Worksheet 9.3

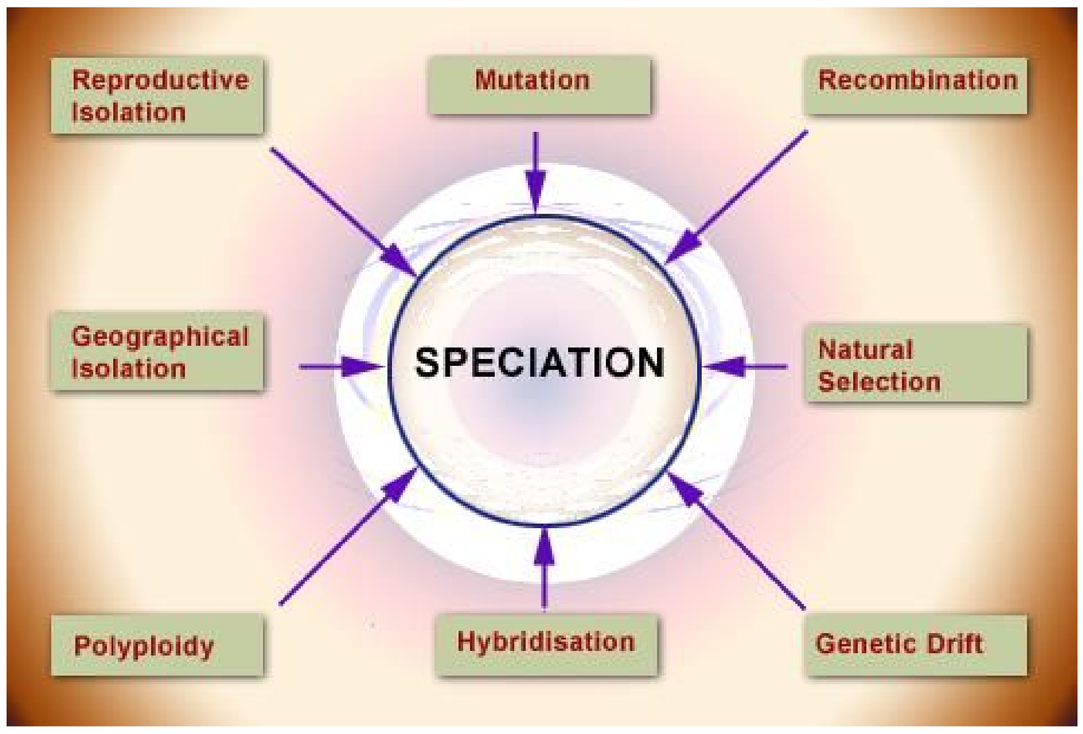
Marks - 25

Case study based questions

10th Science

Heridity and Evolution

Passage - 1 **5 Marks**



While studying biology, Priya came across the word "Speciation". He searched the internet which provided answers to her questions. The following questions were asked by her.

Q 1. State TRUE or FALSE: Genetic drift causes changes in small population.

(1) TRUE
(2) FALSE

Q 2. The elimination of crows by eagles is a process of

(1) Natural selection
(2) Artificial selection

Q 3. State TRUE or FALSE: New variations arise due to changes in the DNA of organisms.

