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NEET PRINCIPLES OF INHERITANCE AND VARIATION — MENDEL'S LAWS OF INHERITANCE, MONOHYBRID CROSS — PYQS

Max. Marks: 108 **Questions:** 27

Section A (MCQ) — 27 questions

Q.1 Given below are two statements: one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A): In an experiment, Mendel observed that the F_1 progeny plants are all tall and none are dwarf.

Reason (R): Stem height is a contrasting trait, with tall being dominant and dwarf being recessive.

In the light of the above statements, choose the most appropriate answer from the options given below: [RE-NEET (UG) 2026]

(1) A is not correct but R is correct

(2) Both A and R are correct and R is the correct explanation of A

(3) Both A and R are correct but R is not the correct explanation of A

(4) A is correct but R is not correct

Scan or tap for the full solution

Q.2 Which one of the following can be explained on the basis of Mendel's Law of Dominance?

A. Out of one pair of factors one is dominant and the other is recessive.

B. Alleles do not show any expression and both the characters appear as such in F_2 generation.

C. Factors occur in pairs in normal diploid plants.

D. The discrete unit controlling a particular character is called factor.

E. The expression of only one of the parental characters is found in a monohybrid cross.

Choose the correct answer from the options given below: [NEET (UG) 2024]

(1) A, B and C only (2) A, C, D and E only

(3) B, C and D only (4) A, B, C, D and E

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Q.3 In a plant, black seed color (BB/Bb) is dominant over white seed color (bb). In order to find out the genotype of the black seed plant, with which of the following genotype will you cross it? [NEET (UG) 2024]

(1) BB (2) bb (3) Bb (4) BB/Bb

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Q.4 Match **List I** with **List II**

List - I		List - II	
A.	Two or more alternative forms of a gene	I.	Back cross
B.	Cross of F_1 progeny with homozygous recessive parent	II.	Ploidy
C.	Cross of F_1 progeny with any of the parents	III.	Allele
D.	Number of chromosome sets in plant	IV.	Test cross

Choose the correct answer from the options given below: [NEET (UG) 2024]

(1) A-I, B-II, C-III, D-IV (2) A-II, B-I, C-III, D-IV

(3) A-III, B-IV, C-I, D-II (4) A-IV, B-III, C-II, D-I

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Q.5 Given below are two statements:

Statement-I: Mendel studied seven pairs of contrasting traits in pea plants and proposed the Laws of Inheritance.

Statement-II: Seven characters examined by Mendel in his experiment on pea plants were seed shape and colour, flower colour, pod shape and colour, flower position and stem height.

In the light of the above statements, choose the correct answer from the options given below : [NEET (UG) 2022]

(1) Both Statement-I and Statement-II are correct

(2) Both Statement-I and Statement-II are incorrect

(3) Statement-I is correct but Statement-II is incorrect

(4) Statement-I is incorrect but Statement-II is correct

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Q.6 The production of gametes by the parents, formation of zygotes, the F_1 and F_2 plants, can be understood from a diagram called : [NEET (UG) 2021]

(1) Net square (2) Bullet square
(3) Punch square (4) Punnett square

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Q.7 How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits? [NEET (UG) 2020]

(1) 14 (2) 4 (3) 2 (4) 8

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Q.8 Select the correct statement : [NEET 2018]

(1) Franklin Stahl coined the term "linkage".
(2) Punnett square was developed by a British scientist.
(3) Spliceosomes take part in translation.
(4) Transduction was discovered by S. Altman.

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Q.9 Which one from those given below is the period for Mendel's hybridisation experiments ? [NEET 2017]

(1) 1870 – 1877 (2) 1857 – 1869
(3) 1840 – 1850 (4) 1856 – 1863

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Q.10 Among the following characters, which one was not considered by Mendel in his experiments on pea? [NEET 2017]

(1) Stem-Tall or dwarf
(2) Pod-Inflated or constricted
(3) Trichomes-Glandular or non-glandular
(4) Seed-Green or yellow

Scan or tap for the full solution

Q.11 A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F_1 plants were selfed the resulting genotypes were in the ratio of - [NEET 2016 (Phase 1)]

(1) 3 : 1 :: Tall : Dwarf
(2) 1 : 2 : 1 :: Tall heterozygous : Tall homozygous : Dwarf
(3) 1 : 2 : 1 :: Tall homozygous : Tall heterozygous : Dwarf
(4) 3 : 1 :: Dwarf : Tall

Scan or tap for the full solution

Q.12 A true breeding plant is - [NEET 2016 (Phase 2)]

