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Biology

(Two hours)

Answers to this paper must be written on the paper 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.

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*Attempt **all** questions from **Section A** and any **four** from **Section B.***
The intended marks for questions or parts of a question are given in the brackets [ ]

SECTION – A [Marks 40]

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

Question 1

(a) Give the equivalent term for the following:- [5]

(i) An antiseptic substance present in tears.
(ii) The part of the brain that carries impulses from one hemisphere of the cerebellum to the other.
(iii) Hormone regulating output of urine.
(iv) Loss of water from hydathodes of a leaf.
(v) Co-factor required for formation of thrombin.

(b) Choose the correct answer from each of the four options given below:- [5]

(i) The term mitosis was coined by:-
(a) flemming (b) watson (c) strasburger (d) virchow

(ii) Deficiency of mineralocorticoids and glucocorticoids leads to
(a) Cushing's syndrome (b) virilism
(c) Addision's disease (d) Grave's disease

(iii) Receptors for heat and cold in the skin, due to change in temperature.
(a) phonoreceptors (b) Thermoreceptors
(c) photoreceptors (d) chemorecptors.

(iv) In humans, urea is formed in
(a) ureter (b) spleen
(c) liver (d) kidney

(v) One of the internal factors which affect the rate of transpiration
(a) big size of the leaf (b) sunken stomata (c) sunny day (d) colour of the leaf

(c) Rewrite and complete the following sentences by inserting the correct word in the space indicated: [5]

(i) Excess water in urine indicates the disease _____.
(ii) The blood vessel that begin from the capillaries and ends in capillaries is the _____.
(iii) A fluid that occupies the larger cavity of the eye ball behind the lens is _____.
(iv) G_1- phase is marked by the synthesis of _____and _____.
(v) The _____stomata reduce transpiration in Nerium.

(d) State the exact location:- [5]

(i) Macula lutea (ii) chordae tendinae (iii) lacrimal gland
(iv) Thyroid gland (v) pia mater

(e) State the main function of the following :- [5]

(i) Acetylcholine (ii) choroid layer (iii) Glucagon
(iv) Thalamus (v) Oxytocin

(f) Given below are six sets with four terms each. In each set one term is odd and cannot be grouped in the same category to which the other three belong. Identify the odd one in each set and name the category to which the remaining three belong. The first one has been done as an example. [5]

Example: Calyx, Corolla, Stamens, Midrib
Odd term: Midrib
Category: parts of a flower.

(i) Cerebrum, diencephalon, hypothalamus, spinal cord.
(ii) Gout, haematuria, leukemia, glycosuria.
(iii) Thymine, cytosine, pepsin, adenine.
(iv) LH,ACTH,TSH,ADH.
(v) Sneezing, coughing, blinking, typing.

(g) The statements given below are false. Rewrite the correct form of the statement by changing the words which is underlined. [5]

(i) <u>leukopenia</u> is the genetic disorder in which blood does not clot.
(ii) <u>Pupil</u> is concerned with the sense of vision.
(iii) <u>Astigmatism</u> is the condition in which cornea turned opaque and non- functional.
(iv) Extensive vein system for <u>slow</u> transport to and from the mesophyll cells.
(v) <u>Cerebellum</u> controls the involuntary activities of the body

(h) Given below are five sets of terms. In each case arrange and rewrite each set so as to be in a logical sequence. [5]

Example: large intestine, stomach, mouth, small intestine, oesophagus.
Answer: mouth, oesophagus, stomach, small intestine, large intestine.

