

ATUL VIDYALAYA
SECOND PRELIMINARY EXAMINATION 2012-2013
SCIENCE PAPER 3-BIOLOGY

STD:X
DATE: //12

M.M:80
TIME:1 ½ HRS

Session I

- Answer 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.
-The question paper is divided into two Sections.
-Section I contains one questions with five parts (a) to (e); all five parts are to be answered.
-Section II contains six questions numbered 2 to 7. You are to answer any four of these questions.
-The intended marks for questions or parts of questions are given in brackets[].

SECTION I (40 Marks)
Attempt all questions from this Section.

Question 1

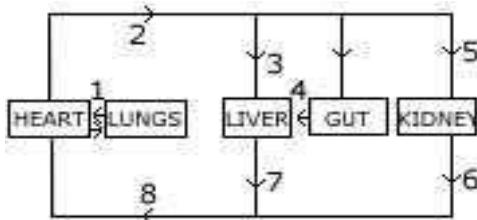
- (a) Name the following: [5]
- i. The duct which transports urine from the kidney to the urinary bladder.
 - ii. The endocrine gland which produces emergency hormone.
 - iii. The fluid that is present inside and outside the brain.
 - iv. The opening through which light enters the eyes.
 - v. Openings on the stem through which transpiration occurs.
- (b) Given below is an example of a certain structure and its special functional activity e.g. Kidney and excretion. On a similar pattern fill in the blanks: [5]
- i. Ribosomes and
 - ii. Blood platelets and
 - iii. Cochlea and
 - iv. Hydathodes and
 - v. Alveoli and
- (c) Choose the odd one in each of the following: Example: Calyx , Corolla, style ,Androecium. Answer: style [5]
- i. Insulin , Blood sugar, Adrenalin , Thyroxine
 - ii. Oestrogen, Progesterone, Testosterone , Prolactin
 - iii. Larynx, Pancreas , Testis , Ovary
 - iv. Cerebrum , Cranium , Cerebellum , Pons
 - v. Phenol , Boric acid , Iodine , Mercurochrome.
- (d) Note the relationship between the first two words and suggest the suitable word/words for the fourth place. [5]
- i. Thylakoid : Chloroplast : Cristae :
 - ii. Cones : Iodopsin : Rods :
 - iii. Stomata : Transpiration : Hydathodes :
 - iv. Lubb : Atrioventricular valves : Dubb :
 - v. Coronary artery : Heart Hepatic artery :
- (e) Complete the following statements by choosing the correct alternative from the choices given in brackets. [5]
- i. (Myxoedema/simple goitre/exophthalmic goitre) is a disorder caused by excess thyroid hormone.
 - ii. The (epididymis/vas deferens/seminal vesicle) stores sperms.
 - iii. The dorsal root ganglion of the spinal cord contains cell bodies of (motor/sensory/intermediate) neurons.
 - iv. The (alveoli/bowman's capsule/nephrons) are the ultimate end parts of the excretory system in man.
 - v. The blood cells engulf bacteria in a process called (diapedesis phagocytosis/active transport)

- (f) Given below are certain functional activities of specimen structures in the body of living organisms. Name the structure responsible for the same. [5]
- Transfers impulses from inner ear to brain.
 - Initiates cell division in animal cells.
 - Helps to change the focal length of the eye lens.
 - Helps to increase the volume of the chest cavity lengthwise.
 - Acts as bearer of heredity units.
- (g) Choose the correct answer to the following:
(You may either write the statement with the correct answer or may write the corresponding letter of the alphabet.) [5]
- Cerebellum is the part of the brain which is responsible for:
 - Interpreting sensations.
 - Conducting reflexes in the body.
 - Maintaining posture and equilibrium.
 - Controlling thinking, memory and reasoning.
 - The mineral element essential for the clotting of blood is:
 - Iron.
 - Calcium.
 - Iodine.
 - Sulphur.
 - A plant is kept in a dark cupboard for about 48 hours before conducting any experiment on photosynthesis to:
 - Remove chlorophyll from the leaves.
 - Remove starch from the plant.
 - Ensure that no photosynthesis occurs.
 - Ensure that the leaves are free from starch.
 - Marine fish when thrown under tap water bursts because of: (a) Endosmosis
 - Exosmosis
 - Diffusion
 - Plasmolysis
 - Introduction of deadened or weak microbes into the body is termed:
 - Immunisation
 - Vaccine
 - Sterilisation
 - Vaccination
- (h) Match the items in Column I with those which are most appropriate in Column II. You must rewrite the matching pairs: [5]

