# WORKSHEET 2

## CHAPTER 4 – HEREDITY AND EVOLUTION

### A. Tick (✓) the correct option.

1. What is meant by gene flow?
   a. Floating of genes
   b. Exchange of genetic material
   c. Melting of genes
   d. None of the above
2. What is applicable for Y-chromosomes?
   a. They lack DNA.
   b. They lack histones.
   c. The contain genes for maleness.
   d. They contain genes for femaleness.
3. In the monohybrid cross done by Mendel,
   a. $F_1$ had 75% tall plants and 25% dwarf plants.
   b. $F_1$ had all tall plants.
   c. $F_1$ had all dwarf plants.
   d. None of the above was observed.
4. The genetic constitution of an individual organism is called
   a. its genotype. b. its phenotype. c. heredity. d. gene.
5. The forelimbs of man, cat, bat and whale are
   a. analogous organs. b. homologous organs. c. missing links. d. fossils.

### B. Fill in the blanks.

1. A zygote which has an X-chromosome inherited from the father develops into a _____ child.
2. The component of a chromosome that controls heredity is _____
3. Differences among individuals of a species are _____
4. _____ is the alternative forms of a gene.
5. _____ organs have different origin but similar functions.

### C. State true (T) or false (F).

1. Mutation can occur due to X-rays.
2. Vestigial organs are non-functional.
3. Miller and Urey carried out their experiment in presence of oxygen.
4. Ammonites are fossils of vertebrate animals.
5. Variation helps in evolution of species.

### D. Match the following.

| | |
|---|---|
| 1. Natural selection | (*a*) Lamarck |
| 2. Inheritance of acquired characters | (*b*) Phenotype |
| 3. Homozygous condition | (*c*) Darwin |
| 4. Physical traits | (*d*) Molecular phylogeny |
| 5. Study of DNA sequence | (*e*) TT |

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## E. Answer the following questions.

1. Differentiate between dominant and recessive characters.
2. Why is variation considered to be a raw material of organic evolution?
3. A very small population of a species faces a greater threat of extinction than a larger population. Provide a suitable genetic explanation.
4. With suitable example, highlight how temperature has an effect on sex determination in the animal world.
5. What are homologous structure? Give an example.

# ANSWERS

## WORKSHEET 2

### A. Tick (✓) the correct option.

1. b 2. c 3. b 4. a 5. b

### B. Fill in the blanks.

1. Female 2. Gene 3. Variation 4. Allele 5. Analogous

### C. State true (T) or false (F).

1. T 2. T 3. F 4. F 5. T

### D. Match the following.

1. (*c*) 2. (*a*) 3. (*e*) 4. (*b*) 5. (*d*)

### E. Answer the following questions.

1.

| | Dominant trait | Recessive trait |
|---|---|---|
| (*i*) | Expresses itself even in the presence of recessive allele. | Unable to express its effect in the presence of dominant allele. |
| (*ii*) | Can be expressed in homozygous as well as heterozygous condition. | Can be expressed in homozygous condition only. |
| | For example, Tallness in pea plant | For example, Dwarfness in pea plant |

2. Variation which are beneficial and help in better survival of the population are naturally selected and passed onto the progeny. Accumulation of such variation result in development of new species. Thus variation is the raw material of organic evolution.

3. A small population of species extensively inbreed among themselves resulting in less variation. We know that variation helps the organisms to adapt to the change in the environment. Hence small population can become extinct as they cannot cope with the environmental changes.

4. Effect of temperature on sex determination in the animal world.

   Sex determination is regulated by environmental factors in some animals. In some reptiles, the temperature at which the fertilized egg is incubated before hatching is important factor for determining the sex of the offspring. For example, in turtles, if fertilized egg is incubated at high temperature, it results in female progeny while incubation at low temperature produces male progeny. While in lizard, high incubation of fertilized egg results in male progeny while temperature below 28°C produces only female.

5. Organs similar in structure and origin but different in function are called homologous organs.

   For example, forelimbs of bird, horse and man.