



BIOLOGY

BOOKS - ARIHANT PRAKASHAN

HEREDITY AND VARIATION

Topic 1 Practice Questions 1 Mark Questions

1. If allele for tallness (TT) is dominant and dwarfness (tt) is recessive , then in cross

between _____ 50% of the offsprings
will be dwarf .

A. $TT \times tt$

B. $Tt \times tt$

C. $tt \times tt$

D. $Tt \times Tt$

Answer: b



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2. Correct the statement of each bit, if necessary, by changing the underlined words only :

Griffith coined the term 'gene' for Mendelian factor.



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3. The process of physical removal of anthers is called

A. emasculation

B. mass selection

C. introduction

D. mutation

Answer: a



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4. The genetic ratio in F-generation of Mendel's monohybrid cross is 9:3:3:1.

A. True

B. False

C.

D.

Answer:



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5. Which term did Mendel use to denote something in germ cells responsible for transmission of characters?

A. Chromosome

B. Element

C. Factor

D. Gene

Answer: c



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Topic 1 Practice Questions Important Questions

1. An individual who has two different alleles of a gene is called

A. hybrid

B. dominant

C. homzygous

D. heteroozygous

Answer: c



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2. A cross of progeny with their recessive parent is known as

A. buck cross

B. hybrid cross

C. test cross

D. double cross

Answer: c



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3. The experimental plant material used by Mendel was :

A. cowpesa

B. garden pea

C. wild pea

D. sweet pea

Answer: b



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4. Which of the following characters is not among the seven characters considered by Mendel for his hybridization experiments ?

- A. Seed colour
- B. Pod shape
- C. Flower position
- D. Flower shape

Answer: d



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5. Which law Mendel would not have proposed , if the phenomenon of linkage was known to him ?

- A. Law of unit character
- B. Law of dominance
- C. Law of segregation
- D. Law of independent assortment

Answer: d



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6. The number of genotypes produced in F_2 generation in Mendel's monohybrid cross was :

A. 1

B. 2

C. 3

D. 4

Answer: c



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7. In which of the crosses , half of the offspring show dominant phenotype ?

A. $Tt \times Tt$

B. $TT \times tt$

C. $Tt \times tt$

D. $TT \times TT$

Answer: c



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8. Two allelic genes are located on the :

- A. same chromosome
- B. two homologous chromosomes
- C. two non-homologous chromosomes
- D. any two different chromosomes

Answer: b



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9. Write short notes on the following

Test cross



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10. Write short notes on the following

Back cross



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11. Differentiate between dominant and recessive traits.



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12. Distinguish between: Homozygous and heterozygous



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[Topic 1 Practice Questions Fill Up The Blanks](#)

1. The basic unit of heredity is



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2. An individual who has two different alleles of a gene is called



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3. Monohybrid cross in F_2 - generation yields . .
. . number of phenotypes





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4. Monohybrid cross in F_2 - generation yields .
... number of genotypes



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5. The genotype of a plant showing the dominant phenotype can be determined by :



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6. In a cross between AaBB and aaBB, the genotypic ratio in F_1 - generation will be



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Topic 1 Practice Questions Correct The Statements

1. The process of transmission of characters through generations is known as variation



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2. In Mendel's dihybrid cross in F_2 - generation, nine phenotypes are produced



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3. Name the portion or region of chromosome that represents a single gene.



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4. What is the ratio of F₂ in a Mendelian Dihybrid cross?



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5. A cross between the F_1 - hybrids with any one of the homozygous parents



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6. A pair of Mendelian factors (genes) that appear at a particular location on a particular chromosome and control the same



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Topic 1 Practice Questions Exams Questions

1. Write short note with 2-3 important points on law of segregation



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2. Write notes on :Law of independent assortment



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3. Differentiate between: Phenotype and genotype



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4. Differentiate between :

Back cross and Test cross



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Topic 1 Practice Questions 7 Marks Questions

1. Discuss Mendel's dihybrid cross with checker board.



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Topic 1 Practice Questions Important Questions

1. Give an account of the monohybrid cross explained by Mendel. Also explain the conclusion drawn by him from the experiment



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2. State and explain Mendel's laws of inheritance.



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3. What do you mean by back cross and test cross? Explain test cross through an example.



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4. Discuss Mendel's dihybrid cross with checker board.



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1. The contrasting traits with respect to seeds in pea plant that were studied by Mendel are

- A. seed shape
- B. seed size
- C. seed colour
- D. both (a) and (c).

Answer: d



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2. Punnett square was developed by



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3. Describe Mendel's monohybrid and dihybrid experiment and state the laws derived from them.



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4. What do you mean by a hybrid?



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5. Why the law of independent assortment is not always valid for two or more phenotypical traits of an individual ?



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6. Dominant genes and Recessive genes



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7. How is the Mendelian monohybrid ratio be mathematically condensable in the form of the binomial expression



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8. Mention the advantages of selecting pea plant for experiment by Mendel.



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9. How are alleles of particular gene differ from each other ? Explain its significance



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10. When tall pea plants were selfed, some of the offsprings were dwarf. Explain with the help of a Punnett square.



