



GIET UNIVERSITY, GUNUPUR – 765022

B. Sc. (AG) (Second Semester) Examinations, October – 2021

PBG-121 – Fundamentals of Genetics

Time: 2 hrs

Maximum : 50 Marks

The figures in the right hand margin indicate marks.

PART – A

Q.1. Fill in the blanks with suitable word / figure.

(0.5 x 10 = 5 Marks)

- a. Healing wounds and replacement of damaged tissue in plants and animals is based on _____ cell division.
- b. Nullisomy are only viable in _____ species.
- c. In F1 generation, characters of only one of the parents is expressed due to _____
- d. Law of independent assortment always operates when genes are located on _____ chromosome.
- e. DNA synthesis takes place during _____ phage.
- f. Double monosomics are represented as _____
- g. A gene that influences the expression of more than one character is termed as _____ gene.
- h. _____ genes do not show independent segregation.
- i. Synaptonemal complex is formed between _____ chromosomes.
- j. Down syndrome is associated with chromosome _____

Q.2. Define (or) Explain the following in one or two sentences.

(1 x 5 = 5 Marks)

- a. Preformation theory
- b. B DNA
- c. Transposon
- d. Repulsion phage linkage
- e. Law of purity of gamete

Q3. Match COLUMN-A with COLUMN-B

(0.5 x 10 = 5 Marks)

Column – A		Column – B	
(a)	Longest stage of mitosis	(i)	Anaphase
(b)	Linkage	(ii)	Wolf
(c)	Moist vapour theory	(iii)	Prophase
(d)	Shortest phage of mitosis	(iv)	Telocentric chromosome
(e)	Epigenesis theory	(v)	Pythagorus
(f)	I shape chromosome in anaphage	(vi)	Weismann
(g)	XO sex chromosome condition	(vii)	Bateson and Punnett
(h)	Germplasm theory	(viii)	Turner syndrome
(i)	Trisomy in 18 no. chromosome	(ix)	Serebrovsky
(j)	Contact first theory	(x)	Edward syndrome

Q4. Write True or False against each statement

(0.5 x 10 = 5 Marks)

- a. Mutant genes are always dominant in nature.
- b. Duplications are the basis of evolution of new genes.
- c. Duplicate dominant epistatic ratio is 13:3.
- d. Thymine is present in RNA.
- e. Pangenesis theory was given by Lamark.
- f. Spontaneous mutation occurs in very high rate.
- g. Nullisomy are represented by $2n-1$.
- h. Nucleotide consists of sugar, phosphorous group and nitrogen base.
- i. UV rays are non ionising radiation type of mutagen.
- j. Linkage is carried out when two genes are present in different chromosomes.

PART – B

Attempt ANY FIVE questions. All question carry equal marks.

(5 x 6 = 30 Marks)

5. Describe the reasons behind Mendel's success and briefly describe the laws of Mendel with example?
6. What is linkage and crossing over? Describe the types of linkage and crossing over briefly?
7. What are mutation and mutagens and their type? Describe briefly about the gene mutations?
8. Write-down about different epistatic gene interaction and their ratio? Briefly describe about complementary gene action?
9. What are chromosomal aberrations and its type? Briefly describe about translocation?
10. What is genetic material? Describe briefly about the research carried out by different scientist to prove DNA as genetic material?

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