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(1) TRUE
(2) FALSE

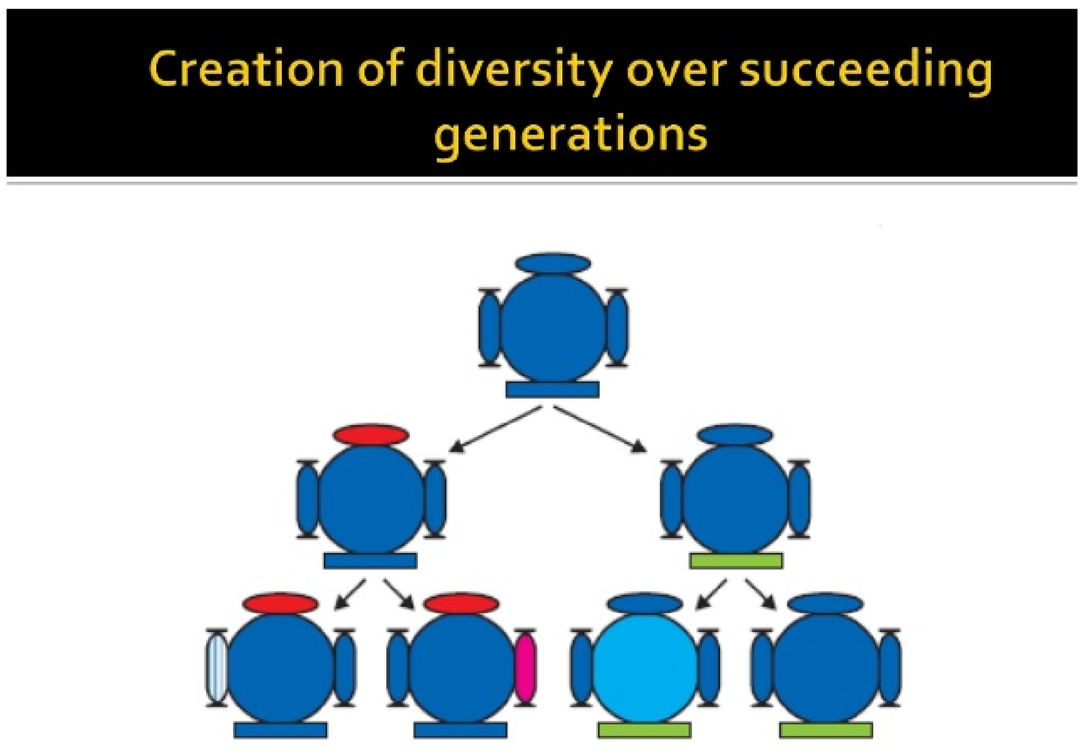
Q 4. Will geographical isolation be a major factor in the speciation of a self-pollinating plant species ?

(1) YES
(2) NO

Q 5. Will geographical isolation be a major factor in the speciation of a cross-pollinating plant species ?

(1) YES
(2) NO

Passage - 2 **5 Marks**



During a seminar, Renu saw the above slide. The picture was not clear to her so she asked certain doubts to her friends.

Worksheet 9.3

Marks - 25

Q 1. State TRUE or FALSE : Inheritence from the previous generation provides both a common basic body design, and subtle changes in it for the next generation.

(1) TRUE
(2) FALSE

Q 2. Which of these type of reproduction results in greater diversity ?

(1) Asexual reproduction
(2) Sexual reproduction

Q 3. Do all the variations in a species have equal chances of surviving in the environment in which they find themselves ?

(1) YES
(2) NO

Q 4. What forms the basis for evolutionary process ?

(1) Selection of variants
(2) Rejection of variants

Q 5. The variations from one generation to another occurs as a result of

(1) DNA copying
(2) RNA copying

Passage - 3

5 Marks

Worksheet 9.3

Marks - 25

The image of an eminent scientist was shown to a class of students. The students were asked some important questions regarding the contributions of this person to the world of heridity and evolution.

Q 1. Name the scientist in the picture.

(1) Mendel
(2) Newton
(3) Darwin
(4) Ross

Q 2. The scientist started his work in heridity by conducting experiments on

(1) Plant breeding and hybridization
(2) Animal breeding and hybridization

Worksheet 9.3

Marks - 25

Q 3. The scientis is known as the Father of

(1) Evolution
(2) Genetics
(3) Plant
(4) Breeding

Q 4. The scientific name of the organism in which he conducted his experiments is

