

NEET PRINCIPLES OF INHERITANCE AND VARIATION — CHROMOSOMAL THEORY OF INHERITANCE, LINKAGE AND RECOMBINATION — PYQS

Max. Marks: 64

Questions: 16

Section A (MCQ) — 16 questions

Q.1 Frequency of recombination between gene pairs on same chromosome as a measure of the distance between genes to map their position on chromosome, was used for the first time by

[NEET (UG) 2023]

- (1) Sutton and Boveri (2) Alfred Sturtevant
(3) Henking (4) Thomas Hunt Morgan

Scan or tap for the
full solution

Q.2 Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A): Mendel's law of independent assortment does not hold good for the genes that are located closely on the same chromosome.

Reason (R): Closely located genes assort independently.

In the light of the above statements, choose the correct answer from the options given below :

[NEET (UG) 2022]

- (1) Both (A) and (R) are correct and (R) is the correct explanation of (A)
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
(3) (A) is correct but (R) is not correct
(4) (A) is not correct but (R) is correct

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Q.3 The recombination frequency between the genes a & c is 5%, b & c is 15%, b & d is 9%, a & b is 20%, c & d is 24% and a & d is 29%. What will be the sequence of these genes on a linear chromosome?

[NEET (UG) 2022]

- (1) a, d, b, c (2) d, b, a, c (3) a, b, c, d (4) a, c, b, d

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Q.4 The chromosomal theory of inheritance was proposed by [NEET (UG) 2022 (Phase 2)]

- (1) Robert Brown (2) Thomas Morgan
(3) Sutton and Boveri (4) Gregor Mendel

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Q.5 Experimental verification of the chromosomal theory of inheritance was done by

[NEET (UG) 2020]

- (1) Sutton (2) Mendel (3) Morgan (4) Boveri

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full solution

Q.6 The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by :

[NEET (UG) 2019]

- (1) Alfred Sturtevant (2) Gregor J. Mendel
(3) Sutton Boveri (4) T.H. Morgan

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full solution

Q.7 What map unit (Centimorgan) is adopted in the construction of genetic maps? [NEET (UG) 2019]

- (1) A unit of distance between genes on chromosomes, representing 1% cross over.
(2) A unit of distance between genes on chromosomes, representing 50% cross over.
(3) A unit of distance between two expressed genes, representing 10% cross over.
(4) A unit of distance between two expressed genes, representing 100% cross over.

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Q.8 In a testcross involving F_1 dihybrid flies, more parental-type offspring were produced than the recombinant-type offspring. This indicates

[NEET 2016 (Phase 1)]

- (1) Both of the characters are controlled by more than one gene
- (2) The two genes are linked and present on the same chromosome
- (3) The two genes are located on two different chromosomes
- (4) Chromosomes failed to separate during meiosis

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Q.9 Which of the following statements is not true of two genes that show 50% recombination frequency ?

[NEET 2013]

- (1) The genes are tightly linked
- (2) The genes show independent assortment
- (3) If the genes are present on the same chromosome, they undergo more than one crossovers in every meiosis.
- (4) The genes may be on different chromosomes

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Q.10 Select the correct statement from the ones given below with respect to dihybrid cross –

[AIPMT 2010 (Prelims)]

- (1) Genes far apart on the same chromosome show very few recombinations
- (2) Tightly linked genes on the same chromosome show very few recombinations
- (3) Tightly linked genes on the same chromosome show higher recombinations
- (4) Genes loosely linked on the same chromosome show similar recombinations as the tightly linked ones

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Q.11 Lack of independent assortment of two genes A and B in fruit fly *Drosophila* is due to [AIPMT 2004]

- (1) Linkage
- (2) Recombination
- (3) Repulsion
- (4) Crossing over

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Q.12 One of the parents of a cross has a mutation in its mitochondria. In that cross, that parent is taken as a male. During segregation of F_2 progenies that mutation is found in - [AIPMT 2004]

- (1) 50% of the progenies
- (2) 1/3 of the progenies
- (3) None of the progenies
- (4) All the progenies

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Q.13 The genes controlling the seven pea characters studied by Mendel are now known to be located on how many different chromosomes? [AIPMT 2003]

- (1) Six
- (2) Seven
- (3) Five
- (4) Four

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Q.14 There are three genes a, b and c. The percentage of crossing over between a and b is 20%, b and c is 28% and a and c is 8%. What is the sequence of genes on chromosome? [AIPMT 2002]

- (1) a, b, c
- (2) b, a, c
- (3) a, c, b
- (4) None

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Q.15 A and B genes are linked. What shall be genotype of progeny in a cross between AB/ab and ab/ab?

[AIPMT 2001]

- (1) AABB and aabb
- (2) None
- (3) AaBb and aabb
- (4) AAbb and aabb

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Q.16 Independent assortment of genes does not take place when [AIPMT 2001]

- (1) Genes are located on non-homologous chromosomes
- (2) Genes are linked and located on same chromosome
- (3) Genes are located on homologous chromosomes
- (4) All the above

Scan or tap for the full solution 

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	3	4	3	3	1	1	2	1	2	1
Ques.	12	13	14	15	16						
Ans.	3	4	2	3	2						