						
	D)	presynaptic membr	ane of a c	chemic	al synaj	ose						
22.	'HeL	a' is a well-known	used in	researc	ch labs.							
	A)	High Efficiency Lo	w particl	e filter								
	B)	First continuous fee	d ferment	er								
	C)	Thermopolymerase	;									
	D)	Cell line										
23.	Find the weakest interaction among the following:											
	A)	Covalent bonding	B)	Hydr	Hydrogen bonding							
	C)	Electrostatic attract	ions	D)	Van	der Waals attr	actions					
24.	The p	proteins which help in	the proce	ess of t	fusion o	f the transport	vesicle	to target				
	mem	membrane and cargo delivery is:										
	A)	Agglutinin B)	CRP		C)	SNARE	D)	HRP				
25.	Triglycerides serve as major energy reservoir because they are											
	A)	Oxidized and anhyo	drous	B) Reduced and hydrated								
	C)	Reduced and anhyd	lrous	D)	Oxid	ized and hydra	ated					
26.	When the outermost high energy phosphate bond in ATP is hydrolysed under standard											
	cond	itions, the energy relea	ased is eq	ual to-								
	A)	7.3 kcal/mole		B)	21.9	kcal/mole						
	C)	7.3 J/mole		D)	21.9	J/mole						
27.	Matc	h Group I with Group	II									
	Gi	oup I		Grou	up II							
	a. Bt	gene		1. G	olden ri	ice						
	b.β·	carotene biosynthetic	genes	2. In	sect res	istance						
	c. AC	CC deaminase		3. H	erbicide	e resistance						
	d. El	PSP synthase		4. Fr	uit riper	ning						
	A)	a-1, b-2, c-3, d-4		B)	a-2, l	o-1, c-4, d-3						
	C)	a-3, b-1, c-2, d-4		D)	a-2, l	o-1, c-3, d-4						

- 28. Choose the statements about glycolysis:
  - 1. Total of 4 ATP produced per one fructose 1,6-diphosphate
  - 2. Total of 2 ATP produced per one fructose 1,6-diphosphate
  - 3. The phosphorylation step of glucose is reversible in liver cells
  - 4. In liver the phosphorylation of glucose is promoted by Glucokinase
  - A) Only 1 is correct B) Only 2 and 4 are correct
  - C) Only 2, 3 and 4 are correct D) Only 1, 3 and 4 are correct
- 29. Which of the following statements are correct?
  - 1. Each myofibril is composed of myosin and actin filaments at a ratio of 1:2
  - 2. The light bands in the myofibrils contain only actin filaments and thus called A bands
  - 3. The ends of the myosin filaments are attached to a *Z disk*
  - 4. The part of the myofibril that comes between two successive *Z disks* is call a *Sarcomere*
  - A) 1, 2 and 3 only are correct B) 1 and 4 only are correct
  - C) Only 1 and 2 are correct D) Only 4 is correct
- Determine the correctness or otherwise of the following Assertion (a) and Reason (r).
   Assertion (A): Glycine is the highly conserved amino acid residue in the evolution of proteins
  - Reason (R) : Glycine has the smallest side chain of any amino acids
  - A) Both A and R are correct and R is the correct reason for A
  - B) A and R are correct but R is not the correct reason for A
  - C) A and R are false
  - D) A is false but R is true
- 31.The absorption coefficient of a protein at 600nm is 12000  $M^{-1}cm^{-1}$ . What is the<br/>absorbance of 1mg/ml (4.5 X 10<sup>-5</sup> M) solution across a 1-cm path length?<br/>A) 0.870 B) 0.720 C) 0.540 D) 0.420
- 32. Assertion(A): Phosphoenolpyruvate has a high phosphoryl-transfer potential Reason (R): The phosphoryl group traps the molecule in its unstable enol form
  - A) A and R are correct and R is the reason for A
  - B) A is correct and R is wrong
  - C) A is wrong but R is correct
  - D) A and R are wrong