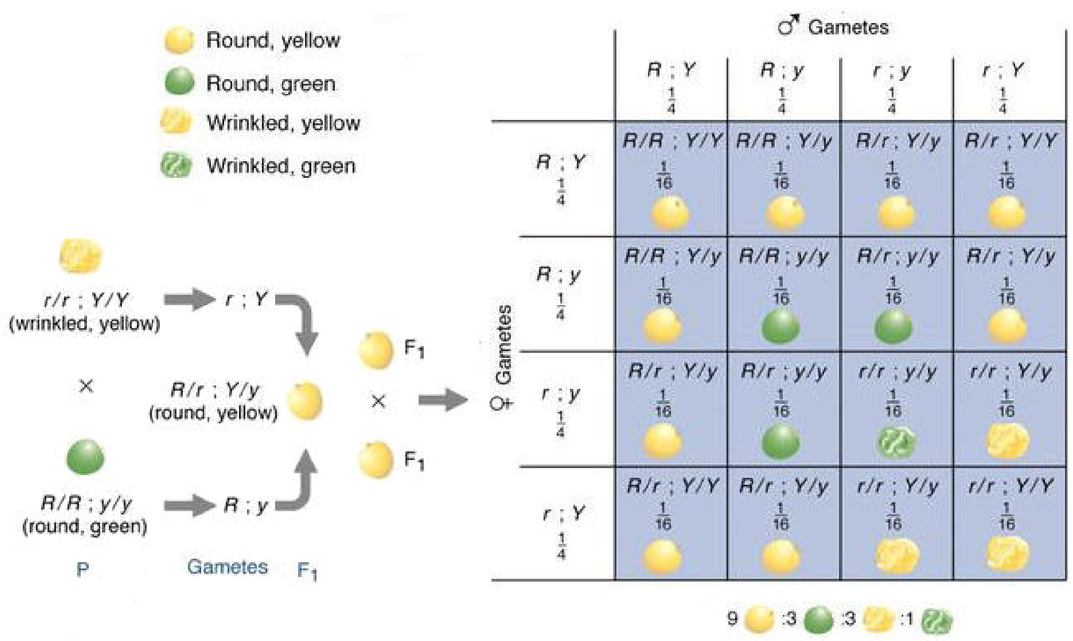
(1) Pisum Sativum
(2) Pisum Sativa
(3) Pisum sativum
(4) Pisum sativa

Q 5. The plant he selected for experimentation is commonly known as

(1) Garden Pea
(2) Wild Pea

Passage - 4

5 Marks



Students of class X were being taught about the cross conducted by Mendel to study inheritence. The students were asked certain questions at the end of the class.

Worksheet 9.3

Marks - 25

Q 1. State TRUE or FALSE: Mendel studied one character of the pea plant at a time.

(1) TRUE
(2) FALSE

Q 2. In case of monohybrid cross, the phenotypic ratio obtained in the F2 generation.

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

Q 3. In case of dihybrid cross, the phenotypic ratio obtained in the F2 generation.

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

Q 4. The manifestation of a character when it is masked is known as

(1) Dominant
(2) Recessive

Q 5. The homozygous dominant trait is denoted by

(1) Two capital letters
(2) Two small letters

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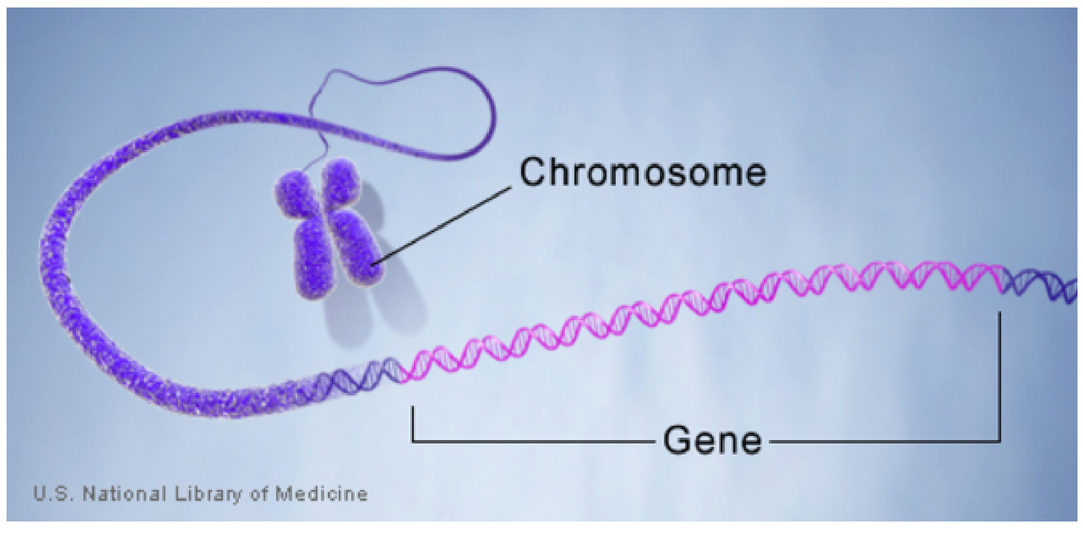
(3) One capital and one small letter
(4) None of these

Passage - 5 **5 Marks**



The above picture of genes within a chromosome. Renu was solving a test paper, when some questions related to this picture arrived. Help her solve the questions.

