

BIOLOGY 2018

PART TWO: STRUCTURED QUESTIONS (60 MARKS)

1. Define the following terms:

- (a) **Genetics:** is the study of variations and how they are inherited
- (b) **Fertilization:** is the fusion of the nuclei of the male and female gametes

2. Name four major parts of the forebrain.

- (a) Cerebrum
- (b) Thalamus
- (c) Hypothalamus
- (d) Pituitary gland

3. Compare between mitosis and meiosis.

Answer: **Mitosis** is a type of cell division in which a cell divides into two daughter cells each having the same number of chromosomes as the parent cell. Mitosis occurs in somatic (body) cells. **Meiosis** involves two divisions of the parental cell resulting into four daughter cells each having half the number of chromosomes as the parent cell. It takes place in reproductive organs.

4. (a) Name the parts: A(iris), B (pupil), C (lens), D (cornea), E (optic nerve), F (retina)

(c) Name three common eye defects that may limit seeing clearly.

- (i) Cataract
- (ii) Short-sightedness (Myopia)
- (iii) Long-sightedness (Hypermetropia)

5. Give the meaning of the following:

- (i) **Allele:** on the chromosomes, genes occur in pairs, such gene pairs are known as alleles (different forms of a gene).
- (ii) **Oviparous :** egg-lying mammals

6. Explain the role of DNA and RNA.

Answer: **DNA** stores genetic information in a coded form. **RNA** carries genetic information from DNA in the nucleus to the ribosome in the cytoplasm.

7. State the male and female gonads.

Answer: female gonads are the ovaries; the male gonads are the testes.

8. Give reasons as to why biological control is better than chemical control in the control of pests and parasites.

Answer: Biological control reduces reliance on non-biodegradable chemicals. It also reduces pollution.

9. State Mendel's first law of inheritance

Answer: Law of segregation: the pair of alleles segregates during gamete formation and the gamete contains only one of the alleles.

10. What is the physiological importance of why the male testes lie outside the male cavity?

Answer: it gives a cooler environment for sperm production

11. Give two examples of each of the following:

(i) Inherited traits:

- (a) Height
- (b) Skin colour

(ii) Acquired traits:

- (a) Learning how to write
- (b) Learning how to cook

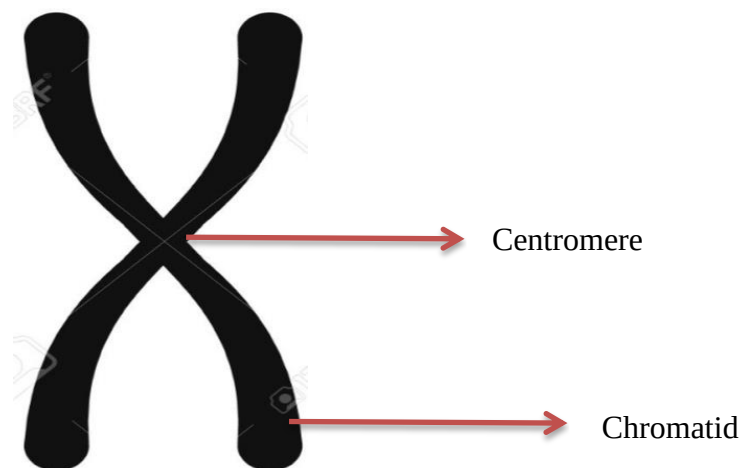
(iii) Continuous variation:

- (a) Finger print
- (b) Body weight

(iv) Discontinuous variation:

- (a) ABO blood group
- (b) Tongue rollers or non-tongue rollers

12. Draw the structure of the chromosomes and label its major parts.



13. Identify the cause and symptoms of typhoid disease.

Answer: the cause is bacterium called **Salmonella typhi**. Symptoms of typhoid disease are fever and headache, abdominal pain and vomiting, severe diarrhea, dry cough, and dehydration.

14. **Answer:** **A** (ear canal), **B** (eardrum), **C** (cochlea), **D** (auditory nerve).

END

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