- 33. If glucose is labelled with <sup>14</sup>C at C-6, where we can find the radioactive label after oxidative phase of pentose phosphate pathway
  - A) C-2 of ribulose 5- phosphate B) C-1 of ribulose 5- phosphate
  - C) C-5 of ribulose 5- phosphate D) C-6 of ribulose 5- phosphate
- 34. Assertion (A) : Treatment of carbonic anhydrase with high concentrations of EDTA results in loss of enzyme activity
  - Reason(R) : EDTA will bind and remove Mg<sup>2+</sup>, which is required for Carbonic anhydrace enzyme activity
  - A) A and R are true and R is the reason for A
  - B) A and R are true and R is not the reason for A
  - C) A is true but R is false
  - D) A and R are false

35. Choose the correct statements about noncompetitive inhibition of enzymes

- 1) An inhibitor and a substrate can bind simultaneously to an enzyme
- 2)  $K_M$  is unchanged
- 3) Can be overcome by increasing the substrate concentration
- 4) Vmax is increased

A)	Only 1,3 & 4 are correct	B)	Only 1 & 2 are correct
C)	Only 1 & 4 are correct	D)	Only 1, 2 & 4 are correct

#### 36. Psychrophiles are organisms that grow at:

- A) high salt concentration B) high sugar concentration
- C) low temperature D) low humidity
- 37. Vesicular-Arbuscular Mycorrhizae (VAM) is found in -----.
  - A) Plant roots
  - B) Tooth lichens
  - C) AIDS and other immunodeficiency conditions
  - D) Phylloplane

#### 38. Which of the following is a tissue specific macrophage?

- A) Osteoclasts B) Osteoblasts
- C) Melanocytes D) Dendritic cells
- 39. The Papain enzyme digestion of IgG will yield:
  - A) Two Fab fragments and one Fc fragment
  - B) One Fab fragment and two Fc fragments
  - C) One Fab fragment and one Fc fragment
  - D) Two heavy chains and two light chains

- 40. A complete virus particle, consisting of one or more molecules of DNA or RNA enclosed in a coat protein, is called a -----.
  A) Viroid B) Virion C) Virusoid D) Prion
- 41. The time required to kill 90% of the microorganisms or spores in a sample under specified conditions is
  - A) L value B) D value C) K value D) M value
- 42. Choose the correct statement about T lymphocytes:
  - A) Both CD4 and CD8 glycoproteins are expressed on the surface of all T lymphocytes
  - B) T cells displaying CD4 generally functions as T<sub>H</sub> cells, whereas those displaying CD8 generally functions as Tc cells
  - C) T cells displaying CD4 generally functions as T<sub>C</sub> cells, whereas those displaying CD8 generally functions as T<sub>H</sub> cells
  - D) Neither CD4 nor CD8 is expressed on T lymphocytes
- 43. Choose the correct statements:
  - 1)  $T_{\rm H}$  cells are class II MHC restricted and Tc cells are class I MHC restricted
  - 2)  $T_{\rm H}$  cells are class I MHC restricted and Tc cells are class II MHC restricted
  - All nucleated cells express class II MHC molecules and expression of class I MHC molecule is limited to antigen-presenting cells
  - All nucleated cells express class I MHC molecules and expression of class II MHC molecule is limited to antigen-presenting cells
  - A) Only 1 & 3 B) Only 2 & 3 C) Only 1 & 4 D) Only 2 & 4
- 44. Choose the statements which are correct about monoclonal antibody:
  - 1) They are specific for a single epitope
  - 2) Comprises a mixture of antibodies, each specific for a particular epitope, produced from a variety of B-cell clones
  - 3) It is easy to purify monoclonal antibody from polyclonal antibody preparation
  - 4) Have research, diagnostic and therapeutic applications
  - A) Only 1 & 4 B) Only 1, 2 & 4 C) Only 1 & 3 D) All are correct
- 45. The drug, aminopterin, in the HAT medium blocks -----.
  - A) DNA repair mechanism B) Cell-cell fusion
  - C) Nucleotide synthesis D) Antibody production
- 46. A patient with myasthenia gravis disease produce auto-antibodies that bind with:
  - A) Histone proteins B) Acetylcholine receptor
  - C) TSH receptor D) Fc region of IgG

- 47. The method that can be employed effectively to analyse the diffusion rate of membrane proteins:
  - A) Patching and capping B) Immuno diffusion
  - C) FRAP D) Patch-clamp

48. Individual variations in response to a drug are responsible for the high failure rates of new drug molecules at the clinical trial stage. What might be the reason for this individual variation?

