

ICSE 2023 EXAMINATION
MODEL QUESTION PAPER-1
BIOLOGY
(SCIENCE PAPER - 3)

Maximum Marks : 80

Time allowed : Two hours

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.

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

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

SECTION A

(Attempt **all** questions from this Section.)

Question 1

Select the correct answer to the questions from the given options. (Do not copy the question. Write the correct answer only) : **[15]**

- (i) The soluble protein present in the blood plasma which is responsible for blood clotting is :
(a) Prothrombin (b) Fibrin (c) Thrombin (d) Fibrinogen
- (ii) The abnormal rise of erythrocytes in blood is :
(a) Erythropenia (b) Polycythaemia (c) Leukopenia (d) Leukemia
- (iii) The part of nephron where ultrafiltration occurs :
(a) Bowman's capsule (b) Vasa recta (c) Glomerulus (d) Loop of Henle
- (iv) Blood enters the glomerulus through :
(a) Efferent arteriole (b) Renal vein (c) Renal artery (d) Afferent arteriole
- (v) The part of brain which acts like the thermoregulatory centre of the body :
(a) Thalamus (b) Diencephalon (c) Hypothalamus (d) Pons
- (vi) The fibrous sheet which connects into cerebral hemisphere is :
(a) Corpus luteum (b) Cerebellum (c) Pons (d) Corpus callosum
- (vii) Cinematography makes use of :
(a) Accommodation (b) After image (c) Adaptation (d) All of these
- (viii) Which of the following is not an involuntary action ?
(a) Heart beat (b) Peristalsis (c) Blinking (d) Chewing
- (ix) The gland which is located just above the kidneys :
(a) Pancreas (b) Pineal gland (c) Adrenal (d) Thyroid
- (x) Which of the following is not an endocrine gland ?
(a) Thyroid (b) Liver (c) Pituitary (d) Adrenal
- (xi) Sperms are produced in :
(a) Seminal vesicle (b) Leydig's cells (c) Seminiferous tubule (d) Epididymis

- (xii) The statistical study of human population is called :
 (a) Population density (b) Demography (c) Mortality (d) Natality
- (xiii) The basic structural unit of human chromosome is :
 (a) Nucleotide (b) Nucleic acid (c) Nucleoside (d) Nucleosome
- (xiv) The phenotypic ratio in F_2 generation of a monohybrid cross is :
 (a) 1 : 3 (b) 1 : 2 : 1 (c) 3 : 1 (d) 9 : 3 : 3 : 1
- (xv) The waxy substance of cuticle layer consists of :
 (a) Cutin (b) Fat (c) Histone (d) Protein

Question 2

- (a) **Name the following :** [5]
 (i) The organelle which initiates cell division.
 (ii) The genetic constitution of an organism.
 (iii) The plastid which contains coloured pigments (yellow/orange/red, etc.)
 (iv) A solution whose concentration is greater than that of the cell sap.
 (v) The biological process which is the starting point of the food chain.
- (b) **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 underlined. [5]
 (i) Prophase, Telophase, Anaphase, Metaphase
 (ii) Kidney, Urethra, Ureter, Urinary bladder
 (iii) Right ventricle, Lungs, Pulmonary vein, Pulmonary artery
 (iv) Ear pinna, Membranous labyrinth, Ear ossicles, Auditory canal
 (v) Stimulus, Effector, Receptor, CNS.
- (c) **Match the items** given in column I with the most appropriate ones in column II and rewrite the correct matching pairs. [5]

Column I

- (i) Endosmosis
- (ii) Exosmosis
- (iii) Guttation
- (iv) Cellulose
- (v) Ultrafiltration

Column II

- 1. Hydathodes
- 2. Hydrophilic
- 3. Hypertonic solution
- 4. Hydrostatic pressure
- 5. Hypotonic solution
- 6. Haematuria
- 7. Haemin

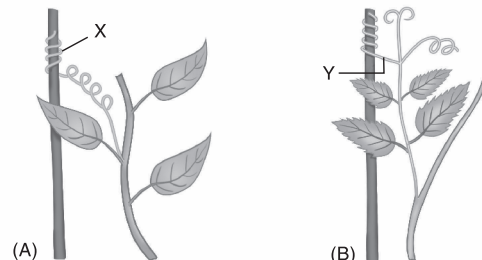
- (d) **Choose the odd one** out from the following terms and name the category to which the others belong : [5]
 (i) Chloroplast, Chromoplast, Chromosome, Leucoplast
 (ii) Adenine, Adrenaline, Thymine, Cytosine
 (iii) Thrombokinas, Thrombocytes, Leucocytes, Erythrocytes
 (iv) Urea, Uric acid, Urochrome, Ammonia
 (v) Wisdom teeth, Oesophagus, Vermiform appendix, Ear pinna
- (e) **State the exact location** of the following structures : [5]
 (i) Leydig cells (ii) Prostate gland (iii) Macula lutea
 (iv) Mitral valve (v) Nissl granules

