



# KARNATAKA ICSE SCHOOLS ASSOCIATION

## ICSE STD. X Preparatory Examination 2024

**Subject: BIOLOGY**

**Maximum Marks: 80**

**Time Allowed: 2 Hrs**

**Date: 31.01.2024**

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

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

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

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

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**Section A is compulsory. Attempt any four questions from Section B**

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

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### SECTION A

*(Attempt all questions from this Section.)*

#### Question 1

Choose the correct answers to the questions from the given options.

[15]

(Do not copy the question, write the correct answers only.)

- (i) The special openings that develop on the barks of older stems are called as:
- (a) Cuticle
  - (b) Lenticels
  - (c) Stomata
  - (d) Hydathodes
- (ii) The most effective lights of the visible spectrum for photosynthesis are
- (a) Blue and green
  - (b) Blue and orange
  - (c) Blue and red
  - (d) Violet and yellow
- (iii) The biological or technical term for the process of fixing of blastocyst to the wall of the endometrium is.
- (a) Fertilisation
  - (b) Implantation
  - (c) Parturition
  - (d) Gestation
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- (iv) While viewing a slide of longitudinal section of kidney under high power Shreya found the renal cortex to have dotted appearance. The cortex appears dotted due to the presence of
- (a) Henle's loop and Collecting duct
  - (b) PCT and DCT
  - (c) Bowman's capsule and DCT
  - (d) Bowman's capsule and PCT
- (v) The tendinous cord like structure present in the ventricles of the heart that holds the cuspid valves in position is.
- (a) Tendons
  - (b) Ligaments
  - (c) Chordae tendinae
  - (d) Cardiac muscles
- (vi) Assertion (A): The function of Lymphocytes and Monocytes present in the lymph is to defend the body against infections.  
Reason (R): The lymphocytes produce antibodies and the Monocytes are phagocytic in function.
- (a) Both A and R are True
  - (b) Both A and R are False
  - (c) A is True and R is False
  - (d) A is False and R is True
- (vii) One among the following is the function of the plant hormone Cytokinin.
- (a) Promote growth of internodes by cell elongation
  - (b) Promotes apical dominance
  - (c) Promotes chlorophyll synthesis
  - (d) Helps in ripening of fruits
- (viii) The complex formed by the winding of DNA strands around the core of eight histones is.
- (a) Nucleotides
  - (b) Nitrogenous bases
  - (c) Proteins
  - (d) Nucleosomes
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- (ix) Fruits and vegetables sometimes burst when kept in water for a longtime.  
This is because:
- (a) Turgor pressure is less than wall pressure
  - (b) Turgor pressure exceeds wall pressure
  - (c) Osmotic pressure exceeds turgor pressure
  - (d) Turgor pressure equals wall pressure
- (x) A plant with Yellow and Wrinkled seeds with the genotype (Yyww) will give rise to the following gametes.
- (a) Yy and ww
  - (b) Yw and Yw
  - (c) Yw and yw
  - (d) Yw and ww
- (xi) The hyposecretion of cortisone causes
- (a) Cushing's syndrome
  - (b) Addison's disease
  - (c) Adrenal virilism
  - (d) Acromegaly
- (xii) The surgical method in which the sperm duct is cut and ligated is termed as:
- (a) Vasectomy
  - (b) Vitrectomy
  - (c) Tubectomy
  - (d) Hormonal method
- (xiii) The use of non-conventional sources of energy needs to be encouraged. Which of the following reasons makes non-conventional sources of energy better than the conventional sources?
- P. Easily available in nature
  - Q. Do not cause environmental pollution
  - R. Are non-renewable sources of energy
- (a) Only P
  - (b) Only Q
  - (c) Only P and Q
  - (d) Only Q and R
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- (xiv) The light dependent phase of photosynthesis takes place in:
- (a) Grana
  - (b) Stroma
  - (c) Frets
  - (d) Stoma
- (xv) Snehal was looking at a nearby object. For better viewing which of the following is / are involved in the change in curvature of the elastic lens making it thicker?
- 1. Ciliary body
  - 2. Ciliary muscles
  - 3. Suspensory ligament
  - 4. Pupil
- (a) Only 4
  - (b) Only 1 and 2
  - (c) Only 1,3 and 4
  - (d) Only 1, 2 and 3

