ICSE Biology Question Paper

Maximum Marks: 80
Time: 2 hours

Instructions:
- All questions are compulsory.
- The intended marks for questions are given in brackets.

Section A (40 Marks)

All questions are compulsory

Q1. Choose the most appropriate option in each case. Write the correct number and the alphabet of the correct answer in your answer sheet. (5 × 1 = 5)

1. (1) The functional unit of a chromosome is:
    A. Gene B. Nucleus C. Centrosome D. Ribosome
2. (2) Which of the following is excretory in function?
    A. Large intestine B. Ureter C. Pancreas D. Duodenum
3. (3) Plasmolysis in a plant cell is due to:
    A. Osmosis B. Loss of water C. Gain of water D. Active transport
4. (4) In monohybrid cross, the phenotypic ratio in F2 generation is:
    A. 3:1 B. 1:2:1 C. 1:1 D. 9:3:3:1
5. (5) One of the following is not a cause of air pollution:
    A. Excessive use of fertilizers B. Emission from vehicles C. Deforestation D. Loudspeakers

Q2. Fill in the blanks with suitable words. (5 × 1 = 5)

- _____ is the pigment found in root hairs that helps in absorption.
- Genes are located on the _____.
- The human kidney contains functional units called _____.
- The study of population is called _____.
- _____ is the waste product excreted by lungs.

Q3. Name the following. (5 × 1 = 5)

- The outermost layer of a plant cell.
- The nitrogenous waste excreted by humans.
- The part of the nephron where filtration occurs.
- The type of pollution caused by burning fossil fuels.
- The process by which genetic traits are passed on from parents to offspring.

Q4. State whether the following statements are True or False. If false, rewrite the correct statement. (5 × 1 = 5)

- Xylem helps in the translocation of food in plants.
- Mitosis results in the formation of four daughter cells.
- Chromosomes are made of DNA and protein.
- Overcrowding is a factor that affects population growth.
- Skin is an excretory organ.

Q5. Match the items in Column A with those in Column B. (5 × 1 = 5)

Column A	Column B
(i) Allele	A. Structural unit of life
(ii) Nephron	B. Chromosome number in humans
(iii) Cell	C. Functional unit of kidney
(iv) 46	D. Alternate form of a gene
(v) Lenticels	E. Gaseous exchange in plants

Q6. Answer the following in short. (5 × 2 = 10)

- State two functions of the plasma membrane.
- Why are root hairs long and narrow?
- What is the role of Bowman's capsule in the excretory system?
- Define mutation. Give one example.
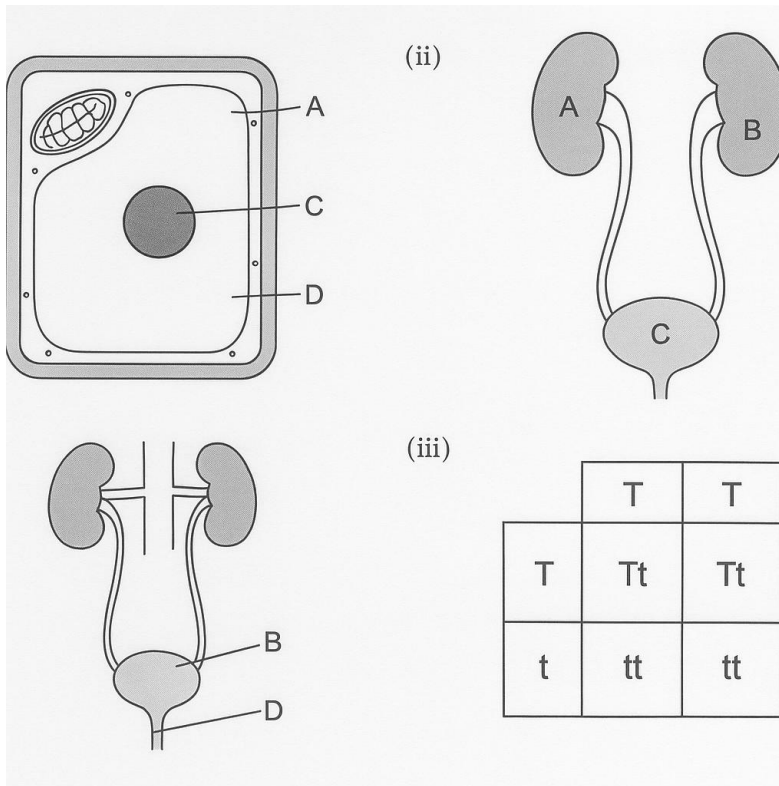- State two effects of noise pollution.

Section B (40 Marks)

Q7. Answer the following questions. (4 × 2 = 8)

- Define osmosis. Explain with an example from plant life.
- State any four differences between mitosis and meiosis.
- What are autosomes and sex chromosomes? How many of each are present in humans?
- List any two causes and two control measures for water pollution.

Q8. Give detailed answers. (3 × 4 = 12)

- With the help of a labelled diagram, describe the structure of a nephron.
- Describe an experiment to show that root hairs absorb water by osmosis.
- Explain Mendel's monohybrid cross using a suitable example. Show the genotypic and phenotypic ratios.

Q9. Diagram-Based Questions. (3 × 4 = 12)

i) The diagram below shows a plant cell. Label parts A, B, C, and D. Then, write two differences between plant and animal cells.

ii) Study the given diagram of the human excretory system and answer:
Label parts A (organ), B (tube), C (filtering unit), D (urine-carrying tube). Then, state the function of any two parts.

iii) Observe the following Punnett square and answer:
Label the genotypes of parents. Write the genotypic and phenotypic ratios of the F2 generation.

Q10. Answer any one of the following. (1 × 8 = 8)

- (a) Write a detailed note on the causes and consequences of air pollution.
- OR
- (b) What is population explosion? Mention any four problems caused by overpopulation. Suggest any four ways to control population.