- A) Variations in the structure of the target molecule
- B) Differences in the way that a particular drug is adsorbed and distributed
- C) Differences in their metabolism and excretion
- D) All of the above
- 49. After a certain dosage level of the drug, any further increase in the dosage of the drug, shows no additional effect. This is known as-----.
  - A) Ceiling effect B) Null effect
  - C) Threshold effect D) Dose effect

50. Resistance of a population to the infection and pathogen spread due to the immunity among the large percentage of the population is called:

- A) Passive immunity B) Acquired immunity
- C) Secondary immunity D) Herd immunity

51. Assertion (A): Although antigen-antibody reactions are highly specific, in some cases antibody elicited by one antigen can cross-react with an unrelated antigen

Reason (R) : Two different antigens can have equal number of epitopes

- A) A is true and R is the reason for A
- B) A and R are true but R is not the reason for A
- C) A is true but R is not true
- D) A and R are not true
- 52. An example for toxoid vaccine:
  - A) BCG B) HBsAg
  - C) Tetanus vaccine D) Salk vaccine

## 53. Which of the following statement about primer conditions are correct for a successful PCR experiment?

- 1) Primers with less than 20% GC content is ideal
- 2) Sequence with long runs of a single nucleotide should be avoided
- 3) Primers with significant secondary structures are undesirable
- 4) The two primers should be complementary to each other
- A) 1 & 3 only B) 2 & 3 only C) 1 & 4 only D) 1,2 & 3 only

- 54. Nested PCR is a modification of PCR in which:
  - A) Adding DNA polymerase after the heat-denaturation step of the first cycle
  - B) Products of initial PCR amplification are used to seed a second PCR amplification
  - C) cDNA serves as the template for DNA polymerase
  - D) mRNA can be directly used in the amplification reaction
- 55. Assertion (A) : phage that survive one cycle of growth upon the restrictive host can become protected from restriction enzyme and can subsequently reinfect that host efficiently
  - Reason (R) : their DNA becomes glycosylated by modifying enzymes in host
  - A) A and R are true and R is the reason for A
  - B) A is true but R is wrong
  - C) A and R are true but R is not the reason for A
  - D) A and R are wrong
- 56. A single-stranded DNA vector:

A)	pBR322	B)	pUC18
C)	Bacteriophage $\lambda$	D)	M13

- 57. The enzyme terminal deoxynucleotidyltransferase catalyze:
  - A) the formation of phosphodiester bonds between blunt-ended fragments
  - B) synthesis of homopolymeric 3' single-stranded tails
  - C) covalent joining of annealed cohesive ends produced by certain restriction enzymes
  - D) modification of internal cytosine residues
- 58. An affinity column containing immobilized divalent nickel can be used to purify fusion proteins with:
  - A) Biotin tag B) Glutathione-S-transferase
  - C) Polyhistidine tag D) MalE protein
- 59. Assertion (A) : Despite the success of microbes in biotechnology, mammalian cells are widely used in biopharmaceutical industry.
  - Reason (R) : Only mammalian cells can glycosylate human proteins in the correct manner
  - A) A is true but R is wrong
  - B) A and R are correct but R is not reason for A
  - C) A and R are wrong
  - D) A and R are correct and R is the reason for A