## Question 2

- (i) Name the following: [5]
- (a) A pair of corresponding chromosomes of the same shape and size one from each parent.
  - (b) The passage of substances from its lower to higher concentration through living cell membrane using cell energy.
  - (c) The chemical substance released at the site of injury which initiates the process of clotting of blood.
  - (d) The innermost layer of the meninges.
  - (e) The number of individuals per square kilometer at any given time.
- (ii) Arrange and rewrite the terms in each group in the correct order so as to be in a logical sequence beginning with the term that is underline. [5]
- (a) Parturition, Implantation, Gestation, Fertilization
  - (b) Homo erectus, Neanderthals, Australopithecus, Cro magnon
  - (c) Ear ossicles, Pinna, Auditory nerve, Auditory canal
  - (d) Snake, Rat, Grains, Peacock
  - (e) Root hair, Cortex, Soil water, Xylem
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(iii) Fill in the blanks with suitable words: [5]  
 When we pass from a brightly lighted area to a dark room, we experience difficulty in seeing the objects, slowly our vision improves. This improvement is called (a) \_\_\_\_\_. This change is due to regeneration of the (b) \_\_\_\_\_ pigment of the (c) \_\_\_\_\_. And also due to the (d) \_\_\_\_\_ of pupil permitting more (e) \_\_\_\_\_ to enter the eyes.

(iv) Choose the odd one out from the following terms and name the category to which the others belong: [5]  
 (a) Simple goitre, Cretinism, Diabetes insipidus, Myxoedema  
 (b) Syringes, Needles, DDT, Dirty cotton bandages  
 (c) Cerebrum, Cerebellum, Medulla Oblongata, Pons  
 (d) Auxins, Gibberellins, Absciscic acid, Cytokinins  
 (e) Bowman’s capsule, Axon, Henle’s loop, Collecting tubule

(v) Match the items given in Column I with the most appropriate ones in Column II and rewrite the correct matching pairs. [5]

<b>Column I</b>	<b>Column II</b>
(a) Recessive gene	1. Downward flow of sap
(b) Phloem	2. 12 pairs
(c) Liquid part squeezed out of blood during clotting	3. A gene that can express only in homozygous condition.
(d) Cranial nerves	4. 10 pairs
(e) Conjunctiva	5. Serum
	6. Single layer of transparent membrane.
	7. Plasma

### SECTION B

*(Attempt any four questions from this Section.)*

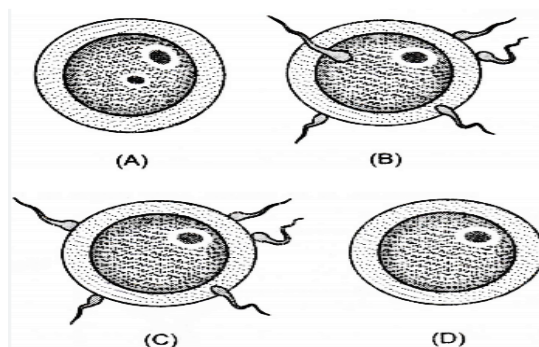
#### Question 3

- (i) State Mendel’s Law of Purity of gametes. [1]
- (ii) Define mutation. Give an example of a disease caused by mutation. [2]
- (iii) What are autosomes? Mention the number of autosomes present in humans. [2]
- (iv) Explain any two reasons why Mendel selected pea plants for his experiments. [2]

- (v) A pea plant which is homozygous for axial flowers which are purple (AAPP) is crossed with a homozygous plant for terminal flowers which are white (aapp). [3]
- (a) Give the genotype of the offsprings of F<sub>1</sub> generation.
- (b) Write the phenotypic ratio of the F<sub>2</sub> generation.
- (c) What is the scientific name of the plant which Mendel used for his experiments?