SECTION B

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

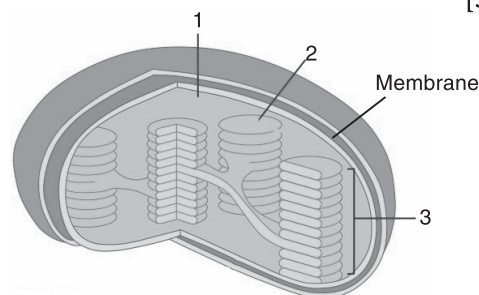
Question 3

- (a) Define : 'Apical dominance'. [1]
- (b) Distinguish between erythrocytes and leucocytes (life-span). [2]
- (c) What are Phytohormones ? Give one example. [2]
- (d) What is the significance of transpiration. State in two points. [2]
- (e) The figures given below depict a phenomenon of the plants. Study the figure and answer the questions. [3]
 - (i) Name and define the phenomenon.
 - (ii) Name the structure shown as X and Y in the figure (A) and (B), respectively.
 - (iii) Write the functions performed by the structures X and Y.



Question 4

- (a) Expand the abbreviation - NADP. [1]
- (b) Name the two main phases of photosynthesis. [2]
- (c) What do you mean by 'Adaptation of Eye' ? Write its two kinds. [2]
- (d) Write two important functions of human ovaries. [2]
- (e) Given below is a figure of the internal structure of an organelle found in plants cells. Study the figure and answer the following questions : [3]
 - (i) Identify the organelle and name the physiological process that occurs in this organelle.
 - (ii) Label the guidelines 1 and 3 of the figure.
 - (iii) Write a well balanced equation for the above metabolic process.



Question 5

- (a) Define - 'Pollution'. [1]
- (b) Differentiate between stomata and lenticels with reference to their location. [2]
- (c) Name two famous biologists who proposed the 'Theories of Evolution'. [2]
- (d) What are the two surgical methods of contraception in human males and females respectively ? [2]
- (e) Draw a neat and labelled diagram of an animal cell showing the anaphase stage of mitosis with two pairs of chromosomes. [3]

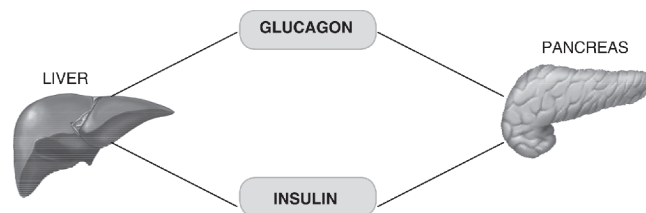
Question 6

- (a) Define - 'Population'. [1]
- (b) Differentiate between ureter and uterus with reference to their functions. [2]
- (c) State the function of choroid and cochlea respectively. [2]
- (d) Gametes must be produced by meiosis. Explain. [2]

(e) Study the diagram given below and answer the questions that follow :

[3]

- Name the cells of the pancreas that produce glucagon and insulin.
- State the main function of glucagon and insulin.
- What is the technical term for the cells of the pancreas that produce hormones ?



Question 7

- Explain - 'Karyotype'.
- What are the two main causes of long sightedness ?
- Write two important roles of vitreous humour.
- What is the difference between Dominant and Recessive alleles ?
- Draw a neat diagram of the cross section of spinal cord showing a reflex action and label the following parts :
 - Central canal
 - Ventral root
 - Gray matter

[1]

[2]

[2]

[2]

[3]

Question 8

- Define - 'Evolution'.
- What are the two ways by which we can control vehicular air pollution ?
- State "Mendel's Law of Independent Assortment".
- Name two abnormalities which are caused due to the hypersecretion of the growth hormone in humans.
- The diagram given below is an experimental set-up to study a very important physiological process. Study the same and answer the questions that follow :
 - Name and define the process.
 - Name the part of a plant cell which is represented by and acts like the sugar solution and parchment paper.
 - Draw a "Control set-up" for the same experiment and label it.

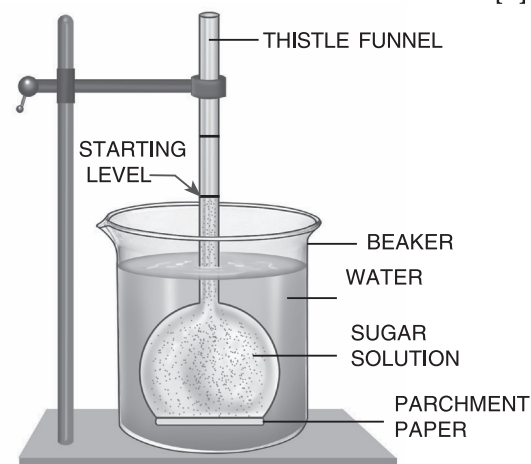
[1]

[2]

[2]

[2]

[3]



ICSE 2023 EXAMINATION
MODEL QUESTION PAPER-2
BIOLOGY
(SCIENCE PAPER - 3)

Maximum Marks : 80

Time allowed : Two hours

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

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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.