60.	Choose the correct statements about primary cell culture of animal cells											
	1)	Freshly isolat	ed cell o	culture								
	2)	Usually home	genous	cultures	S							
	3) More representative of the tissue of the origin											
	4)	Very fast grov	wth rate	;								
	A)	Only 1, 2 & 4	are cor	rect	B)	Only	1 & 4 are	e correct				
	C)	Only 1 & 3 ar	e correc	ct	D)	Only	2 & 4 are	e correct				
61.	Comm	on origin of pr	imary t	umors o	f reticu	lo endo	othelial sy	ystem is due t	0:			
	A)	Impaired CM	1		B)	Нуре	r gamma	globulinemia				
	C)	Abuse of cort	ico ster	oid	D)	Acqui	ired hemo	olytic anemia				
62.	Browning on culture medium often occurs in plant tissue culture experiments due to the presence of:											
	A) Certain antibiotics B) Excess sugar in medium											
	C)	Microbial con	itaminat	tion	D)	Pheno	olic comp	oounds				
63. Shoots developed from <i>in vitro</i> appear brittle, glassy, and								ater-soaked, 1	this is called	ł		
	A)	Vitrification			B)	Soma	clonal va	ariation				
	C)	Somatic embr	yogene	S1S	D)	Recal	citrance					
64.	The most commonly used fusogen for protoplast fusion is											
	A)	Sorbitol			B)	Mace	rozyme					
	C)	Polyethylene	glycol		D)	50-10	0mM Ca	$ICl_2$				
65.	The procedures or systems designed to minimize accidental release of organisms during laboratory operations, their dissemination and survival in the environment and accidental infections to persons is:											
	A)	Containment			B)	Quara	intine					
	C)	Filtration			D)	None	of the ab	oove				
66.	Which of the following is a selectable marker?											
	A)	genes conferr	ing resi	stance to	o kanan	nycin						
	B)	β-galacturinic	lase gen	ie								
	C)	luciferase gen	e									
	D)	nopaline syntl	hase gei	ne								
67.	Find th 1,1 1,2,1 1,3,3,1 1,4,-,4	ne missing valu 4,1	le									
	A)	4	B)	5		C)	6	D)	7			

68.	The 'S	S' in the <b>'https</b>	s://' stan	ds for:						
	A)	safe	B)	secure	•	C)	stable	D)	secret	
69.	Choos 1. The 2. We 3. Mo 4. Mo 5. No 6. Not	se the correct sere are more the have some ge st mutations of st mutation occ correlation bet t more than 60	statemer an 1 mil nes whic ccur in f cur in m tween m % of ou	nts relate llion SN ch migh Yemales ales nutation ar DNA	ed with Ps. t have c rate and is junk	the hun ome fro l gende	nan genome om bacteria r	project:		
	A) C)	Only 2, 4 and Only1, 2 and	d 6 are c 5 are co	correct orrect	B) D)	Only Only	1, 3 and 6 are 1, 2 and 4 are	e correct e correct		
70.	Collag chain. A) C)	gen protein con The overall st Polyprotine I Polyprotine I	nsists of ructure [ ]	three he of each	elical ch polyper B) D)	tains co btide in Polyg $\alpha$ - hel	ntaining glyc the molecule lycine 1 lix	cine and p e is a:	rotine in each	
71.	A={4,	$(6,8,9) B = \{6,7\}$	7,8,9} .V	What is 1	the set d	lifferen	ce A–B?			
	A)	4,7	B)	{7}		C)	{4,7}	D)	{4}	
72.	In 200 meters running race 8 participants had the following finishing times in seconds:28,22,26,29,21,23,24,29. Calculate the Mode, Median, and Mean of this running raceresults and Identify the correct answer from the following optionsA)Mode>Median=MeanB)Mode >mean>medianC)Mode >mean <median< td="">D)Mode <mean>median</mean></median<>									
73.	Which A) B) C) D)	<ul> <li>Which of the following statement is true?</li> <li>A) The larger the p-value, the more strongly the data contradict null hypothesis.</li> <li>3) The smaller the p-value, the more strongly the data contradict alternative hypothesis.</li> <li>C) The smaller the p-value, the more strongly the data contradict null hypothesis.</li> <li>D) The larger the p-value, the more strongly the data contradict alternative hypothesis.</li> </ul>								
74.	<ul> <li>Choose the statement which is true about Python and SPSS:</li> <li>A) Both Python and SPSS are statistical software</li> <li>B) Python is a statistical software and SPSS is a non-parametric paired t test</li> <li>C) Python is a programming language and SPSS is a non-parametric paired t test</li> <li>D) Python is a programming language and SPSS is statistical software</li> </ul>									
75.	Which	n of the follow	ing is no	ot a stop	codon?	,				
	A)	UAG	B)	UAC		C)	UAA	D)	UGA	

