

**ICSE Board  
Class X Biology  
Board Paper 2017  
(Two hours)**

**General Instructions:**

**Total Marks: 80**

---

*Answers to this paper must be written on the paper provided separately.*

*You will **not** be allowed to write during the first **15** minutes.*

*This time is to be spent in reading the question paper.*

*The time given at the head of the paper is the time allowed for writing the answers.*

---

*Attempt **all** questions from **Section I** and **any four** questions from **Section II**.*

*The intended marks of questions or parts of questions are given in brackets [ ].*

---

**SECTION I (40 Marks)**

*Attempt **all** questions from this Section*

**Question 1**

- (a) Name the following: [5]
- (i) The process by which root hairs absorb water from the soil.
  - (ii) The organ which produces urea.
  - (iii) The kind of lens required to correct Myopia.
  - (iv) The pituitary hormone which stimulates contraction of uterus during child birth.
  - (v) The international health organisation which educates people in accident prevention.
- (b) Choose the correct answer from each of the four options given below: [5]
- (i) The prime source of chlorofluorocarbons is:
    - A. Vehicular emissions
    - B. Industrial effluents
    - C. Domestic sewage
    - D. Refrigeration equipments

- (ii) Penicillin obtained from a fungus is:
- A. Antibiotic
  - B. Antiseptic
  - C. Antibody
  - D. Antiserum
- (iii) Marine fish when placed in tap water bursts because of:
- A. Endosmosis
  - B. Exosmosis
  - C. Diffusion
  - D. Plasmolysis
- (iv) Surgical method of sterilisation in a woman involves cutting and tying of:
- A. Ureter
  - B. Uterus
  - C. Urethra
  - D. Oviduct
- (v) Synthesis phase in the cell cycle is called so, because of the synthesis of more:
- A. RNA
  - B. RNA and proteins
  - C. DNA
  - D. Glucose
- (c) The statements given below are incorrect. Rewrite the correct statement by changing the underlined words of the statements. [5]
- (i) The Graafian follicle, after ovulation turns into a hormone producing issue called Corpus callosum.
  - (ii) Deafness is causal due to the rupturing of the Pinna.
  - (iii) Gyri and Sulci are the folds of Cerebellum.
  - (iv) Free movement of solutes in and out of the cell takes place across the cell membrane.
  - (v) The solvent used to dissolve the chlorophyll pigments while testing a leaf for starch is Soda lime.

- (d) Given below are sets of five terms each. Rewrite the terms in correct order in a logical sequence.

Example : Large intestine, Stomach, Mouth, Small intestine, Oesophagus.

Answer : Mouth → Oesophagus → Stomach → Small intestine → Large intestine.

- (i) Fibrin, Platelets, Thromboplastin, Fibrinogen, Thrombin.
  - (ii) Cochlea, Malleus, Pinna, Stapes, Incus.
  - (iii) Receptor, Spinal cord, Effector, Motor neuron, Sensory neuron.
  - (iv) Uterus, Parturition, Fertilisation, Gestation, Implantation.
  - (v) Caterpillar, Snake, Owl, Frog, Green leaves.
- (e) Choose the ODD one out of the following terms given and name the CATEGORY to which the others belong: [5]
- (i) Aqueous humour, Vitreous humour, Iris, Central canal
  - (ii) Formalin, Iodine, DDT, Lime
  - (iii) ACTH, TSH, ADH, FSH
  - (iv) Phosphate, RNA, Sugar, Nitrogenous base
  - (v) Bile, Urea, Uric acid, Ammonia
- (f) Given below are groups of terms. In each group the first pair indicates the relationship between the two terms. Rewrite and complete the second pair on a similar basis.
- Example : Oxygen : Inspiration : : Carbon dioxide : Expiration
- (i) Eye : Optic nerve : : Ear : \_\_\_\_\_
  - (ii) Cytoplasm : Cytokinesis : : Nucleus : \_\_\_\_\_
  - (iii) TT : Homozygous : : Tt : \_\_\_\_\_
  - (iv) Foetus : Amnion : : Heart : \_\_\_\_\_
  - (v) Adenine : Thymine : : Cytosine : \_\_\_\_\_

- (g) Match the items given in Column A with the most appropriate ones in Column B and rewrite the correct matching pairs.