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1. Fill in the blanks: The phenomenon of single gene contributing to multiple phenotypic traits is called _____



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2. Correct the statement of each bit, if necessary, by changing the underlined word only:

Mutation that completely elimanates a gene is called silent mutation.



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3. In a cross between red and white flowered plants, F_1 - hybrids are pink. This is called quantitative dominance



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4. Red (RR) Antirrhinum is crossed with white (rr) one . The F_1 hybrid is pink . This is an example of :

A. dominant recessive

B. codominance

C. incomplete dominance

D. complementary genes

Answer: c



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5. In a dihybrid cross , in F_2 generation , the parental types are far greater in number than the recombinants . This is due to :

A. linkage

B. incomplete dominance

C. multiple allelism

D. complete dominance

Answer: a



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6. The number of phenotypic classes is same as to the genotype in complete dominance



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7. When two or more genes equally express themselves, they are called dominant genes



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8. Inheritance of skin colour in man is monogenic



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9. A man with blood group 'AB' marries a woman with 'O' blood group. The blood group of offsprings will be ...



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10. Phenomenon where in the heterozygous condition an intermediate phenotype is observed



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11. Fill in the blanks: The phenomenon of single gene contributing to multiple phenotypic traits is called _____



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12. Genes which move together and do not show independent assortment



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1. Write note on

Quantitative inheritance



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2. State the significance of crossingover.



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3. Multiple alleles



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4. Write note on

Quantitative inheritance



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5. Write short notes on the following

Chromosomal basis of inheritance.



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6. Write note on :

Codominance.



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7. Write notes: Incomplete dominance



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8. Write a short notes on: Linkage



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9. Write a short notes on: Linkage



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Topic 2 Practice Questions 3 1 2 Mark Questions

1. Distinguish between: Dominance and incomplete dominance



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2. Differentiate between :

Linkage and Crossing Over



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3. Differentiate between :

Qualitative Inheritance & Quantitative inheritance.



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1. Give an account of linkage and recombination



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Topic 2 Topic Test 2

1. Which one is incorrect?

A. Polygenic character is controlled by multiple genes

B. Numerous intermediate types are found in between the two extremes in polygenic inheritance

C. Height, weight and skin colour are polygenic

D. A polygenic trait is controlled by multiple alleles

Answer: d



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2. 9:3:3:1 ratio is due to ____ .

- A. segregation
- B. independent assortment
- C. crossing over
- D. homologous pairing

Answer: b



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3. Genetic complement is called

A. genotype

B. phenotype

C. alleles

D. dominant

Answer: a



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4. Segregation of alleles takes place during

A. meiosis

B. cleavage

C. fertilisation

D. crossing over

Answer: a



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5. Snapdragon is an example of dominance.



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6. Two or more pairs of genes which produce an additive effect on the same trait are called..... .



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7. Write a short note on co dominance.



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8. Write a short note on pleiotropy.



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9. Give an account of the chromosomal basis of sex determination.



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10. With the help of one example, explain the phenomenon of codominance and multiple allelism in human population .



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Chapter Test

1. Multiple alleles control the inheritance of ...
. in man

- A. phenylketonuria
- B. colour blindness
- C. sickle cell anaemia
- D. blood groups

Answer: d



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2. An incomplete dominance is shown by

- A. *Pisum sativum*

B. Neurospora

C. Mirabilis jalapa

D. Lathyrus odoratus

Answer: c



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3. A plant with round (dominant) seeds was crossed with a plant with wrinkled (recessive) seeds. If former plant is heterozygous which of these agrees with the expected result?

A. 301 round and 100 wrinkled

B. 305 round and 301 wrinkled

C. 90 round and 300 wrinkled

D. 200 round and 99 wrinkled

Answer: b



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4. Multiple alleles are present on



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5. Law of independent assortment of Mendel can be proved on the basis of which F₂ ratio ?



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6. A cross of F_1 with the recessive parent is known as



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7. According to chromosomal theory of inheritance, a gamete contains only two chromosomes of a type.

A. True

B. False

C.

D.

Answer: one



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8. Test cross is conducted in breeding programmes to stabilise a character.



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9. During incomplete dominance, phenotypic ratio is



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10. Skin colour inheritance in humans is an example of



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11. A cross between F_1 -hybrid and a recessive parent gives the ratio of



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12. inheritance deals with quantitative traits.



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13. and crossing over do not conform to Mendel's principles of inheritance.



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14. linkage groups are found in human female.



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15. Write short note on the dihybrid cross.



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16. How are dominance, codominance and incomplete dominance patterns of inheritance

different from each other



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17. Who proposed chromosomal theory of inheritance ? Point out any two similarities in the behaviour of chromosomes and genes



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18. Differentiate between heredity and variation.



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19. Differentiate between pleiotropy and polygenic inheritance .



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20. In man, brown eyes (B) are dominant over blue (b) and dark hair (R) are dominant to red hair (r). A man with brown eyes and red hair, whose father was blue eyed, marries a woman

with blue eyes and dark hair whose mother was red haired. They have four children. Give the genotypic outline and phenotypes of the parents and children.



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