#### Question 4

- (i) State the exact function of Leydig cells. [1]
- (ii) Name the two hormones produced by the pituitary gland during the ovulatory phase of the menstrual cycle. [2]
- (iii) Write any two functions of Amniotic fluid. [2]
- (iv) Differentiate between Spermatogenesis and Oogenesis. [2]
- (v) Given below are the stages in the process of fertilisation of an egg. Study the same and answer the questions: [3]

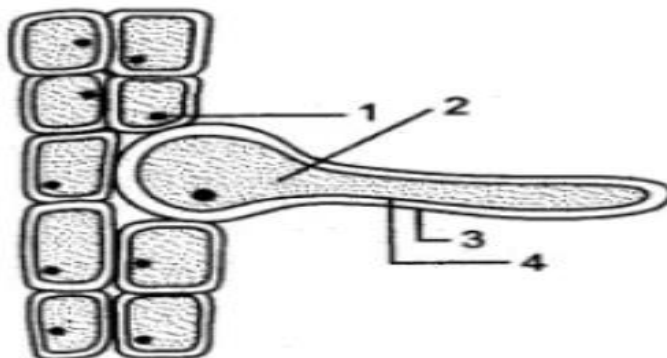


- (a) Arrange the above stages in logical sequence.
- (b) Where does the process of fertilization take place in human female?
- (c) What is the product of fertilisation?

#### Question 5

- (i) Explain the term Root pressure. [1]
- (ii) Rani transplanted few saplings in her garden in the afternoon. After about an hour she found that the leaves of the saplings drooped down (wilted). Give reason for the drooping of leaves? [2]
- (iii) A normal cell when placed in a certain solution for some time became flaccid. Identify the nature of the solution and the phenomenon which lead to the change in the cell? [2]
- (iv) Differentiate between Guttation and Bleeding. [2]

- (v) Given below is a structure of grown root hair cell. Observe the same and answer the questions: [3]



- (a) Root hair cell is unicellular. Justify the statement.  
 (b) Write the difference between part labelled as 3 and 4 based on their permeability.  
 (c) Draw a neat diagram of the root hair cell as it would appear when concentrated salt solution is added near it

### Question 6

- (i) Expand the abbreviation NADP. [1]  
 (ii) Chlorophyll is highly sensitive to light. Too much of light may destroy chlorophyll. But small plants or grasses growing in the shade or under rocks turn yellowish. Why? [2]  
 (iii) Mention any two adaptations in leaves to perform the process of photosynthesis. [2]  
 (iv) To study the necessity of a particular factor Raju prepared an experimental set-up using long leaf and a bottle containing potassium hydroxide. He inserted half the leaf inside the bottle using split cork and kept this set-up in sunlight. Name the factor being studied by the experimental set-up and what is use of potassium hydroxide in the experiment. [2]  
 (v) Draw a neat labelled diagram of an animal cell in the anaphase stage having 6 chromosomes. [3]

### Question 7

- (i) What is Apical dominance? [1]  
 (ii) Pituitary gland is called 'Master gland'. Why? Name the hormone secreted by this gland for the regulation of urine output. [2]  
 (iii) State any two limitations in the use of potometer. [2]

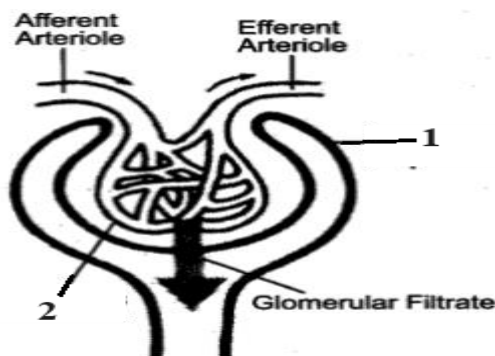
- (iv) Who proposed the Theory of inheritance of acquired characters? Give an example for the principle 'Use and disuse' of organs. [2]
- (v) The figure given below shows a kind of pollution. Study the same and answer the questions: [3]



- (a) Write one natural source for the pollution shown above.
- (b) Mention any one measure to reduce the above pollution.
- (c) What is the effect of smog on human health?

### Question 8

- (i) State the exact location of Kidney. [1]
- (ii) Mention one function each for – Hypothalamus and Medulla oblongata [2]
- (iii) Gametes are produced by Meiosis. Give reason. [2]
- (iv) Give one difference between Blood pressure and Pulse [2]
- (v) The diagram given below is of Malpighian capsule. Observe the diagram and answer the questions. [3]



- (a) Name the process that takes place in parts labelled as 1 and 2.
- (b) Define the process mentioned in (a).
- (c) Mention any one organic constituent present in urine.