- 76. When you study the gene expression analysis of a stem cell population, which of the following strategies will be useful for avoiding false positive results?
  - A) Treating the sample with RNAse H
  - B) Treating the sample with RNAse free DNAse
  - C) Using an exon spanning primer
  - D) All of the above
- 77. ----- is NOT a bioinformatic method to study gene expression.
  - A) t-SNE B) PCA
  - C) Hierarchical Clustering D) MALDI-TOF
- 78. The first patent was given for a living organism in connection with a genetically engineered----.
  - A) Bacteria B) Drosophila C) Maze plant D) Bacteriophage
- 79. Plant breeder's right are granted by a government to:
  - A) The breeder to exclude others from producing or commercializing the propagating material of the protected variety
  - B) Breeders to use a protected variety in breeding programmes without any obligation to the party holding the PBR title of the initial variety
  - C) Farmers/farming communities, who provided the genetic resources for the varieties, to share the profit earned by seed corporations
  - D) A farmer to use a part of the material produced on his farm, from protected variety, for planting his own fields without any obligation to the PBR title of holder
- 80. The currently operative patent act in India is:
  - A) Indian Patents Act 1985 B) Indian Patents Act 2014
  - C) Indian Patents Act 1992 D) Indian Patents Act 1970
- 81. The definition which best suits for 'trademark':
  - A) is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin
  - B) is a word or symbol adopted and used by a manufacturer or merchant to identify his goods and distinguish them from those manufactured or sold by others
  - C) Private proprietary information or physical material that allows a definite advantage to the owner
  - D) the rights that creators have over their literary and artistic works
- 82. PDB is an example for:
  - A) Primary nucleotide sequence database
  - B) Protein sequence database
  - C) Macromolecular 3D structure database
  - D) Sequence motif database

83.	Quorum sensing is a signaling mechanism usually found in											
	A)	Biofilms	B)	Epith	elium	C)	Lichens	D)	Endothelium			
84.	Char	acteristics prefe	erred fo	or a tissue	e engin	eering s	scaffold:					
	1. E	Biodegradable			-	2.	Porous with in	terconne	cted pores			
	3. P	orous without	intercoi	nnected p	oores	4. Hydrophobic						
	5. N	Non-biodegrada	ble	-								
	A)	1 and 2	B)	2, 4 a	nd 5	C)	3, 4 and 5	D)	1 and 3			
85.	An ic	leal preservativ	e for W	Vine:								
	A)	Ethanolamin	e		B)	Sodi	um chloride					
	C)	Sulphur diox		D)	Poly	vinyl pyrrolido	one					
86.	The	method that car	n be ado	opted to a	test mu	tation a	bility of the po	ollutant:				
	A)	ELISA	B)	Ames	s test	C)	RIA	D)	Oxidase test			
87.	The	polymer which	is an ex	xample f	òr biop	lastic:						
	A)	Poly β-hydro	oxy but	yrate	B)	Poly vinyl chloride						
	C)	Polycarbona	te		D)	Poly	styrene					
88.	The t	two major nutri	ents im	plicated	in eutr	ophicat	ion are					
	A)	Oxygen and	Carbor	1	B)	Nitro	ogen and Oxyg	en				
	C)	Carbon and	orus	D)	Nitro	ogen and Phos	phorus					
89.	For effective microbial activity during the activated sludge process, the optimum											
	BOD	: nitrogen: pho	sphoru	s ratio is								
	A)	1: 100: 5	B)	5:100	0:1	C)	100: 5: 1	D)	None of these			
90.	The	increase of a po	ollutant	in the or	ganism	at the	successive troj	phic leve	l of a food			
	chair	n is known as:										
	A)	Bioconcentra	ation		B)	Bioa	ccumulation					
	C)	Biomagnific	ation		D)	Bioc	onversion					
91.	Matc	ch Group I with	Group	II								
		Group I			Grou	ıp II						
	1) A	Amylase		a) Cla	arificati	ion of ju	uice					
	2) P	ectinase		b) Me	eat tend	lerizer						
	3) P	apain		c) Ch	eese pr	oductio	n					
	4) R	Rennet		d) Ba	king in	dustry						
	A)	A) 1-a, 2-b, 3-c, 4-d			B)		2-a, 3-d, 4-b					
	C)	1-d, 2-a, 3-b	, 4-c		D)	1 <b>-</b> b, 1	2-d, 3-a, 4-c					