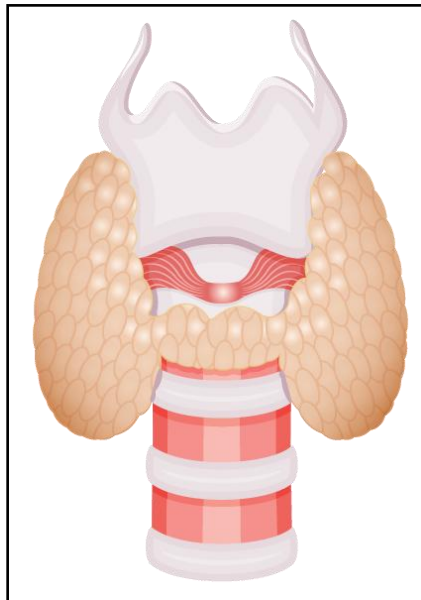
**Column A**

1. Sacculus
2. Birth rate
3. DNA and histones
4. Euro norms
5. Diabetes mellitus

**Column B**

- dynamic body balance
- Hyperglycemia
- Hypoglycemia
- Natality
- static body balance
- vehicular standards
- nucleosome

- (h) The diagram given below represents the location and structure of an endocrine gland. Study the same and answer the questions that follow: [5]



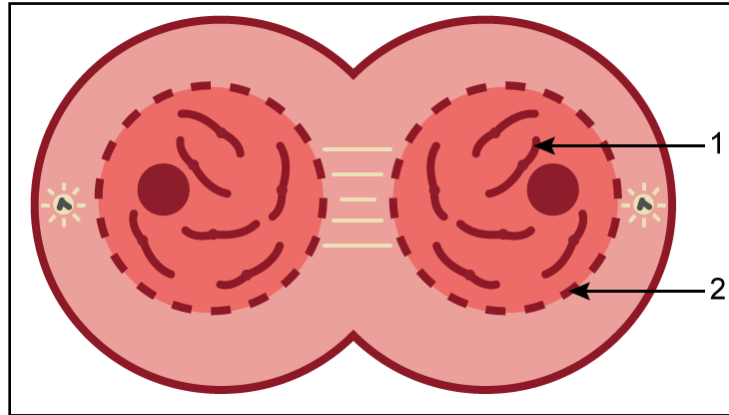
- (i) Name the endocrine gland shown in the diagram.
- (ii) Name the secretion of the gland which regulates basal metabolism.
- (iii) Name the mineral element required for the synthesis of the above mentioned hormone.
- (iv) Name the disease caused due to undersecretion of the above mentioned hormone in children.
- (v) Name the disease caused due to hypersecretion of the above mentioned hormone.

## SECTION II (40 Marks)

Attempt any **four** questions from this Section

### Question 2

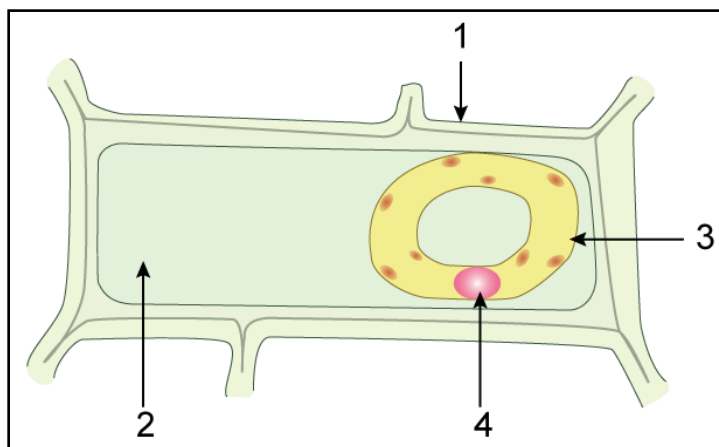
- (a) Study the diagram given below which represents a stage during the mitotic cell division and answer the questions that follow: [5]



