

BIOLOGY GRADE - X

SCIENCE Paper – 3 (Two hours)

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 this Paper is the time allowed for writing the answers.

Attempt all questions from Section A and any four questions from Section B.

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

SECTION A (40 Marks) 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) Auxins are produced by:

- (a) old leaves (b) Fruits (c) buds (d) woody stem

(ii) A single highly coiled tube where sperms are stored, get concentrated and mature is known as:

- (a) Epididymis (b) Vas efferentia (c) Vas deferens (d) Seminiferous tubule

(iii) Chromosomes get aligned at the centre of cell during:

- (a) Metaphase (b) Anaphase (c) Prophase (d) Telophase

(iv) Polluted water can cause:

- (a) Cholera (b) Mumps (c) Tuberculosis (d) Measles

(v) Which one of the following is mainly associated with the maintenance of the posture?

- (a) Cerebrum (b) Cerebellum (c) Thalamus (d) Pons

(vi) An example of non-biodegradable waste is:

- (a) Vegetable peels (b) Sewage (c) Livestock waste (d) DDT

(vii) The cell component visible only during cell division:

- (a) Mitochondria (b) Chloroplast (c) Chromosome (d) Chromatin

(viii) Pulse wave is mainly caused by the:

- (a) Systole of atria (b) Diastole of atria (c) Systole of the left ventricle (d) Systole of right ventricle

(ix) The recessive gene is one that expresses itself in:

- (a) Heterozygous condition (b) Homozygous condition (c) F₂ generation (d) y-linked inheritance

(x) A gland which secretes both hormone and enzyme is the:

- (a) Pituitary (b) Pancreas (c) Thyroid (d) Adrenal

(xi) The ventral root ganglion of the spinal cord contains cell bodies of the:

- (a) Motor neuron (b) Sensory neuron (c) Intermediate neuron (d) Association neuron

(xii) A plant is kept in a dark cupboard for about 48 hours before conducting any experiment on photosynthesis to:

- (a) Remove starch from the plant.

- (b) Ensure that starch is not translocated from the leaves.
- (c) Remove chlorophyll from the leaf of the plant.
- (d) Remove starch from the experimental leaf.

(xiii) The part of the human eye where rod cells and cone cells are located is the:

- (a) Retina
- (b) Cornea
- (c) Choroid
- (d) Sclera

(xiv) A reflex arc in man is best described as movement of stimuli from:

- (a) Receptor cell, sensory neuron, relaying neuron, effector muscles.
- (b) Receptor cell, efferent nerve, relaying neuron, muscles of the body
- (c) Receptor cell, spinal cord, motor neuron, relaying neuron.
- (d) Receptor cell, synapse, motor neuron, relaying neuron.

(xv) NADP is expanded as:

- (a) Nicotinamide, adenosine dinucleotide phosphate.
- (b) Nicotinamide, adenine dinucleotide phosphate
- (c) Nicotinamide, adenine dinucleus phosphate
- (d) Nicotinamide, adenosine dinucleus phosphate

Question 2

(i) Name the following:

(5)

- (a) The phenomenon by which living or dead plant cells absorb water by surface attraction.
- (b) The phase of cardiac cycle in which the auricles contract.
- (c) The organ where urea is produced.
- (d) The hormone that helps increase the reabsorption of water from the kidney tubules.
- (e) IAA, IBA, NAA and 2,4-D.

(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 underlined.

(5)

- (a) Tympanum, stapes, malleus, incus, fenestra ovalis
- (b) Graafian follicle, uterus, oviducal funnel, fallopian tube, ovum
- (c) Soil water, root hair, xylem, cortex, endodermis
- (d) Association neuron, effector, motor neuron, receptor, sensory neuron.
- (e) Lens, pupil, conjunctiva, yellow spot, cornea.

(iii) Match the items given in column I with the most appropriate ones in column II and rewrite the correct matching pairs.

(5)

Column I

- (a) Potometer
- (b) Hypothalamus
- (c) Roots
- (d) Contraception in males
- (e) Mutation

Column II

- (i) Geotropism
- (ii) Phototropism
- (iii) Vasectomy
- (iv) Sudden change in gene
- (v) Pituitary gland
- (vi) Tubectomy
- (vii) Transpiration
- (viii) Thyroid gland

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

(5)

- (a) Ureter, uterus, urethra, oviduct.
- (b) Chlorophyll, magnesium, photosynthesis, haemoglobin, calcium.
- (c) Endothelium, collagen fibres, smooth muscles, myelin sheath.
- (d) Grey matter, piamater, ventricles, pericardium.
- (e) Fertilisation, capacitation, fermentation, ovulation.