COLUMN I	COLUMN II
(a) Ova (c) Cochlea (e) Vein (f) Neuron (g) Stomata (h) Grana	(i) basic unit of the brain (ii) stimulated by light (iii) deoxygenated blood (iv) haploid cell (v) found in the kidney (vi) audio receptors (vii) diffusion of gases (viii) diploid cell

SECTION II (40 MARKS)**Attempt any four questions from this Section.****Question 2**

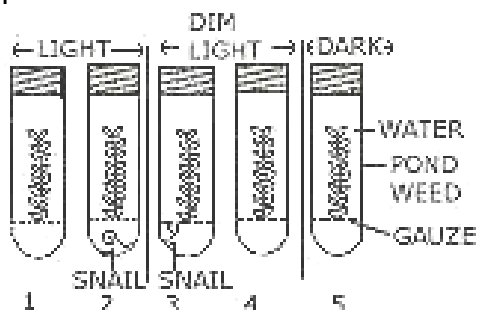
(a) The following simplified diagram refers to the outline plan of the circulation of blood in a mammal. Study the diagram and write the number and the name of the blood vessel in each case as mentioned under: [5]



- Several hours after a meal containing a lot of protein, which vessel will contain the highest concentration of urea?
 - Which vessel would contain the highest concentration of amino acids and glucose soon after a meal?
 - Which vessel begins and ends in capillaries?
 - Which vessel will contain the smallest number of red blood cell per unit volume of blood?
 - In which vessel will the blood carry the most oxyhaemoglobin?
- (b) Explain briefly the role of the following health aids: [5]
- Antiseptics
 - Disinfectants
 - Penicillin
 - Sulphonamides
 - Vaccines

Question 3

(a) The following diagram is a set up to demonstrate an experiment. Pondweed was placed in five water filled tubes. The experiment was set up as shown in the diagram. The tubes were then left for 24 hours. Write the correct answer out of the available choices given under each question. [5]

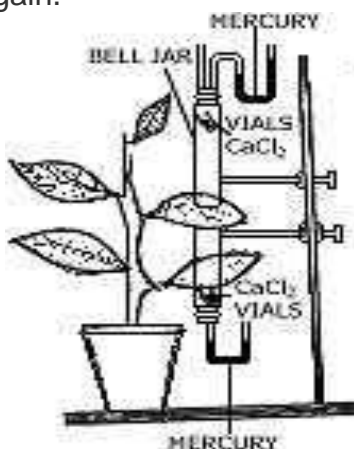


- In which tube would you expect the greatest increase in dry weight of the pondweed?
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
 - In which tube would you expect to find the plant with the least amount of starch?
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
 - The tube in which most oxygen would be found is:
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
 - The tube in which least carbon dioxide would be found is:
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
 - The tube in which the plant would survive for the shortest length of time is:
(i) 1 (ii) 2 (iii) 3 (iv) 4 (v) 5
- (b) Answer the following questions [5]
- State Mendel's law of dominance.
 - What is a dihybrid ratio?
 - Define Phenotype.