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

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

SECTION A

(Attempt **all** questions from this Section.)

Question 1

Select the correct answers to the questions from the given options. (Do not copy the questions. Write the correct answer only) : **[15]**

- (i) A cell has 4 pairs of chromosomes. After mitotic division, the number of chromosome pairs in the daughter cells would be :
(a) 8 (b) 14 (c) 4 (d) 48
- (ii) The nuclear changes that occur during cell division are collectively termed as :
(a) Karyotype (b) Cytokinesis (c) Karyokinesis (d) Enterokinesis
- (iii) The point of attachment between two sister chromatids of a chromosome is :
(a) Centrosome (b) Chiasma (c) Centriole (d) Centromere
- (iv) The full complement of DNA of an organism is :
(a) Gene (b) Genetics (c) Genome (d) Heredity
- (v) When a cell in solution shrinks and loses its shape, then the solution is :
(a) Isotonic (b) Hypertonic (c) Hypotonic (d) Potable water
- (vi) With increase in atmospheric humidity, the rate of transpiration will :
(a) Increase slowly (b) Remain the same (c) Decrease (d) Increase rapidly
- (vii) In the process of photosynthesis, the substance which is reduced is :
(a) Glucose (b) Oxygen (c) Water (d) Carbon dioxide
- (viii) Which of the following is a growth-retarding hormone ?
(a) IAA (b) ABA (c) GA₃ (d) GA₂
- (ix) Basophils release which of the following chemicals ?
(a) Histones (b) Factor X (c) Histamine (d) Stuart factor
- (x) Which of the following is an inorganic constituent of urine ?
(a) Urea (b) Uric acid (c) Ammonia (d) Creatinine



- (xi) Which part of the brain controls and coordinates muscular activity and balance of the body ?
 (a) Cerebrum (b) Pons (c) Cerebellum (d) Diencephalon
- (xii) The pigment which is sensitive to dim light :
 (a) Iodopsin (b) Melanin (c) Visual violet (d) Rhodopsin
- (xiii) The hormone which stimulates milk ejection is :
 (a) Prolactin (b) Luteinizing hormone
 (c) Oxytocin (d) Estrogen
- (xiv) The process of fertilization of sperm and ovum takes place in :
 (a) Uterus (b) Fallopian tubes (c) Vagina (d) Vulva
- (xv) The famous book "The Origin of Species" is written by :
 (a) Jean Baptist Lamarck (b) Walther Flemming
 (c) Gregor John Mendel (d) Charles Darwin

Question 2

(a) Name the following :

[5]

- (i) The number of deaths per 1000 of population per year.
- (ii) The liquid waste material produced by factories.
- (iii) The scattered golgi bodies in plant cells.
- (iv) The structures which help in the formation of spindle fibres in plant cells during cell division.
- (v) The part of inner ear responsible for dynamic balance.

(b) **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 underlined. [5]

- (i) Soil water, Xylem, Pericycle, Root hair
- (ii) Xylem vessels, Stoma, Mesophyll, Sub-stomatal space
- (iii) Light energy, Thylakoid, Glucose, Splitting of water molecules
- (iv) Glomerulus, Collecting duct, Loop of Henle, Distal convoluted tubule
- (v) Conjunctiva, Retina, Vitreous humour, Cornea

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

Column I

- (i) Thylakoids
- (ii) Starch formation
- (iii) ATP
- (iv) Autotrophs
- (v) Light reaction

Column II

1. Photorespiration
2. Photo-chemical phase
3. Photosynthesis
4. Photolysis of water
5. Polymerisation
6. Phagocytosis
7. Phosphorylation

(d) **Choose the odd one** out from the following terms and name the category to which the others belong :

[5]

- (i) Uterine tubes, Seminiferous tubule, Epididymis, Interstitial cells
- (ii) Progesterone, Testosterone, Oestrogen, Prolactin

- (iii) Conjunctiva, Cornea, Cochlea, Choroid
- (iv) Cell wall, Visking bag, Cellophane paper, Parchment paper
- (v) Simple goitre, Myxoedema, Cretinism, Acromegaly

(e) **State the exact location** of the following structures :

[5]

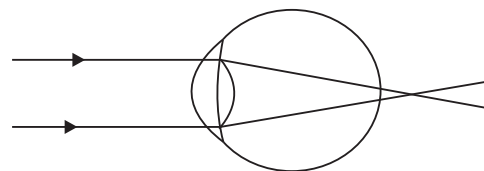
- (i) Chlorophyll
- (ii) Lenticels
- (iii) Spleen
- (iv) Thyroid
- (v) Uterus

