

Time : 1 Hour 30 Minute

STD 10 Science  
Chapter Based Test

Total Marks : 50

SECTION A

\* Select and write one most appropriate option out of the four options given [7]  
for each of the questions

- If a round, green seeded pea plant (RRyy) is crossed with wrinkled, yellow seeded pea plant, (rrYY) the seeds produced in F<sub>1</sub> generation are:  
(A) Round and yellow. (B) Round and green. (C) Wrinkled and green. (D) Wrinkled and yellow.
- The genotype of the height of an organism is written as Tt. What conclusion may be drawn?  
(A) The allele for height has at least two different genes. (B) There are at least two different alleles for the gene for height. (C) There are two different genes for height, each having a single allele. (D) There is one allele for height with two different forms.
- In evolutionary terms, we have more in common with:  
(A) A chinese school boy. (B) A chimpanzee. (C) A spider. (D) Aa bacterium.
- The wings of a housefly and the wings of a pigeon are examples of:  
(A) Analogous organs (B) Vestigial organs (C) Respiratory organs (D) Homologous organs
- A recessive homozygote is crossed with a heterozygote of the same gene. What will be the phenotype of the F<sub>1</sub> -generation?  
(A) All dominant. (B) 75% dominant, 25% recessive. (C) 50% dominant, 50% recessive. (D) 25% dominant, 50% heterozygous, 25% recessive.
- According to scientists, aves have evolved from:  
a. Mammals.  
b. Amphibians.  
c. Reptiles.  
d. Arthropods.
- In order to ensure that he had pure-breeding plants for his experiments, Mendel:  
a. Cross-fertilised each variety with each other.  
b. Let each variety self fertilise for several generations.  
c. Removed the female parts of the plants.  
d. Removed the male parts of the plants.

\* Assertion - Reasoning based questions.

[3]

8. In the following questions, a statement of Assertion is given by the corresponding statement of Reason. Of the statements, mark the correct answer as:
- If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
  - If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
  - If Assertion is true, but Reason is false.
  - If Assertion is false, but Reason is true.
  - If both Assertion and Reason are false.

**Assertion:** The ratio of plants when Mendel took pea plants with two contrasting characters was 9 : 3 : 3 : 1.

**Reason:** The ratio of plants when Mendel took pea plants with one contrasting character was 1 : 1.

9. For two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
- Both A and R are true and R is correct explanation of the assertion.
  - Both A and R are true but R is not the correct explanation of the assertion.
  - A is true but R is false.
  - A is false but R is true.

**Assertion:** If blood group of both mother and father is 'O' then the blood group of children will also be O.

**Reason:** Blood group in humans is determined by many alleles of a gene viz.  $I^A$ ,  $I^B$ ,  $I^O$ .

10. For two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
- Both A and R are true and R is correct explanation of the assertion.
  - Both A and R are true but R is not the correct explanation of the assertion.
  - A is true but R is false.
  - A is false but R is true.

**Assertion:** In some reptiles, the temperature at which fertilised egg is incubated before hatching plays a role in determining sex of offspring.

**Reason:** In turtle, high incubation temperature above 33°C leads to development of female offspring whereas in lizards high incubation temperature results in male offspring.

\* **Fill in the blank with correct answer.[1 Mark each]** [2]

11. The theory of natural selection for evolution was proposed by \_\_\_\_\_.

12. The characteristic which is visible in an organisms is called its \_\_\_\_\_.

\* **Answer the questions.[1 Mark each]** [2]

13. State whether the following statement is true or false:  
Human beings have evolved from chimpanzees.

14. Write the scientific term for 'Science of heredity and variation.'

**SECTION B**

\* **Answer the following question. :** [10]

1. What is meant by variations found in a population?
2. Where are genes located in an organism?
3. Which of the following represent tall plants and which represent short plants (or dwarf plants)? Which of the following represent tall plants and which represent short plants (or dwarf plants)?

- a. Tt
- b. tt
- c. TT

Give reason for your choice (The symbols have their usual meaning).

4. What is meant by a species? Give two examples of plant species and two of animals.
5. Why do all the gametes formed in human females have an X chromosome?

### SECTION C

\* Answer short answer questions. [3 Mark each]

[12]

1. How are fossils formed? Describe, in brief, two methods of determining the age of fossils.
2. With the help of suitable examples, explain why certain traits cannot be passed on to the next generation. What are such traits called?
3. What is meant by acquired and inherited traits? Explain with one example each.
4. How are contributions of Darwin different from that of Mendel?

### SECTION D

\* Long answer questions [5 Mark each]

[10]

1. Give the basic features of the mechanism of inheritance.
2. "Only variations that confer an advantage to an individual organism will survive in a population". Do you agree with this statement? Give reason for your answer.

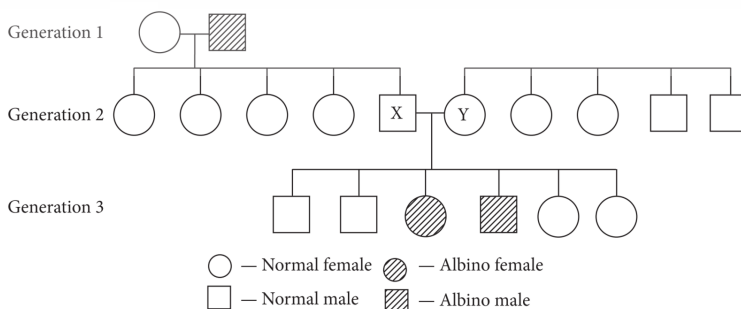
### SECTION E

\* case - based/data -based questions

[4]

1. Read the following and answer any four questions from (i) to (v).

Refer to the schematic representation of the albinism that is an inherited condition caused by recessive allele (a). 'A' is the dominant allele for the normal condition. The inheritance of certain genetic traits for two or more generations is represented in a pedigree or family tree. Study the given pedigree chart and answer the following questions.



i. Which of the following could be the genotypes of X and Y?

	<b>X</b>	<b>Y</b>
(a)	AA	AA
(b)	AA	Aa
(c)	Aa	Aa
(d)	aa	aa

ii. Which of the following could be the genotype of generation - 1 male and female?

	<b>Male</b>	<b>Female</b>
(a)	AA	aa
(b)	aa	AA
(c)	Aa	aa
(d)	AA	AA

iii. If X married an albino female, then what is the probability that their children would be albino?

- a. 0
- b. 0.125
- c. 0.25
- d. 0.5

iv. If Y married a normal homozygous male, then what is the probability that their children would be albino?

- a. 0
- b. 0.125
- c. 0.25
- d. 0.5

v. Which of the following could be the genotype of offsprings produced by cross of X and Y?

- a. AA, Aa, aa
- b. aa, aa
- c. Aa, Aa
- d. AA, AA

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