Q 1. Fill in the blank : The _____ controls a particular trait separate from each other during gamete formation.

(1) Genes
(2) Factors
(3) Both A and B
(4) None of A and B

Q 2. State TRUE or FALSE: In crossing if two or more traits are involved, their gene assort independently, irrespective of the combinations present in the parents.

(1) TRUE
(2) FALSE

Q 3. Genes carry information for producing

(1) Carbohydrates
(2) Fats
(3) Proteins
(4) Vitamins

Q 4. How many alleles does the offspring receive from his/her mother and father ?

(1) 1 each from both
(2) 1 from mother and 2 from father
(3) 1 from father and 2 from father
(4) 2 each from both

Q 5. Fill in the blank: The combination of the male and female germ cells gives a _____ zygote.

(1) Haploid
(2) Diploid

Worksheet 9.4

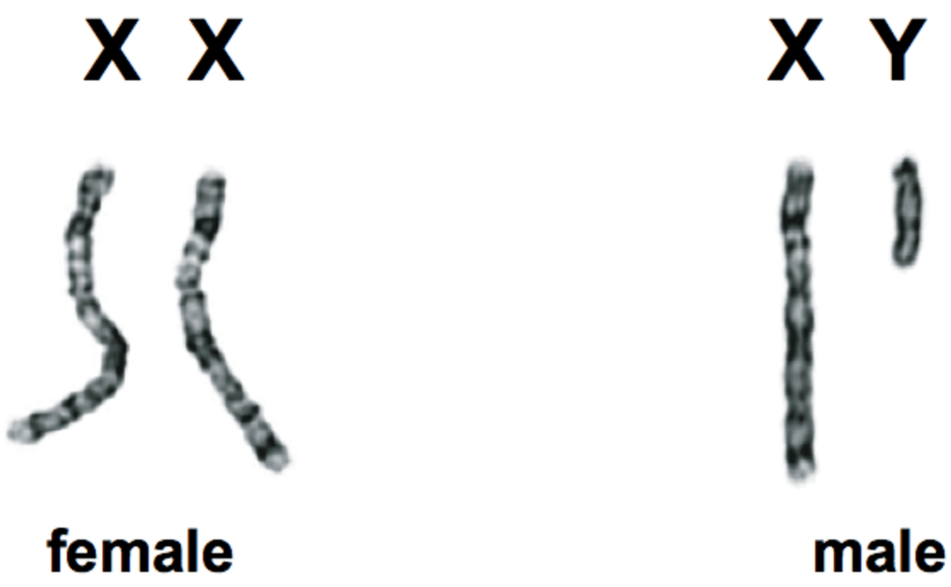
Marks - 25

Case study based questions

10th Science

Heridity and Evolution

Passage - 1 **5 Marks**



The above image shows a pair of sex chromosomes. In a quiz conducted in class X, certain questions were asked related to this topic.

Q 1. How many pairs of chromosomes are there in human beings ?

(1) 23
(2) 24
(3) 25
(4) 26

Q 2. How many pairs of sex chromosomes are there in human beings ?

(1) 1
(2) 2
(3) 3
(4) 4

Worksheet 9.4

Marks - 25

Q 3. How many pairs of autosomes are there in human beings ?

