

## **BRAINWARE UNIVERSITY**

## Term End Examination 2019 – 20

Programme - Master of Science in Microbiology

Course Name - Cell & Molecular Biotechnology

Course Code - MMB105

(Semester - 1)

Time allotted: 2 Hours 30 Minutes

Full Marks: 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group -A  $20 \times 1 = 20$ (Multiple Choice Type Question) 1. Answer any twenty from the following (i) During DNA staining chromosome get stained with b. Borax carmine a. Eosin c. Acetocarmine d. Safranin Which bonds are broken during DNA replication? (ii) a. hydrogen bonds between bases b. phosphodiester bonds c. covalent bonds between bases d. ionic bonds between bases and phosphate groups Suppose 30% of the bases in a DNA molecule are adenine, what % of the bases are (iii) guanine? b. 30% a. 20% d. 70% c. 35% DNA synthesis occurs in (iv) b. Bidirectional a. Unidirectional d. Multidirectional c. Nondirectional

(v)

b. Elongation

d. Termination

Generally the beta subunit of polymerase plays role in

a. Promoter binding

c. Cation binding

(vi)	Calculated alignment score of the following a	lignment is?				
	TCGCA       TC - CA					
	a. +2.	b2.				
	c4	d. +4.				
(vii)	Algorithm that searches for all matching word	s is				
	a. FASTA.	b. BLAST.				
	c. SWAT.	d. BLITz.				
(viii)	The famous SWISSPROT database began in					
	a. 1985	b. 1986				
	c. 1987	d. 1988				
(ix)	cDNA deposition into inert structure is known	as and the second of the secon				
	a. DNA finingerprinting	b. DNA polymerase				
	c. DNA probes	d. DNA microarrays				
(x) Characterizing of molecular component is known as						
	a. Genomics	b. Cheminformatics				
	c. Proteomics	d. Bioinformaics				
(xi)	The shotgun cloning differs from clone-by-clone method in which of the following ways:					
	a. The location of the clone being sequenced is known relative to other clones within the genomic library in shotgun cloning.	b. Genetic markers are used to identify clones in shotgun cloning.				
	c. Computer software assembles the clones in the clone-by-clone method.	d. No genetic or physical maps of				
(xii)	The 2D gels are used to					
	a. Separate DNA fragments	b. Separate RNA fragments				
	c. Separate different proteins	d. Observe a protein in two dimensions				
(xiii)	In a DNA molecule of 1000 base pairs size range	ged				
	a. 3400 Å	b. 34000 Å				
	c. 6800 Å	d. 1000 Å				
(xiv)	What is the right difference between a DNA an	d RNA				
	a. Sugar and phosphate	b. Sugar and purines				
	c Purines and phosphate	d Sugar and nyminidings				

(xv)	Scientists Hershey and Chase showed DNA as the genetic material was based on principle						
	a.	Transduction	b.	Transformation			
	c.	Transcription	d.	Translation			
(xvi)	The v	vord 'Cistron' refers					
	a.	The coding sequence of DNA	b.	The functional unit of DNA molecule that codes for a particular gene product			
	c.	Intervening non coding sequence of DNA	d.	The sequences which are removed during RNA splicing.			
(xvii)	Remo	Removal of enzyme affects the synthesis of hnRNA in eukaryotes					
	a.	RNA polymerase II	b.	RNA primase			
	c.	RNA polymerase III	d.	RNA polymerase I			
(xviii)	Which of the following mRNAs will be translated to a polypeptide chain containing eight amino acids.						
	a.	AUGUUAAUAGACGAGUAGCG ACGAUGU	b.	AUGAGACGGACUGCAUUCCC AACCUGA			
i la	c.	AUGCCCAACCGUUAUUCAUG CUAG	d.	AUGUCGACAGUCUAAAACAG CGGG			
(xix)	The s	tretch of codon between the AUG and a st	odon is called				
	a.	Open reading frame	b.	TATA box			
	c.	Colinearity	d.	Degenerate			
(xx)	In wh	In which year scientist Fleming received the Noble prize?					
	a.	1945	b.	1947			
	c.	1942	d.	1944			
(xxi)	In a one turn of DNA, the number of base pair is						
	a.	4	b.	6			
	c.	8	d.	10			
(xxii)	Ampli	ification of rRNA-ITS genes required					
	a.	Only forward primer	b.	Both forward & reverse primer			
	c.	Only reverse primer	d.	All of these			
(xxiii)	pBR32	22 is the example of					
	a.	HAC	b.	YAC			
	c.	Plasmid vector	d.	None of these			

		a. Micro satellite	ъ.	Macro s	atellite			
		c. Both a & b	d.	None of	these			
(xx	v) 7	The two strands of DNA are held together by		ion and	A CANA	1, f /	iler) .	
i I , h.	, and	a. Nitrogen	b.	Oxygen	an I in			
atting.	在 抗學	c. Hydrogen	d.	Carbon				
and the second		Group - B			195 H 12 11 FT			
		(Short Answer Type Qu	estion	ıs)			4 x 5 =	= 20
An	swer a	any four from the following						
2.		Explain the role of protein kinase in cell cycle						5
3.	(a)	What is oncogene?	A Head			ight of	78.2	1
Ů.N.	(b)	How malignant tumor develop?						4
4.	(a)	Define positive regulators and negative regu	lators	* * * * * * * * * * * * * * * * * * *				2
	(b)	Briefly describe RNAi technology.						3
5.	(a)	How cDNA is formed?						4
	(b)	Write the full form of AFLP	2):					1
6.	(a)	What is Biochips?						1
	(b)	Write the basic differences of DNA & prote	in chi	ps.	ביר ויא"ד א	uni	frea.	4
7.		Explain the importance of recomminant DNA	A tech	nology.				5

(xxiv) In molecular biology SSR DNA marker are

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## Group - C

		(Long Answer Type Questions)	$2 \times 10 = 20$
Ans	swer a	any two from the following	
8.	(a)	Explain the steps of DNA sequence alignment using NCBI tools.	7
	(b)	What are the importance of phylogenetic tree construction?	3
9.	(a)	Write in details the importance of recombinant DNA technology.	8
	(b)	What is 'MAS'?	2
10.	(a)	Explain the procedure to be followed during 'Gene therapy'.	8
	(b)	What are basic difference between chemical drug Vs Gene therapy?	2
11.	(a)	Write the full form of PCR in molecular biology?	1
	(b)	Write its applications.	3+2
	(c)	Write in detail the protocol of 50µl PCR with 35 cycles.	4