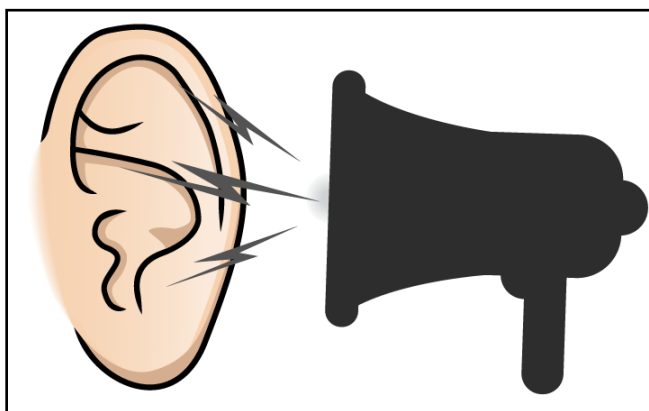
- (i) Identify the stage giving suitable reasons.
  - (ii) Name the parts numbered 1 and 2.
  - (iii) What is the technical term for the division of nucleus?
  - (iv) Mention the stage that comes before the stage shown in the diagram. Draw a neat labelled diagram of the stage mentioned.
  - (v) Which is the cell division that results in half the number of chromosomes in daughter cells?
- (b) Differentiate between the following pairs on the basis of what is mentioned in brackets: [5]
- (i) Active Transport and Diffusion [Significance in plants]
  - (ii) Demography and Population density [Definition]
  - (iii) Antibiotic and Antibody [Source]
  - (iv) Renal cortex and Renal medulla [Parts of the nephrons present]
  - (v) NADP and ATP [Expand the abbreviation]

### Question 3

- (a) The diagram given below represents a plant cell after being placed in a strong sugar solution. Study the diagram and answer the questions that follow: [5]



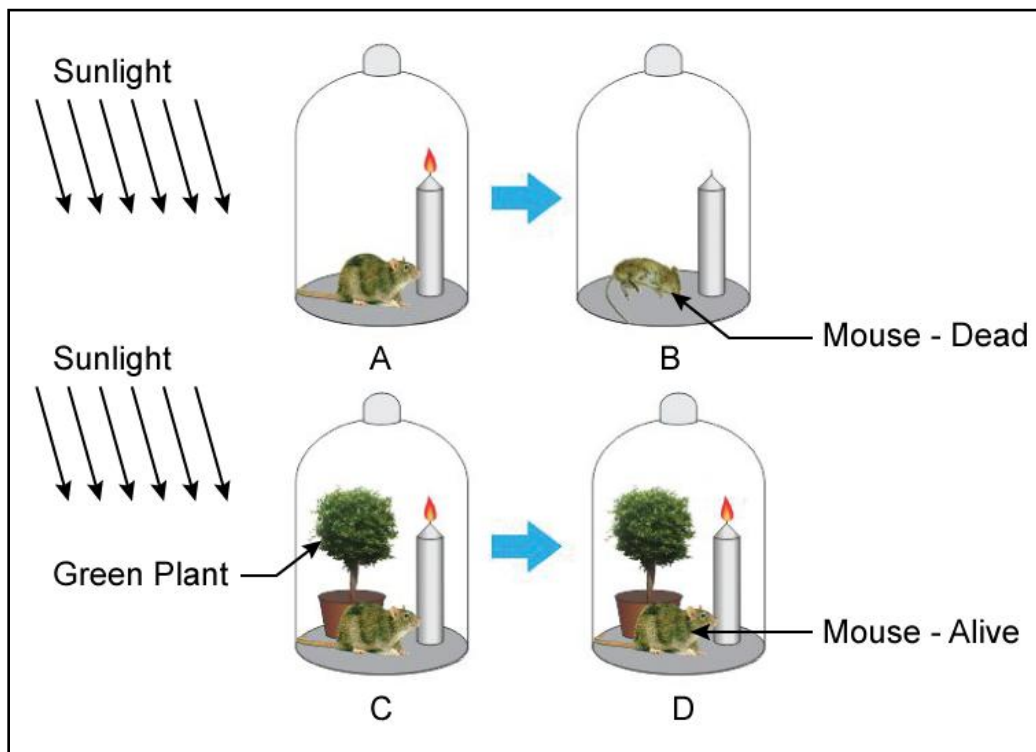
- (i) What is the state of the cell shown in the diagram?
  - (ii) Name the structure that acts as a selectively permeable membrane.
  - (iii) Label the parts numbered 1 to 4 in the diagram.
  - (iv) How can the above cell be brought back to its original condition? Mention the scientific term for the recovery of the cell.
  - (v) State any two features of the above plant cell which is not present in animal cells.
- (b) Given below is a representation of a kind of pollution. Study the same and answer the questions that follow: [5]



