[65]

Sardar Patel University
S.Y. B.Sc. Third Semester Examination-2019
Subject-Genetics
Course-US03CGEN21   Principles of Genetics I
Time: 2.00pm to 5.00pm   Date: 25/11/2019   Total Marks-70

Q.1   Multiple Choice Questions (one mark each)   Attempt all   10M   10

1   Relative distance between two genes is indicated by
a)% of parental combinations   b)% of recombinants
c) Both A and B   d) None of above

2   Test cross resulting in linkage will be
a)1:1   b) not 1:1   c) Both a and b   d) None of above

3   Cytological basis of crossing over was given by
a) Curt Stern   b) Bateson   c) Muller   d) All of above

4   In ABO blood group of human O blood group is
a) Recessive   b) Dominant
c) Incompletely dominant   d) Co-dominant

5   When members of allelic pair are same, it is called
(a) Heterozygous   (b) homozygous
(c) hemizygous   (d) All of above

6   Phenotypic ratio of dihybrid cross is
a) 3:1   (b) 1:2:1   (c) 9:3:3:3:1   (d) none of above

7   Presence of only parental combinations in progeny shows
a)Complete linkage   b) Incomplete linkage
c) Both A and B   d) None of the above

8   Length of life cycle for drosophila is
a)20 days   b) 3 days   c) 12 days   d) none of the above

9   Graphs are _____ dimension figures.
(a) three   (b) one   (c) two   (d) none of them.

10 Variance is the _____ of the standard deviation.
(a) square root   (b) square
(c) coefficient   (d) none of these

Q.2   Short questions : Attempt any ten questions   20 M

1   What is linkage? Enlist its types

2   Define chromosomal map and give its unit

3   What is mitotic and meiotic crossing over

4   Give History and Sub-disciplines of genetics.

5   Define and give example of Pleiotropy and Co-dominance.

6   Enlist the characters of pea plant used by Mendel.

7   Differentiate between Qualitative and Quantitative traits

8   Write the important features of *Arabidopsis* as model system

(P.T.o.)

9   Define penetrance and expressivity

10   Find mean for the following data.
      20,25,10,13,21,25,11,13,45,13,28

11   In a sample study about coffee habit in two towns, the following information was received: Town A : Females were 40%, Total coffee drinkers were 45% & Males non coffee drinkers were 20%.Town B : Males were 55%, Males non coffee drinkers were 30% and Female coffee drinkers were 15%. Present the above data in tabular form.

12   Define statistics?

Q.3 a	State and explain Mendel's law of independent assortment	7M
b	Give the symbols used in humans pedigree analysis	3M

<div align="center">OR</div>

Q.3 a	Define epistasis. Discuss epistasis with example.	6M
b	Write a note on supplementary genes	4M
Q.4 a.	Write a note on model systems i) Yeast ii) Drosophila	6M
b.	Discuss mutation and migration as a factor affecting gene and genotype frequency	4M

<div align="center">OR</div>

Q.4	State and explain Hardy Weinberg law .	10M

Q.5 a.	Write a note on kinds of linkage with examples	7M
b.	Write a note on mapping of chromosome	3M

<div align="center">OR</div>

Q.5 a.	Discuss Stern's experiment for cytological detection of crossing over	6M
b.	Diagrammatically represent Holliday model for crossing over	4M

Q.6 (a)   The data below relates to marks of students in a subject biostatistics. Which class has more variation in marks?   5M

	BNF	GT
No. of students	14	15
Average marks	24	28
Standard deviation	2	4

(b)   Find missing frequency if Mean is 24 for following data.   5M

x	5	15	25	35	45
f	15	28	27	-	15

<div align="center">OR</div>

Q.6   The median of distribution is 49 for following data. Find the missing frequency & Qurtile deviation.   10M

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	5	8	7	12	-	20	10	10

<div align="center">— ✗ —</div>

<div align="center">②</div>