- iv. What are Autosomes?
- v. What is bleeder's disease

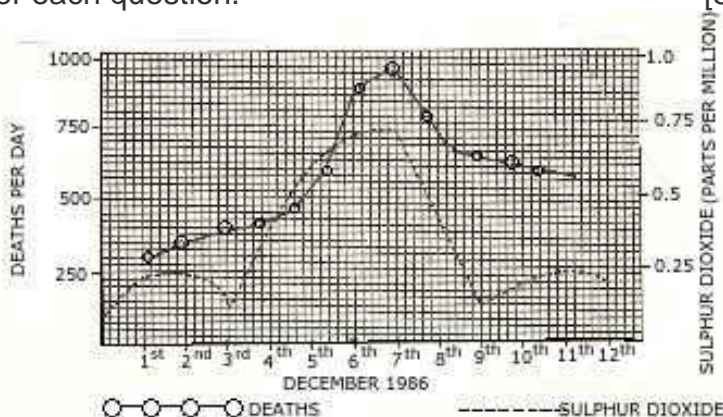
Question 4

(a) The apparatus shown here is Garreau's potometer designed to demonstrate unequal transpiration from the two surfaces of a dorsiventral leaf. Before keeping the leaf in between the cups, anhydrous calcium chloride (CaCl_2) contained in two small vials were weighed and placed in both the cups. The ends of the cups were closed with corks through which two mercury manometers were connected. After few hours, CaCl_2 vials were taken out and weighed again. [5]



- i. What is the purpose of keeping CaCl_2 vials inside the cup?
- ii. After a few hours, CaCl_2 vials were taken out and weighed again. Will you expect any difference in weight? If so give reason.
- iii. What was the purpose of using a manometer?
- iv. What do you mean by transpiration?

(b) The diagram given below refers to the following account of an investigation and a graph of the results obtained. In 1986 a large city experienced a dense fog from 4th to 9th December. During this time there was an increase in the number of deaths. In answering the following questions use the graph which show how deaths per day were related to the amount of sulphur dioxide in the air. Select the best answer out of the five available choices given under each question. [5]



- i. On which day was the increase in sulphur dioxide greatest?
 - (i) 4th December
 - (ii) 5th December
 - (iii) 6th December
 - (iv) 7th December
 - (v) 8th December
- ii. How many deaths occurred on the day following the highest sulphur dioxide concentration?
 - (i) 350
 - (ii) 575
 - (iii) 700
 - (iv) 875
 - (v) 925

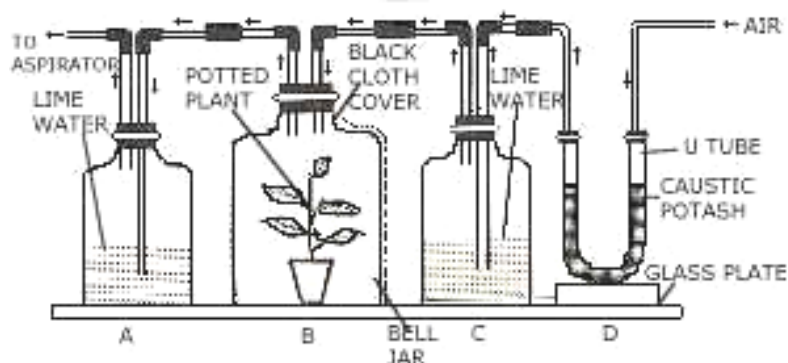
- iii. The graph shows the deaths per day were not:
 (i) lower before the fog than during the fog.
 (ii) higher after the fog than before fog. (iii) highest at the time of fog.
 (iv) decreasing after fog. (v) increasing throughout the fog.
- iv. Clean air prevents the occurrence of fog. Which of the following will help to ensure a clean environment.
 (i) air pollution
 (ii) education
 (iii) legislation
 (iv) population control
 (v) ventilation