- (i) Name the kind of pollution.
- (ii) List any three common sources of this pollution.
- (iii) Mention three harmful effects of this pollution on human health.
- (iv) Explain the term 'Pollutant'.
- (v) Name two soil pollutants

#### Question 4

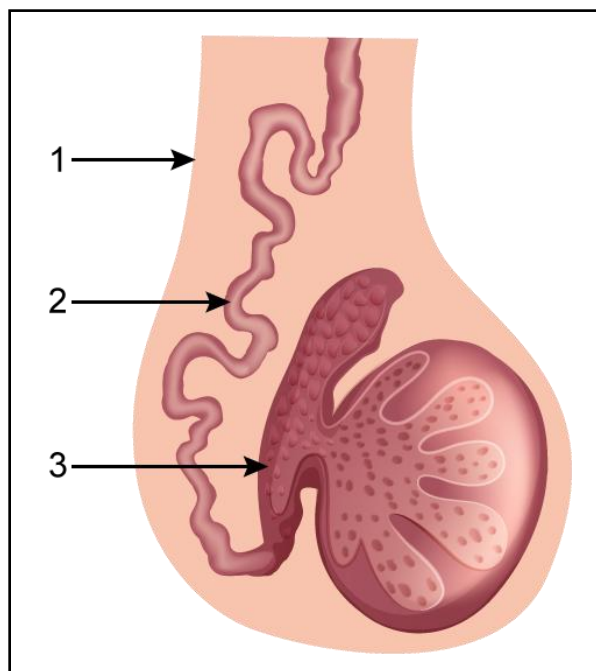
- (a) The diagrams given below represent the relationship between a mouse and a physiological process that occurs in green plants. Study the diagrams and answer the questions that follow: [5]



- Name the physiological process occurring in the green plant that has kept the mouse alive.
  - Explain the physiological process mentioned above.
  - Why did the mouse die in bell jar B?
  - What is the significance of the process as stated in (i) for life on earth?
  - Represent the above mentioned physiological process in the form of a chemical equation.
- (b) Mention the exact location of the following: [5]
- Prostate gland
  - Myelin sheath
  - Islets of Langerhans
  - Semi-circular canals
  - Eustachian tube

### Question 5

- (a) The diagram shown below is the longitudinal section of a testis of man. Study it carefully and answer the questions that follow: [5]

