



## **BRAINWARE UNIVERSITY**

## **Term End Examination 2022**

Programme – B.Sc.(BT)-Hons-2018/B.Sc.(BT)-Hons-2019/B.Sc.(BT)-Hons-2020/B.Sc. (BT)-Hons-2021

## Course Name – Genetics Course Code - BBTH010402/BBTC102 ( Semester I )

Full Marks : 70 Time : 3:0 Hours

[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**

(Multiple Choice Type Question)

1 x 15=15

- 1. Choose the correct alternative from the following :
- (i) How many different types of gamates can be formed by F1 progeny resulting from the following cross AABBCC × aabbcc ?

a) 3 b) 8 c) 27 d) 64

(ii) Which of the following is not an example of model organism?

a) Arabidopsis b) Coenorabdhitis elegans

c) Ficus d) Mouse

(iii) Splicing mechanism is absent in which of the following organism

a) E.coli b) Cow

c) Mango d) Ficus

(iv) Human DNA is generally present in which form?

a) positively supercoiled b) negatively supercoiled

c) circular d) closed circular

(v) Choose which one of the following functions is absent in telomere.

a) all telomere in a given species are same b) all telomere are same in different species

c) Number of repeats in telomere is 100-1000 d) telomere is single stranded at the end

(vi) Monosomy is an example of

a) Euploidy b) Polyploidy c) Aneuploidy d) None

(vii) In a mutational event, the replacement adenine with guanine is known as

a) transition b) transcription

c) transvertion d) frameshift mutation

(viii) The number of copies in highly repetitive DNA is

a) 100-1000 b) 1-10 lakh c) 20-50 lakh d) 10000-20000

(ix) In the following population, what would be the allelic frequency for the dominant

	allele? 20 homozygous recessives; 320 homozy	ous dominants; 160 heterozygotes	
	a) 0.3	b) 0.8	
(v)	c) 0.7 Select the correct statement from the ones give	d) 0.6	
(^)	a) Tightly linked gene on the same	h)	
	chromosome show very few recombination.	Genes far apart on the same chromo Show very few recombination.	some
	c) genes loosely linked on the same chromosome show similar recombinations as the tightly linked genes.	d) Linked genes are located on different chromosome	İ
(xi)	A particular locus, frequency A allele is 0.6 and of heterozygote in an random mating population		
	a) 0.16	b) 0.48 d) 0.24	
(xii)	<ul> <li>c) 0.35</li> <li>d) 0.24</li> <li>i) What would be the allelic frequency for the dominant allele in the following population? 20 homozygous recessives; 320 homozyous dominants; 160 heterozygotes</li> </ul>		
	a) 0.3	b) 0.8	
,	c) 0.7	d) 0.6	
(xiii)	There are three genes a, b and c. Percentage of and c is 28% and a and c is 8%. What is the sec	uence of the genes on chromosomes.	
	a) b, a and c c) a, c,b	b) a, b and c d) none	
(xiv	Inheritance of flower colour is an example of in	•	
	a) Antirrhinum	b) Pisum	
, ,	c) Solanum	d) Hibiscus	
(xv)	The probability of all possible genotypes of offs represented in a graphical form is known as		
	<ul><li>a) Pedgree analysis</li><li>c) Karyotype</li></ul>	b) Punnet square d) chromosome map	
	0,100,900	u, amomosome map	
	<b>Grou</b> (Short Answer Ty	•	3 x 5=15
2. Validate the different modification histone molecule.			(3)
3. E	3. Elaborate natural selection with a suitable example.		
4. Name two sex chromosome disorder and their symptoms			(3)
5. D	escribe plaque assay briefly. How many plaques	can be formed by a single phage particle	? (3)
6. V	/hat is incomplete penetrance and the reason be OI		(3)
E	xplain the assumptions must be met by a popula	tion to be in Hardy- Weinberg equilibriur	m (3)
	Grou	p-C	
	(Long Answer Ty	-	5 x 8=40
7.	What is base analogue? Discuss its mode of action	on in causing mutation.	(5)
	Discuss the different types of sex differentiation	_	(5)
9.	What is the between allelic and non allelic interaction .Explain with example the mode of (5)		
	nheritance pattern in non allelic interaction. [ 3		(5)
	What do you mean by tautomerism? Pictorially on Betty has normal vision, but her mother is color	-	(5) (5)
	marry and have a child together, what is the prolection blind?	•	(3)
	What is gene interaction? Distinguish between e	pistatic and hypostatic gene	(5)
13.	.3. Red- green color blindness in humans is due to an X-linked recessive gene. A woman		

whose father is color blind possesses one eye with normal vision and other eye with color blindness. Propose an explanation for this womens vision pattern and would it be possible for a man to have one eye with normal color vision and one eye with color blindness? (5) 14. What is Hardy and Weinberg Law? Explain with example.

(5) Define base analogue and how does base analogues cause mutation in DNA?

\*\*\*\*\*\*\*\*\*\*\*\*\*