92.	The antimicrobial peptide which is permitted as a food preservative:												
	A)	Nisin B)	Defens	sin	C)	Penicillin	D)	Histatin					
93.	Cann	Canning is a process for food preservation by the application of											
	A)	Low temperature		B)	Gam	ma radiation							
	C)	Thermal sterilization		D)	Prese	ervatives							
94.	Yogł	nurt is commercially manu	ufactu	red by	the fer	mentation of m	ilk with	:					
	A)	Streptococcus thermop	hilus a	and <i>La</i>	ctobaci	illus bulgaricus	1						
	B)	Propionibacterium											
	C)	Penicilliumroquefortia	nd Per	ıicilliı	ітсате	emberti							
	D)	D) Lactobacilli and <i>Brevibacterium linens</i>											
95.	Saue	Sauerkraut is a fermented food prepared from:											
	A)	Meat B)	Peas		C)	Cabbage	D)	Milk					
96.	Mola proce	sses, which is being used	in the	produ	iction n	nedium of many	y ferme	ntation					
	A)	Sugar industry		B)	Dairy industry								
	C)	Paper industry		D)	Brew	ving industry							
97.	Anal agita	Analyse the following components in connection with the control of aeration and agitation in the course of fermentation and select the correct components:: 1) Impellers 2) Baffles											
	1)	Impellers		2)	Baff	les							
	3)	Sparger	1 0 0	4)	Auto	-titration unit							
	A)	I only B)	1 &3 c	only	C)	2 & 4 only	D)	1,2 & 3 only					
98.	Nanc	Nanoparticles can be used in drug delivery systems to											
	3)	Increase drug bioavaila	ability	2) 4)	Redu	ice doses of dru	igs						
	A)	1 & 4 B)	1,2&	4	C)	1, 2, 3 & 4	D)	1, 3 & 4					
99.	Paecilomyces lilacinus is widely used as a biopesticide for the control of												
	A)	Moths and butterflies		B)	Insec	ts							
	C)	Nematodes		D)	Wee	ds							
100.	The o	lisease which is a consequ	uence	of DN	A repa	ir deficiency:							
	A)	AIDS		B)	Xero	dermapigmento	osum						
	C)	Myesthenia gravis		D)	Pneu	monia							
101.	Cell j	population acquires new population acquires new population	potenti This is	ally a know	dvantag n as:	geous traits that	give ris	se to more					
	A)	Competitive colonizati	on	B)	Clon	al evolution							
	Ć)	Mutation stress		D)	Neo	colonization							

- 102. The diagram that shows the relationship among the members of a family is-----.
  - A) Karyotype B) Heat map C) Pedigree D) Mammogram
- 103. Choose the statements which are correct about Riboswitches:
  - 1) are mRNAs
  - 2) are tRNAs
  - 3) bind to a metabolite and allow to alter the gene expression
  - 4) bind to repressor and allow to alter the gene expression
  - A) 2 & 3 only B) 2 only C) 1 & 3 only D) 2 & 4 only

104. Translate the following amino acid sequence into one letter code Val-Ile-Asn-Glu-Leu-Val-Ile-Ser-Ile-Ser-Leu-Ile-Gly-Ala-Ser-Gly-Ile-Asn-Leu-Ala-TYR- Val-Trp

- A) VIAGLVISISLIGASGIALAYVT
- B) VINELVISISLIGASGINLAYVW
- C) VINGLVISISLIGASGINLATVR
- D) VINELVISISLIGASGINLAYVT
- 105. Choose the statement which is true about gel permeation chromatography:
  - A) Large molecules flow more rapidly through the column and emerge first
  - B) Small molecules flow more rapidly through the column and emerge first
  - C) The separation is not based on the size of the molecules
  - D) None of the above

1)