(1) produced due to cross-pollination among unrelated plants
(2) one that is able to breed on its own
(3) near homozygous and produces offspring of its own kind
(4) always homozygous recessive in its genetic constitution

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Q.13 Alleles are [AIPMT 2015 (Cancelled)]

(1) true breeding homozygotes
(2) different phenotype
(3) heterozygotes
(4) different molecular forms of a gene

Scan or tap for the full solution

Q.14 How many pairs of contrasting characters in pea plants were studied by Mendel in his experiments? [AIPMT 2015 (Cancelled)]

(1) Eight (2) Five (3) Seven (4) Six

Scan or tap for the full solution

Q.15 A test cross is carried out to : [AIPMT 2012 (Mains)]

(1) Determine whether two species or varieties will breed successfully
(2) Determine the genotype of a plant at F_2
(3) Predict whether two traits are linked
(4) Assess the number of alleles of a gene

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Q.16 Test cross in plants or in *Drosophila* involves crossing: [AIPMT 2011 (Mains)]

(1) the F_1 hybrid with a double recessive genotype
(2) between two genotypes with dominant trait
(3) between two F_1 hybrids
(4) between two genotypes with recessive trait

Scan or tap for the full solution

Q.17 A cross in which an organism showing a dominant phenotype is crossed with the recessive parent in order to know its genotype is called - [AIPMT 2010 (Mains)]

(1) Dihybrid cross (2) Back cross
(3) Monohybrid cross (4) Test cross

Scan or tap for the full solution

Q.18 The genotype of a plant showing the dominant phenotype can be determined by – [AIPMT 2010 (Prelims)]

(1) Pedigree analysis (2) Back cross
(3) Test cross (4) Dihybrid cross

Scan or tap for the full solution

Q.19 Which one of the following cannot be explained on the basis of Mendel's Law of Dominance? [AIPMT 2010 (Prelims)]

(1) Out of one pair of factors one is dominant, and the other recessive
(2) Alleles do not show any blending and both the characters recover as such in F_2 generation
(3) The discrete unit controlling a particular character is called a factor
(4) Factors occur in pairs

Scan or tap for the full solution

Q.20 In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seeded plant is crossed with a green seeded plant, what ratio of yellow and green seeded plants would you expect in F_1 generation? [AIPMT 2007]

(1) 9 : 1 (2) 3 : 1 (3) 50 : 50 (4) 1 : 3

Scan or tap for the full solution

Q.21 A common test to find the genotype of a hybrid is by:- [AIPMT 2007]

(1) Crossing of one F_1 progeny with recessive parent
(2) Crossing of one F_2 progeny with female parent
(3) Crossing of one F_2 progeny with male parent
(4) Studying the sexual behaviour of F_1 progenies

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Q.22 Phenotype of an organism is the result of- [AIPMT 2006]

(1) Environmental changes and sexual dimorphism
(2) Cytoplasmic effects and nutrition
(3) Genotype and environment interactions
(4) Mutations and linkages

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Q.23 Which one of the following traits of garden pea studied by Mendel was a recessive feature? [AIPMT 2003]

(1) Green seed colour (2) Green pod colour
(3) Axial flower position (4) Round seed shape

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Q.24 Two crosses between the same pair of genotypes or phenotypes in which the sources of the gametes are reversed in one cross, is known as: [AIPMT 2003]

(1) Reciprocal cross (2) Reverse cross
(3) Test cross (4) Dihybrid cross

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Q.25 On selfing a plant of F_1 generation with genotype "AABbCC", the phenotypic ratio in F_2 generation will be [AIPMT 2002]

(1) 1 : 1
(2) 3 : 1
(3) 9 : 3 : 3 : 1
(4) 27 : 9 : 9 : 9 : 3 : 3 : 3 : 1

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Q.26 A gene is said to be dominant if : - [AIPMT 2002]

(1) It is expressed only in heterozygous condition
(2) It expresses its effect only in homozygous stage
(3) It is never expressed in any condition
(4) It is expressed both in homozygous and heterozygous condition

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Q.27 According to mendelism which character is showing dominance? [AIPMT 2000]

(1) Green colour in seed coat
(2) Wrinkled seed
(3) Terminal position of flower
(4) Green pod colour

Scan or tap for the full solution

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	**2**	**2**	**2**	**3**	**1**	**4**	**1**	**2**	**4**	**3**	**3**
Ques.	12	13	14	15	16	17	18	19	20	21	22
Ans.	**3**	**4**	**3**	**2**	**1**	**4**	**3**	**2**	**3**	**1**	**3**
Ques.	23	24	25	26	27						
Ans.	**1**	**1**	**2**	**4**	**4**						