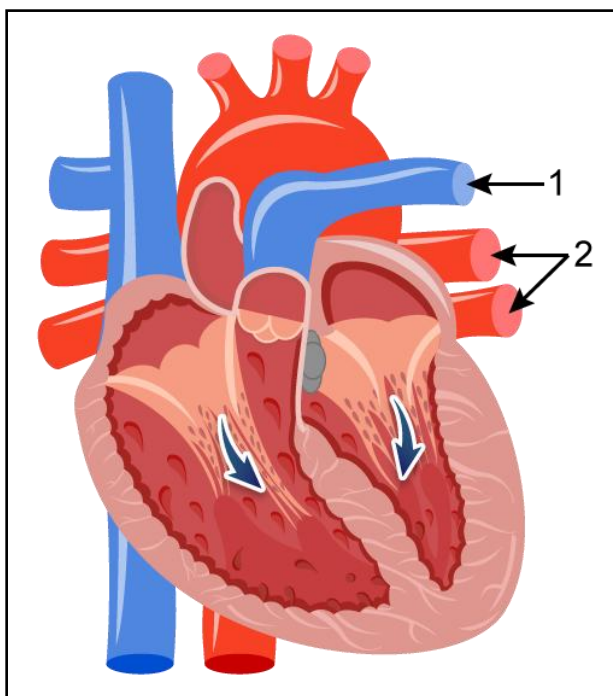


- (i) Label the parts numbered 1 to 3 in the diagram.
  - (ii) In which part of the testis are the sperms produced?
  - (iii) State the functions of the parts labelled 1 and 3 in the diagram.
  - (iv) Name the cells that secrete Testosterone.
  - (v) Draw a neat, labelled diagram of a sperm.
- (b) Give biological reasons for the following statements: [5]
- (i) Some women have facial hair like beard and moustache.
  - (ii) Cutting of trees should be discouraged.
  - (iii) In some xerophytes leaves are modified into spines.
  - (iv) There is frequent urination in winter than in summer.
  - (v) The left ventricle of the heart has a thicker wall than the right ventricle.



### Question 6

- (a) The diagram given below represents a section of the human heart. Answer the questions that follow : [5]

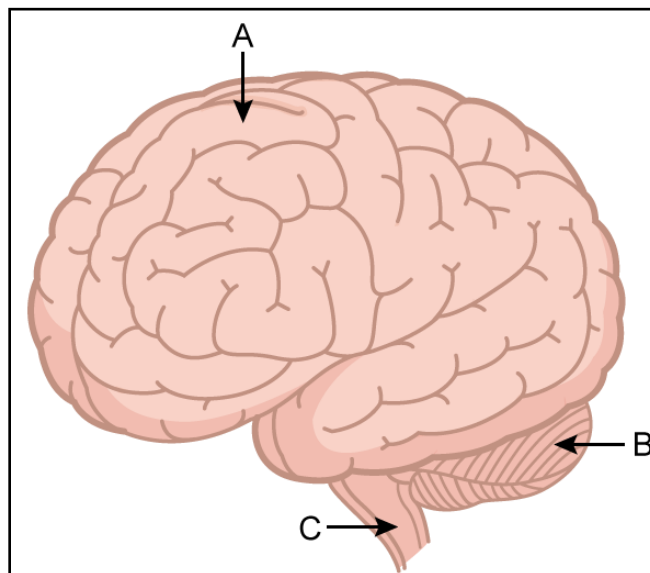


- (i) Which parts of heart are in the diastolic phase? Give a reason to support your answer.
  - (ii) Label the parts numbered 1 and 2 in the diagram. What type of blood flows through them?
  - (iii) What causes the heart sounds 'LUBB' and 'DUP'?
  - (iv) Name the blood vessels that supply oxygenated blood to the heart muscles.
  - (v) Draw neat labelled diagrams of a cross section of an artery and a vein.
- (b) Give appropriate **biological/technical** terms for the following: [5]
- (i) The type of immunity that exists in our body due to our genetic makeup.
  - (ii) The suppressed allele of a gene.
  - (iii) The accessory gland in human males whose secretion activates the sperms.
  - (iv) An apparatus that measures the rate of water uptake in a cut shoot due to transpiration.
  - (v) The kind of twins formed from two fertilized eggs.

- (vi) A pair of corresponding chromosomes of the same size and shape, one from each parent.
- (vii) The mild chemical substance which when applied on the body kills germs.
- (viii) The type of waste generated in hospitals and pathological laboratories.
- (ix) The antiseptic substance in tears.
- (x) Cellular components of blood containing hemoglobin.

### Question 7

- (a) In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a). [5]
- (i) What is the phenotype and genotype of the  $F_1$  generation if a plant bearing pure axial flowers is crossed with a plant bearing pure terminal flowers?
  - (ii) Draw a Punnett square board to show the gametes and offsprings when both the parent plants are heterozygous for axial flowers.
  - (iii) What is the phenotypic ratio and genotypic ratio of the above cross shown in (ii)?
  - (iv) State Mendel's Law of Dominance.
  - (v) Name two genetic disorders commonly seen in human males.
- (b) The diagram given below is an external view of the human brain. Study the same and answer the questions that follow : [5]



- (i) Name the parts labelled A, B and C in the diagram.
- (ii) State the main functions of the parts labelled A and B.

- (iii) What are the structural and functional units of the brain? How are the parts of these units arranged in A and C?
- (iv) Mention the collective term for the membranes covering the brain.
- (v) What is the function of Cerebrospinal fluid?