SECTION B

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

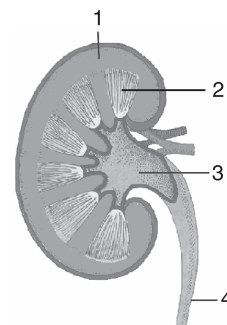
Question 3

- (a) Define – ‘Mutation’. [1]
- (b) Distinguish between sympathetic and parasympathetic nervous system on the basis of function. [2]
- (c) What is lysozyme ? Write its one important role. [2]
- (d) Write two significant roles of Hepatic Portal system. [2]
- (e) Given below is a simplified diagrammatic representation of a defect of the human eye. Study the figure and answer the following questions. [3]
 - (i) Identify the defect (technical term).
 - (ii) Mention two reasons for the above defect.
 - (iii) Draw a neat and labelled diagram for the “correction of the above mentioned defect” by using a lens. You must mention the name of the lens used.



Question 4

- (a) Expand the abbreviation – MTP. [1]
- (b) Name two phases of blood circulation in the human body. [2]
- (c) What are the two important roles of the plant hormone ‘Gibberellins’ ? [2]
- (d) Write two important functions of Amniotic fluid. [2]
- (e) The diagram given alongside is the longitudinal section of a human kidney. Study the diagram and answer the questions that follow. [3]
 - (i) Label the parts numbered 1 and 3.
 - (ii) Name the fluid that passes down from the part numbered as 4. Also write its main nitrogenous constituent.
 - (iii) Why does part 2 show a striped appearance ?

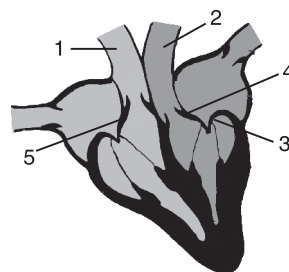


Question 5

- (a) Define – ‘Parturition’. [1]
- (b) Differentiate between biodegradable and non-biodegradable wastes. [2]
- (c) What is placenta ? Write its one important role. [2]

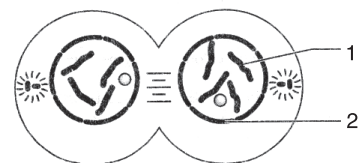


- (d) Make a Punnett square for the cross between two heterozygous axial flowers. Write the Genotypic and Phenotypic ratios of the offspring. [2]
- (e) Given below is the diagram of a human heart showing one phase of contraction. Study the same and answer the following questions. [3]
- Label the parts numbered as 3 and 4.
 - What is the main difference between the blood flowing through the parts numbered as 1 and 2 ?
 - Write one important role of the part numbered as 5.



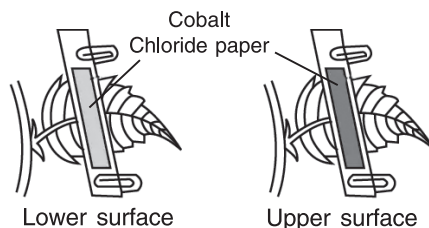
Question 6

- Define – ‘Sanitary landfills’. [1]
- Differentiate between spermatogenesis and oogenesis. [2]
- What is hyaluronidase ? Write its important role. [2]
- Name the nerves which carry impulses from eyes and ear to the brain. [2]
- The diagram given alongside represents a stage during the mitotic cell division. Study the same and answer the following questions. [3]
 - Identify the stage. Give reasons to support your answer.
 - Label the parts numbered 1 and 2.
 - Draw a neat and labelled diagram of the stage that comes before the stage shown in the figure.



Question 7

- Explain – ‘Guttation’. [1]
- What is ‘Reflex action’ ? What are its two main types ? [2]
- Differentiate between ‘Nerve’ and ‘Ganglion’ with respect to their composition. [2]
- What are the two kinds of Nucleic Acids found in the human body ? Write their full forms. [2]
- The diagram given below is an experimental set-up to demonstrate a metabolic process in plants. Study the same and answer the following questions. [3]
 - Name and define the physiological process being studied.
 - What is the aim of the above experiment ?
 - Draw a neat diagram of an opened stoma and label the guard cells and stoma.



Question 8

- Define – ‘Genetics’. [1]
- Distinguish between Autosomes and Sex-chromosomes (2 points). [2]
- What is meant by turgidity in plant parts ? How does it play an important role ? [2]
- Name the basic structural and functional unit of kidney. Write two main steps of ‘urine formation’. [2]
- Identify the hormonal disorders with the following clues : [3]
 - Urination is frequent and copious.
 - Great deal of urine, loaded with sugar.
 - Person becomes sluggish and there is a swelling of the face and hands.