106. Identify the amino acid, which are not involved in the building blocks of proteins:

1) Ornithine 2) Cystein 3) Citrulline 4) Methionine 1 & 2 1 & 3 C) 3 & 4 A) B) 2 only D)

107. *Mycobacterium tuberculosis* is an example for the---

- A) Alcohol fast B) Acid fast
- C) Alcohol and acid fast D) None of the above

108. The selection of B cells and their differentiation to plasma cells occurs at....

- A) Primary lymphoid organs B) Secondary lymphoid organs
- C) Bone marrow D) Thymus

109. The sugar derivatves which is/are present in the peptidoglycan layer of bacteria:

- N-acetylneuraminic acid 2) N-acetyl-glucosamine
- 3) N-acetylmuramic acid 4) N-acetyl-galactosamine
- A) 1&2 B) 2&3 C) 1&4 D) 4 only

110.	Whic	h of the follow	f the following is a recently developed technique in biotechnology?									
	A)	Hydrogel	B)	MRI		C)	CRISPR	D)	PCR			
111.	Most	useful restricti	on-mod	ificatior	ı syster	n for gei	ne manipulati	on is				
	A)	Type I	B)	Туре	II	C)	Type III	D)	Type IIs			
112.	Choo	se the correct s	tatemer	nts about	t YACs	5						
	1)	much larger	size tha	n λ repla	acemer	nt vector	S					
	2)	large genes	are less	likely to	be co	ntained	within a single	e clone				
	3)	widely used	for the o	construc	tion of	libraries	s of large gene	omes				
	A)	1 &2 only	B)	1 & 3	only	C)	2 only	D)	2& 3 only			
113.	Choo	se the statemer	nts which	ch are tr	ue abou	ut chloro	plast transfor	mation:				
	1)	There is no r	isk of tl	ne transg	gene be	ing tran	smitted throug	gh poller	1			
	2)	Transgene in expression	tegrated	d into ch	nloropla	ist genor	me show very	low leve	els of			
	3)	Transformat	ion freq	uencies	are mu	ch highe	er than those f	or nucle	ar genes			
	4) Products of transgene ordinarily accumulates in green parts											
	A)	1, 2 & 3 only	7 B)	2 & 3	only	C)	3 & 4 only	D)	1 & 4 only			
114.	Reco	mbinant therap	eutic pr	oteins a	re prod	uced con	mmercially in	:				
	A)	Bacteria			B)	Yeast						
	C)	Mammalian	cells		D)	All of	the above					
115.	When ' <b>c</b> ' is a real number larger than or equal to 2 and ' <b><u>q</u> &amp; <u><b>r'</b></u> are positive real</b>											
	numb	vers, which of t	he follo	wing is	a corre	ct formu	1)-1					
	A) C)	$\log_{c}(1) = 0$	a (a) lo	$\sigma_{\rm o}(r)$	<i>D)</i>		c) = c					
	0)	1080(4.1) 108	( <b>q</b> ). 10	80(1)	2)	1080(0	) 0					
116.	Supp	ose you have a	number	locker	which	work on	combination	(order is	not			
	impo	rtant) and your	code to	open th	ne locke	er is 892	5. How many	combina	ations could			
	be use	ed to open that	locker?	2.4			1	D)				
	A)	/20	В)	24		C)	1	D)	None of these			
117.	The C	ChIP-Seq techn	ology is	s a way t	to find	out the i	nteractions be	etween:				
	A)	DNA and RN	NA		B)	DNA	and telomera	se				
	C)	DNA and pro	oteins		D)	protei	ns and protein	15				

118.	The post patent grant opposition should be made by the opponent within from the date of publication of grant.											
	A)	6 months	B)	12 months	C)	24 months	D)	5 years				
119.	Choo	se the greenho	use gase	es which occu	ır natural	ly						
	1)	Carbon diox	ide	2)	Meth	Methane						
	3)	Water vapou	4)	Chlo	Chlorofluorocarbons							
	A)	1 & 2	B)	1,2&3	C)	1 only	D)	2 only				
120.	Bio d	iesel, an altern	ative fue	el is provided	l by the te	echnique:						
	A)	Fermentation			Ester	Esterification						
	C)	Transesterif	cation	D)	High	pressure oxida	tion					