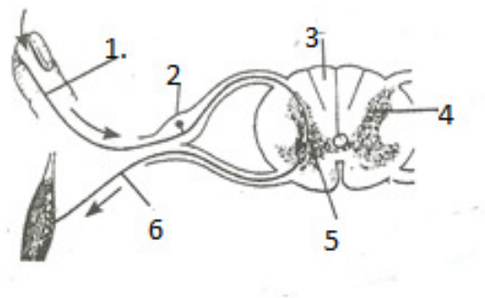
(i) Karyokinesis, S- phase, cytokinesis, G_{1}- phase, G_{2}- phase.
(ii) Spongy cells, upper epidermis, stoma, palisade tissue, substomatal space.
(iii) Pupil yellow spot, cornea, lens, aqueous chamber.
(iv) Synapse, axon endings, cyton, node of ranvier, dendrites.
(v) Intestine, liver, intestinal artery, hepatic vein, hepatic portal vein.

SECTION – B [Marks 40]

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

Question 2

(a) Study the diagram given below and then answer the questions that follow: [5]



(i) Name the phenomenon that is being depicted and define it.
(ii) Name the parts 1,2,3, and 4.
(iii) Write the functions of parts 5 and 6.

(b) Draw a neat and labelled diagram of the pituitary gland. [3]

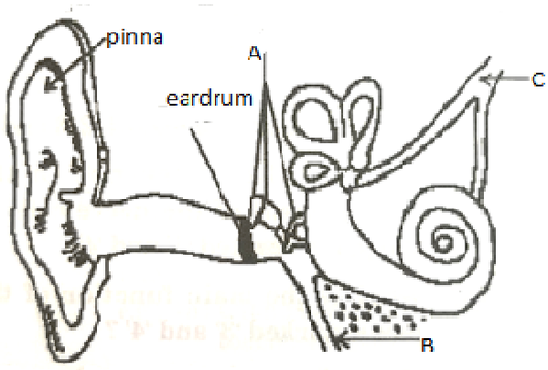
(c) Write any two properties of Hormones. [2]

Question 3

(a) Give the biological / technical terms of the following: [5]

(i) The hormone which stimulates the entire sympathetic nervous system.
(ii) An apparatus that measures the rate of water uptake in a cut shoot due to transpiration.
(iii) The interconnecting between the two lobes of thyroid gland.
(iv) A thin membrane covering the entire front part of the eye.
(v) The lens of eye losing flexibility resulting in a kind of long-sightedness in the middle-aged people.
(vi) Pigment providing colour to urine.
(vii) The photosensitive pigment present in the rod cells in the retina.
(viii) The muscle which guards the urethra.
(ix) Chemicals found in the blood which act against antigens.
(x) The condition caused by the oversecretion of insulin.

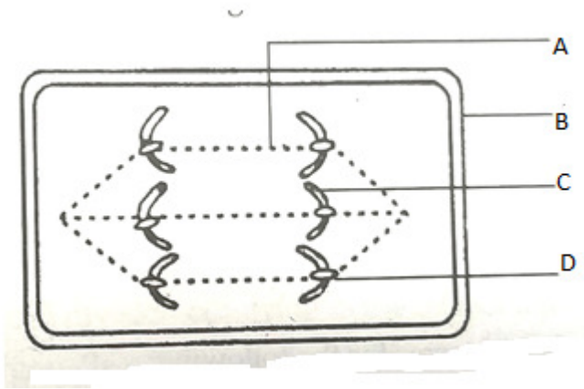
(b) Given below is the diagram of the human ear. Study the same and answer the questions that follow: [5]



(i) Give the biological term for the part labelled 'A' and state its function.
(ii) Name the part labelled 'B' and state its function.
(iii) Name the fluid present in the membranous labyrinth.
(iv) Name the part labelled 'C' and state its function.
(v) Give the function of ear wax.