(1) 21
(2) 22
(3) 23
(4) 24

Q 4. Male sex chromosomes are

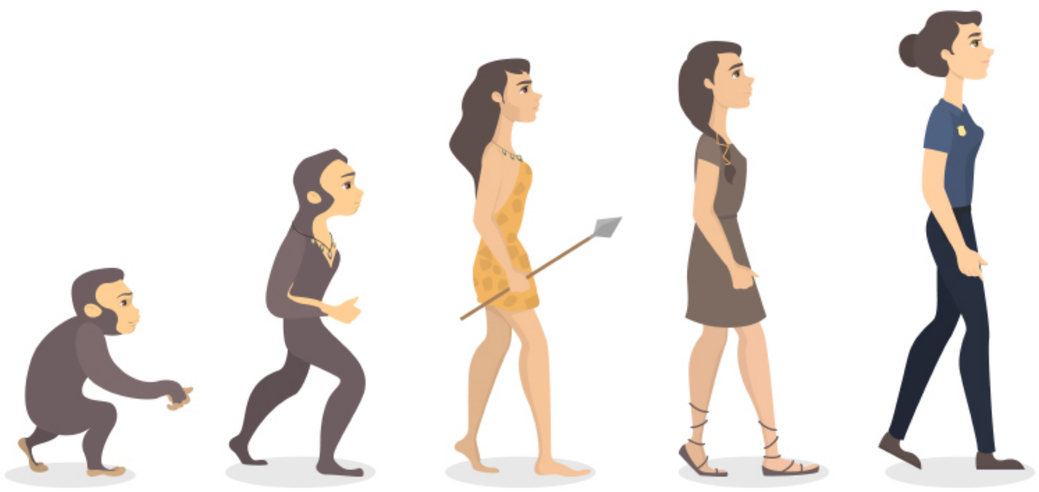
(1) Homozygous
(2) Heterozygous

Q 5. Female sex chromosomes are

(1) Homozygous
(2) Heterozygous

Passage - 2

5 Marks



On a field visit to a museum, a group of students saw the above painting hanging on the wall.

Q 1. Which phenomenon is indicated by the following picture ?

(1) Evolution
(2) Growth
(3) Hunting
(4) Death

Q 2. Fill in the blank: _____ can alter gene frequencies in small population and provide diversity without any survival benefits.

(1) Genetic raise
(2) Genetic drift
(3) Genetic reversal
(4) None of thesse

Q 3. State TRUE or FALSE: The changes occurring in the DNA of germ cells are heritable.

(1) TRUE
(2) FALSE

Q 4. State TRUE or FALSE: The changes occurring in the DNA of non-reproductive cells are heritable.

(1) TRUE
(2) FALSE

Q 5. Who proposed that evolution occured by natural selection ?

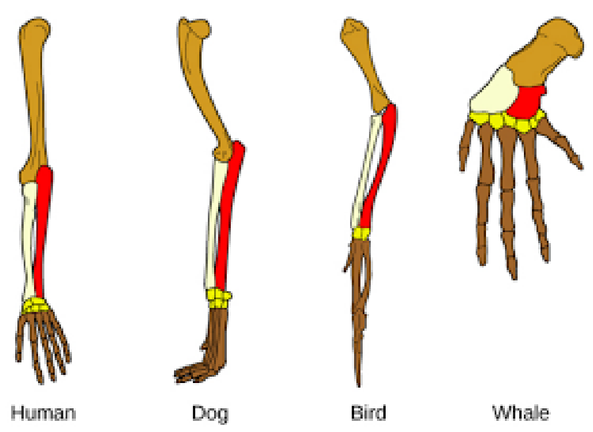
(1) Mendel
(2) Darwin
(3) Ross
(4) Einstein

Worksheet 9.4

Marks - 25

Passage - 3

5 Marks



Four types of bones were shown to the students as in the picture. The students were asked certain questions based on their observation.

Q 1. The organs in the given image are

(1) Homologous
(2) Analogous

Q 2. Wings of birds and wings of insects are

(1) Homologous
(2) Analogous

Q 3. The organs that have the same structural plan and origin but different functions are called

(1) Homologous organs
(2) Analogous organs

Q 4. The organs that have different origin and structural plan but sam function are called

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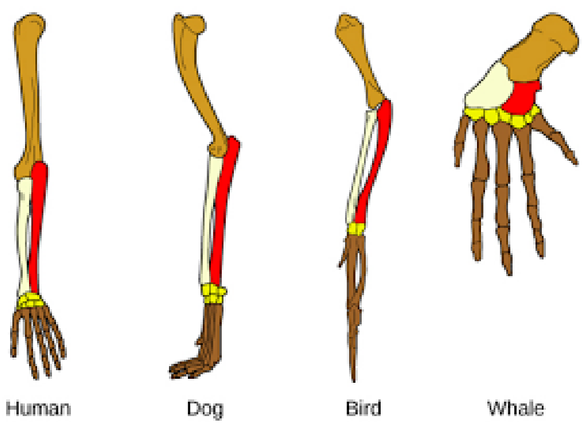
(1) Homologous organs
(2) Analogous organs

Q 5. Fill in the blank: _____ help in tracing evolutionary pathways.

