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FIRST PRELIMINARY EXAMINATION 2012-13
SCIENCE PAPER-3 (BIOLOGY)

STD: X

DATE: 25-9-12.

SESSION: I

MM: [80]

TIME: 1.5 HRS

Answer to this paper must be written on the paper provided separately.

You will not be allowed to write during the first 10 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 I and any four questions from Section II.

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

SECTION I (40 Marks)

Answer all questions from this Section

Question 1

(a) Name the following:

- (i) The cross in which only one pair of character is considered.
- (ii) The cells which possess the power of amoeboid movement.
- (iii) The exudation of sap from the injured parts of the plants.
- (iv) A process of separating small molecules from the larger ones of blood by using a kidney machine.
- (v) The term used for mature follicle in females.

[5]

(b) Given below is an example of a certain structure and the special functional activity with which it is concerned:

E.g. Leydig cells and production of male sex hormone-testosterone.

On similar pattern, fill in the blanks in the following pairs to represent relationships between the structures and their special functional activity.

- (i) Motor neuron and -----.
- (ii) Chloroplast and -----.
- (iii) Platelets and -----.
- (iv) Ureter and -----.
- (v) Hydathode and -----.

[5]

(c) Select one suitable word from the three alternatives given to fill in the blanks in the following sentences

- (i) The function of root is -----.(Secretion/ absorption/ synthesis)
- (ii) Colour blindness is a -----.(Mistake / Genetic disorder/ infectious disease)
- (iii) The modified Golgi complex in a sperm is-----.(Tail/ end piece/ acrosome)
- (iv) Deoxygenated blood is carried to the lungs by -----.(Pulmonary/Coronary/ Renal artery)
- (v) Testosterone is secreted by-----.(Testes/ Ovaries/ Thyroid)

[5]

(d) Choose the correct alternative from the choices given below each statement so as to complete its meaning:

- (i) Osmosis involves diffusion of :
 - (a) suspended particles from lower to higher concentration.
 - (b) suspended particles from higher to lower concentration.
 - (c) water from the more concentration solution to the less concentrated solution.
 - (d) water from the less concentration solution to the more concentrated solution.
- (ii) Transpiration pull will be maximum under which of the following conditions?
 - (a) open stomata, dry atmosphere and moist soil.
 - (b) open stomata, high humid atmosphere and well irrigated soil.
 - (c) open stomata, high humid atmosphere and dry soil.
 - (d) closed stomata, dry atmosphere and moist soil.

(Contd. on Pg-2)

- (iii) Excretion commonly involves:
 - (a) removal of all by-products during catabolism.
 - (b) removal of by-products during anabolism.
 - (c) removal of nitrogenous waste.
 - (d) all of the above.
- (iv) In mammals , the corpus callosum connects :
 - (a) the two optic lobes.
 - (b) the two cerebral hemispheres.
 - (c) the two cerebrum to the cerebellum.
 - (d) the pons to the medulla oblongata.
- (v) Which one of these reactions occurs during photosynthesis?
 - (a) carbon dioxide is reduced and water is oxidised.
 - (b) water is reduced and carbon dioxide is oxidised.
 - (c) carbon dioxide and water are both oxidised
 - (d) carbon dioxide and water are both reduced.

[5]

(e) State whether the following statements are **true** or **false**. If false, rewrite the correct form of the statement by changing the first word only:

- (i) Rods are photoreceptor cells that are sensitive to bright light.
- (ii) The Beta cells of the pancreas secrete glucagon.
- (iii) Vasectomy is the surgical method of sterilization in woman.
- (iv) Transpiration is the loss of water in the form of water droplets from hydathodes.
- (v) Neurons are the basic unit of the Kidney.

[5]

(f) Given below are five sets with four terms each. In each set one term is odd. Choose the odd one out of the following terms given and name the category to which the others belong:

[5]

SET	ODD TERM	CATEGORY
(i) Insulin , Blood sugar, Adrenaline , Thyroxine		
(ii) Oestrogen, Progesterone, Testosterone, GH		
(iii) Larynx, Pancreas , Testis , Ovary		
(iv) Cerebrum , Cranium , Cerebellum , Pons.		
(v) Cortex , Pelvis , Retina , Medulla.		

(g) Differentiate between the following pairs with regard to that given brackets.

- (i) Diabetes mellitus – Diabetes incipidus (Causes)
- (ii) Stoma – Stroma (functions performed)
- (iii) Transpiration – Guttation (Definition)
- (iv) Xylem – Phloem (function performed)
- (v) Parchment paper – Cobalt chloride paper (uses)

[5]

(h) Give one scientific term for the following statements:

- (i) The gap between two neurons.
- (ii) The stage of Karyokinesis which is of longest duration.
- (iii) The chemical used to detect presence of starch in a leaf.
- (iv) The most important change which occurs during prophase of meiosis.
- (v) A solution in which the cell gets plasmoyesed.