(5)

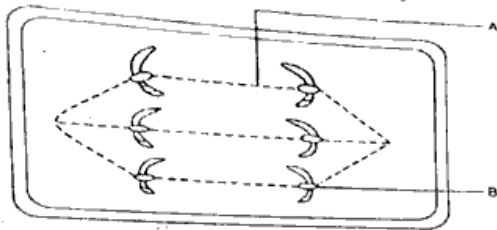
(v) State the exact location of the following structures:

- (a)Thylakoids (b)Organ of corti (c)Lenticle (d)Bicuspid valve (e)Loop of Hanle

SECTION-B
(Attempt any four questions from this section)

Question 3.

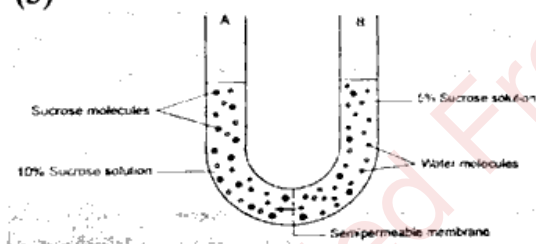
- (i)Define-Gene. (1)
 (ii)Give one difference between tubectomy and vasectomy. (2)
 (iii)Give a brief of selective reabsorption. (2)
 (iv)Mention two ways in which transpiration is beneficial to plants. (2)
 (v)The diagram given below represents a certain stage of mitosis: (3)



- (a)Identify the stage of cell division.
 (b)Name the parts labelled A and B.
 (c)What is the unique feature observed in this stage?

Question 4.

- (i)Expand-ACTH. (1)
 (ii)What is a variegated leaf and why is this kind of leaf used for the experiment? (2)
 (iii)In summer season less quantity of urine is produced than in winter. (2)
 (iv)Testis lies outside the abnormal cavity. Give reason. (2)
 (v)Given below is the diagram of an experiment. Study the diagram and answer the questions that follow: (3)



- (a)What phenomenon is intended to be shown by this experiment.
 (b)Which limb of U-tube A or B contains more concentrated sucrose solution?
 (c)Why is the membrane separating the two solutions labelled as semipermeable membrane?

Question 5.

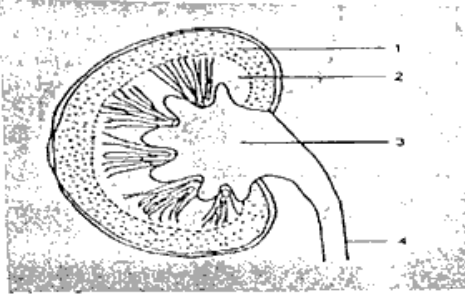
- (a)Define-phagocytosis. (1)
 (b)Give dual function of human ear. (2)
 (c)The oviducal funnel is lined with cilia. (2)
 (d)How is cerebrum different from spinal cord in case of arrangement of neurons? (2)
 (e)Draw a neat and labelled diagram of chloroplast. (3)

Question 6.

- (i)Define bleeding in plants. (1)
 (ii)Differentiate between acrosome and centrosome. (2)
 (iii)Give the function of placenta. (2)

(iv) Relaxin hormone is released at the time of parturition. Explain. (2)

(v) The diagram given below shows a section of human kidney. Study the diagram carefully and answer the questions that follow: (3)



(a) Label the parts numbered 1 to 3.

(b) What is the fluid that passes down part '4'?

(c) Mention the structural and functional units of kidneys.

Question 7.

(i) Define -Plasmolysis. (1)

(ii) Why is excretion important for human body? (2)

(iii) Wilted lettuce leaves become crisp/firm when placed in cold water for a while. Explain. (2)

(iv) Why does one feel blinded for a short while on coming out of a dark room? (2)

(v) Draw a labelled diagram to show a reflex arc. (3)

Question 8.

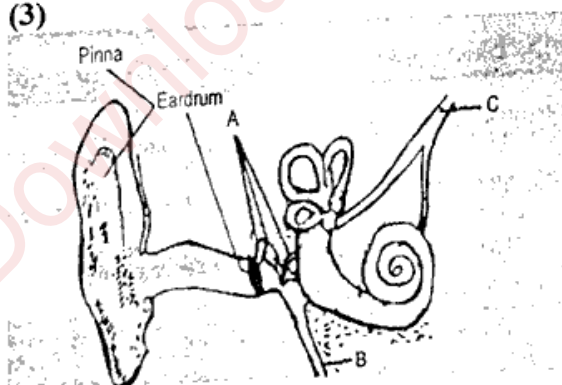
(i) Define-Haemoglobin. (1)

(ii) Differentiate between exosmosis and endosmosis. (2)

(iii) Injury to the medulla oblongata results in death. Explain. (2)

(iv) Why is ammonia the most poisonous waste by-product of metabolism? (2)

(v) Given below is the diagram of the human ear. Study the same and answer the questions that follow: (3)



(a) Give the biological term for the part labelled 'A'.

(b) State the function of B.

(c) Name the part labelled 'C'.