(1) Genes
(2) Fossils
(3) Organs
(4) None of these

Passage - 4 **5 Marks**



Renu is given a project to find out about the details of the given picture.

Q 1. What does the picture represent ?

(1) Genes
(2) Fossils
(3) Organs
(4) None of these

Q 2. State TRUE or FALSE: The age of fossils can be determined by using the relative method or the isotope dating method.

(1) TRUE

(2) FALSE

Q 3. Evolution is a process of

(1) One step
(2) Two steps
(3) Three steps
(4) Four steps

Q 4. Fossils are found in

(1) Rocks
(2) Limestone
(3) Underwater
(4) All of these

Q 5. State TRUE or FALSE: Evolutionary studies have shown that birds are closely related to reptiles.

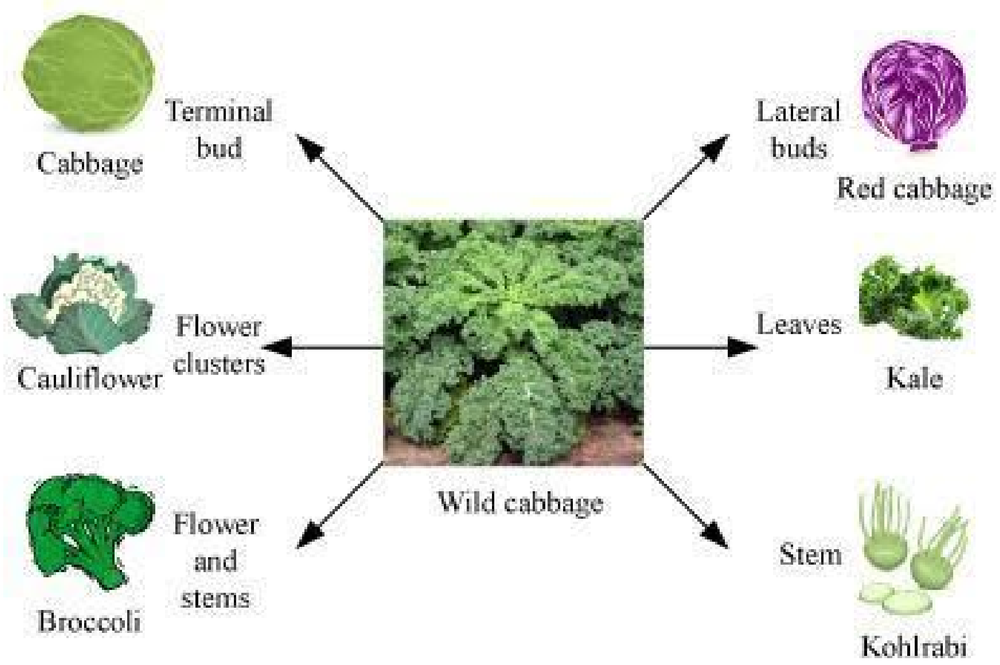
(1) TRUE
(2) FALSE

Passage - 5 **5 Marks**

Worksheet 9.4

Marks - 25

Evolution in the cabbage plant:



The image shows the evolution of cabbage over the ages.

Q 1. In cabbage, humans have carried out

(1) Natural selection
(2) Artificial selection

Q 2. The selected feature in Broccoli is

(1) Arrested flower development
(2) Sterile flowers
(3) Swollen parts
(4) ALL OF THE ABOVE

Q 3. Is cauliflower produced from wild cabbage by the process of artificial selection?

(1) YES
(2) NO

Worksheet 9.4

Marks - 25

Q 4. Is cabbage produced from wild cabage by the process of artificial selection?

(1) YES
(2) NO

Q 5. Which of the following has not been produced from wild cabbage by the process of artificial selection?

(1) Kohlrabi
(2) Cabbage
(3) Spinach
(4) Kale