



Inheritance

01. Select the correct statement out of the following,
 - 1) The feature that externally appears in an organism is known as its genotype
 - 2) Linked gene are on the same chromosome which freely segregate
 - 3) Albinism is a mutation occurred due to a gene responsible for the production of hemoglobin
 - 4) If two genes are similar in Length, width and the place of centromere they are called a homologues pair of chromosomes

02. The dominant gene responsible for haemophilia is H, while the recessive gene is h. The haemophilia carrier is
 - 1) $X^H X^h$
 - 2) $X^H X^H$
 - 3) $X^H Y$
 - 4) $X^h Y$

03. The F_1 generation was obtained by hybridizing a homozygous tall plant and a homozygous short plant. If 3 : 1 ratio of tall : short plants are to be obtained in F_2 generation, what is the most suitable cross to be performed among the following?
 - 1) Hybridizing F_1 plants with homozygous tall plant
 - 2) Hybridizing F_1 plants with homozygous short plant
 - 3) Self pollination of F_1 plants
 - 4) By any of the above three methods

04. Two disease caused by sex linked recessive genes are
 - 1) Thalassaemia, sickle cell anemia
 - 2) Thalassaemia, colour blindness
 - 3) Colour blindness, Albinism
 - 4) Haemophilia, colour blindness

05. Which of the following is not a heredity characteristic of an individual
 - 1) Complexion
 - 2) Syndactyly
 - 3) Growth of muscles
 - 4) Curved thumb

06. Two statements related to sex determination of human is given below,
 A – Probability of getting a girl is 50%
 B – When X chromosome of father is given, a girl is produced while the Y chromosome is of father is given a boy is produced in the formation of zygote
 Which is the correct related to statement A & B?
 - 1) A & B are true
 - 2) A is true B is false
 - 3) B is true A is false
 - 4) Both A & B are false

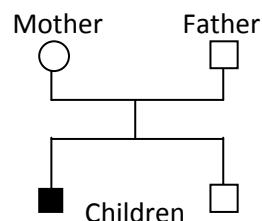
07. Select the incorrect statement of the following
 - 1) The gene expression of an organism is the pair of genes that represent certain character of that organism
 - 2) Gene is the base arrangement that found in DNA molecule responsible for certain character
 - 3) The genes that present on same chromosome which segregate independently are called gene linkage.
 - 4) The gene composition present in the organism which decides the characteristics of that organism; is genotype

08. Mendel's experiments on inheritance are very important due to,
- 1) Presenting a scientific concept about the transmission of inherited characteristics
 - 2) Explaining the process of inheritance through genes
 - 3) Explaining the process of inheritance through chromosomes
 - 4) Explaining the number of chromosomes in a cell is differ from a gamete cell

09. The number of sex chromosomes in human are
- 1) 23 Pair
 - 2) 1 chromosomes
 - 3) 23 chromosomes
 - 4) 1 pair chromosomes

10. In humans the allele for Talasemia is recessive. The diagram shows the inheritance of Talasemia in a family as follows. The genotypes of parents

- Talasemia male
- Normal female
- Normal male



- 1) Mother – Heterozygous , father – Heterozygous
- 2) Mother – Heterozygous, father – Homozygous dominant
- 3) Mother – Homozygous recessive, father – Homozygous dominant
- 4) Mother – Homozygous recessive, father – Homozygous recessive

Structured essay

01. Given below are the result of an experiment carried out by some students in hybridizing pea plants

Characteristics	Hybrid	F ₁ generation	F ₂ generation
Colour of Legume	Green x Yellow	Green	Green : Yellow 428 : 152

- i) What is the dominant character as well as the genotype of the parents
.....
- ii) Write down how characters are transmitted from the parents to the F₁ generation by a punnet diagram
.....
.....
.....
- iii) Show that the genotype ratio of the F₂ generation is TT ; Tt : tt (1:2:1)
.....
.....
- iv) What are the contrasting characters used in this experiment?
.....
- v) Transmission of inherited characters to the next generation is common to all living organisms. Accordingly explain briefly, the importance of not having marriage between blood relations
.....
.....

vi) Write down a disease that occurs due to a gene mutation

.....

B. Recombinant DNA technology is being used to alter the DNA in the genome

i) What is called as genome?

.....

ii) What is the most common bacteria that use in recombinant gene technology in medical field?

.....

iii) What is the main product produce by the above mentioned bacteria ?.....

iv) Identify the importance of following products produced by this gene technology

a) Golden rice -.....

b) Gene therapy -.....

v) Write two other importance of gene technology

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Essay

01.A) The process of transmission of characteristics from parental generation to their off springs ins called inheritance

i) a) What is meant by inherited characteristics?

b) Write two common inheritance characteristics that can be seen among human.

ii) Who is the father of inheritance?

ii) What is the scientific name of the plant that he used for his experiment?

iv) Write three importance of selecting the pea plant for the above experiment.

v) Why is Mendel’s experiment referred to as mono hybrid cross?

vi) During his first experiment obtained off springs by breeding a pure purple flower and a pure white flower (Dominant character – Purple flower)

a) Using suitable symbols draw an inheritance diagram to show the characteristics of the off spring in the first generation

b) What is the ratio between purple and white flowered off springs plants of the F₂ generation

vii) Define the following terms

a) Dominant character b) Homologous chromosomes

02. Even though X & Y chromosomes determine the human sex, all the genes present in those chromosomes are not used in determination of sex.

i) Write the number of

a) Non – sex chromosomes

b) Sex chromosomes present in human cell

ii) Unexpected phenotypic ratios can be obtained due to gene linkage

a) What is meant by gene linkage?

b) Write a sex linked disorder

iii) Haemophilia is a blood clotting disorder. A carrier for haemophilia married a healthy person. By means of an punnet square, show the possible genotypes & phynotypes of off springs and also indicate whether they are normal diseased or carrier.