Question 5

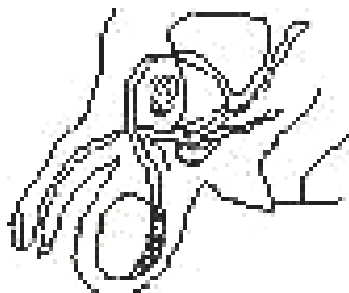
- (a) Answer the following. [6]
- What is a Lacrimal gland?
 - In what two ways is yellow spot different from blind spot?
 - Name an old-age eye defect. Why is it caused?
 - What is meant by 'power of accommodation of the eye'?
 - Mention the characteristics of the image that falls on the retina of the eye.
 - Name the photoreceptors found in the retina of the eye.
- (b) In each of the following cases, pick out one term which includes the other three:
- glucose, oxygen, energy, oxidation.
 - (glomerular filtrate, bowman's capsule, ultrafiltration, glomerulus.
 - ethyl alcohol, carbon dioxide, anaerobic, oxygen absence.
 - diffusion, respiratory gases, alveoli, capillary network. [4]

Question 6

(a) In order to study and prove a particular physiological process in plants, the following experiment was set up. Study the same and then answer the questions that follow: [5]



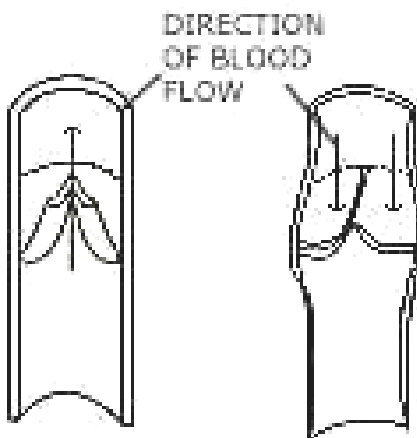
- Name the physiological process being studied.
 - What is the function of soda lime in the bottle 'A' and why is lime water placed in bottle 'B'?
 - What change would you expect to observe in bottle 'D'?
 - Represent the physiological process named in (i) above in the form of a chemical equation.
 - In order to obtain accurate results, the bottle 'C' should be covered with a black cloth. Why?
- (b) Given below is the outline of the cross section of the male reproductive system:[21/2]



- i. Copy the outline on to your answer sheet in pencil and label the following parts-testis, epididymis, seminal vesicles, vas deference.
 - ii. Name the hormone produced by the testis.
 - iii. Why are sperms produced in large numbers?
 - iv. State the function of the seminal vesicles.
- (b) Define the following terms, giving one example of each: [21/2]
- i. Alleles
 - ii. Hormone
 - iii. Exocrine gland
 - iv. Active transport
 - v. Gaseous pollutant.
 - vi.

Question 6

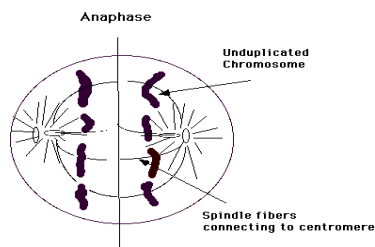
(a) The diagram below represents a certain category of blood vessels showing the role of a special structure in their walls: [5]



- i. Name the kind of blood vessels shown.
 - ii. Name the structure shown inside the blood vessels.
 - iii. Describe the role of these structures.
 - iv. Are these structures present in any other kind of blood vessel? If so, name it.
 - v. Towards which side of the figure (top or bottom) is the heart located?
- (b) Answer the following questions [5]
- i. What are the age restrictions for marriage by law for boys and girls in India?
 - ii. Name two surgical techniques (one for the human male and another for the human female) that can be used to prevent pregnancy in the female.
 - iii. Give two advantages of a small family.

Question 7

(a) Given below is a diagram representing a stage during mitotic cell division in an animal cell. [5]



- i. Identify the above stage. Give a reason to support your answer.
 - ii. Name the cell organelle that forms the 'aster'.
 - iii. Name the parts labelled 1, 2 and 3.
 - iv. Name the stage that follows this stage of mitosis. How can this stage be identified?
 - v. Mention two points of difference between 'mitosis' and 'meiosis' with regard to:
 1. The number of daughter cells formed.
 2. The chromosome number in the daughter cells.
- (b) Draw a well labelled diagram of the human ear. [5]

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