Question4

(a) Describe the opening and closing of stomata based on potassium ion exchange theory . [5]
(b) The diagram below represents a certain stage of mitosis. [5]



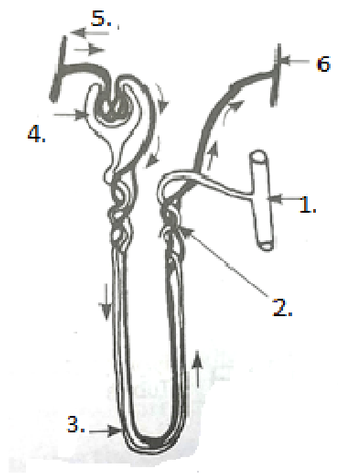
(i) Identify the stage of cell division.
(ii) Name the part labelled A,B,C and D.
(iii) What is the unique feature observed in this stage?
(iv) Why does this type of cell division usually occur ?(any two points)

Question 5

(a) Give reason for the following: [5]

(i) A person from bright sunlight outside enters a poorly lit room and feels blinded for a short while.
(ii) Carbon monoxide is highly dangerous when inhaled.
(iii) Simple Goitre commonly found in people living in hilly areas.
(iv) Gametes having a haploid number of chromosomes.
(v) The hand automatically shows the direction to turn a cycle without thinking.

(b) The given diagram represents a nephron and its blood supply. Study the diagram and answer the following questions. [5]



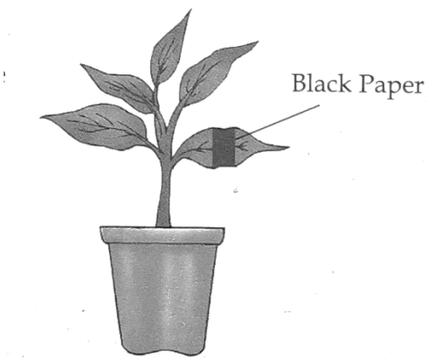
(i) Label the parts 1,2,3 and 4.
(ii) Name the part of the nephron which lies in the renal medulla.
(iii) State the reason for the high hydrostatic pressure in the glomerulus.
(iv) What is micturition ?

Question 6

(a) Differentiate between the following pairs on the basis of what is mentioned within brackets:- [5]

(i) Cretinism and myxoedema (symptoms)
(ii) Short- sightedness and long-sightedness (reason)
(iii) Mitosis and meiosis (occurrence)
(iv) Endosmosis and exosmosis (condition)
(v) Phagocytosis and diapedesis (explain)

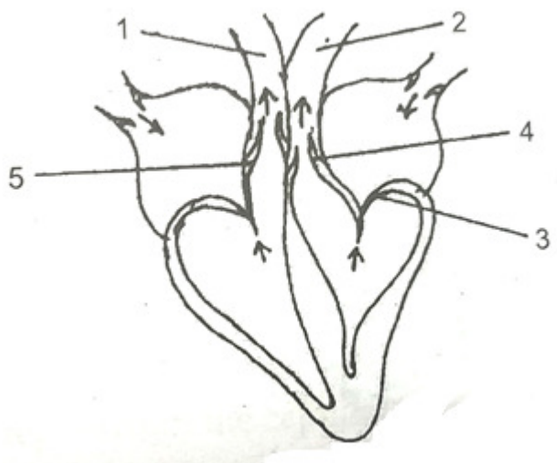
(b) A potted plant was taken in order to prove a factor necessary for photosynthesis. The potted plant was kept in the dark for 24 hours. One of the leaves was covered with black paper in the center. The potted plant was then placed in sunlight for a few hours. [5]



(i) What aspect of photosynthesis was being tested?
(ii) Why was the plant placed in the dark before beginning the experiment?
(iii) During the starch test, why was the leaf
(a) Boiled in water,
(b) Boiled in methylated spirit.
(iv) Give a balanced chemical equation to represent the process of photosynthesis.

Question 7

(a) The diagram below represents the human heart in one phase of its functions. Study the diagram carefully and answer the questions that follow: [5]



(i) Name the phase shown in the diagram.
(ii) Which part of the heart is contracting in this phase? Give a reason to support your answer.
(iii) Name the parts labelled 1 to 4.
(iv) State the function of the part numbered '5' ?

(b) Draw a neat and labelled diagram of a simplified kidney in longitudinal section. [5]