[5]

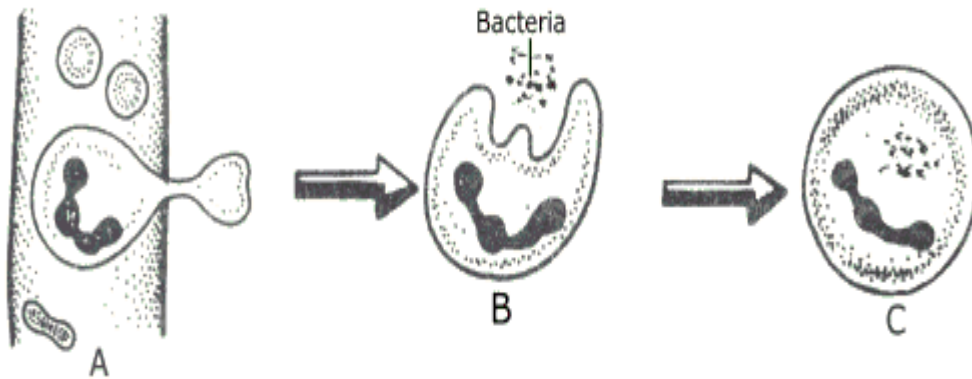
(Contd. on Pg-3)

SECTION II (40 Marks)

Attempt any four questions from this section

Question 2

(a) The diagram shown below in sequence represents the activity of a certain kind of cell in the human body. Study the same and then answer the questions that follow:



- (i) What are the structures visible in A? Name them.
- (ii) What significant activity is shown in A. Name it with its technical term.
- (iii) Describe the events and their significance shown in B and C . [5]

(b) Complete the following table by filling in the correct location of the following structures in the human body and mention one main function of each: [5]

Sr No.	Structure	Location	Function
1.	Eustachian tube		
2.	Chordae tendinae		
3.	Nephron		
4.	Organ of corti		
5.	Cells of Leydig		

Question 3

(a) Differentiate between the following on the basis of what is given in brackets:

- (i) Karyokinesis and Cytokinesis. (Explain the term)
- (ii) WHO and Red Cross. (Any one function of each)
- (iii) Mitosis and Meiosis. (Number of daughter cells Formed)
- (iv) Pure and Hybrid strain. (Definition)
- (v) Phenotype and Genotype. (Explain the term) [5]

(b) (i) Draw a neat diagram of nephron and label the following parts:
 Glomerulus, Afferent arteriole, Efferent arteriole. PCT, DCT and Loop of Henle. [5]

Question 4

- (a) (i) Explain the term imbibition. How it is useful to the plants?
- (ii) Name any two greenhouse gases.
- (iii) Mention any four causes of air pollution. [5]
- (b) (i) Draw a neat labelled diagram of human sperm.
- (ii) List any four ways in which the antibiotics are being used. [5]

(Contd. on Pg-4)

(a) Given below is a cell in a certain stage of cell division. Observe the figure and answer the following questions:



- (i) Identify the stage of cell division. Give reason(s).
- (ii) Is this a plant cell or an animal cell? State two reasons in support of your answer.
- (iii) Name the stage that occurs before and after this stage.
- (iv) What is the significance of meiosis in the life cycle of an organism? [5]

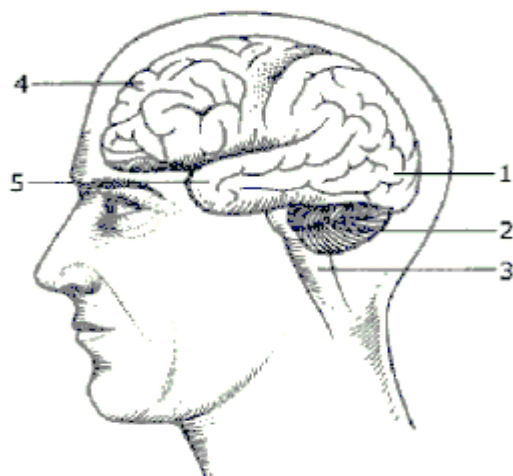
(b) What is reflex action? State its significance. [2]

(c) Name the following:

- (i) Valve found in the pulmonary artery.
- (ii) A mineral present in blood that helps in clotting of blood
- (iii) Any one secondary pollutant. [3]

Question 6

(a) The diagram given below shows the human brain . Study the same and then answer the questions that follow:



- (i) Label parts 1 to 5.
- (ii) Using numbers only, state which part is:
 - 1. Concerned largely with sight.
 - 2. Concerned largely with balance.
 - 3. Concerned with involuntary activities of internal organs.
 - 4. Concerned with intelligence.
 - 5. Concerned largely with hearing [5]

(b) (i) Mention any *two* methods of birth control.

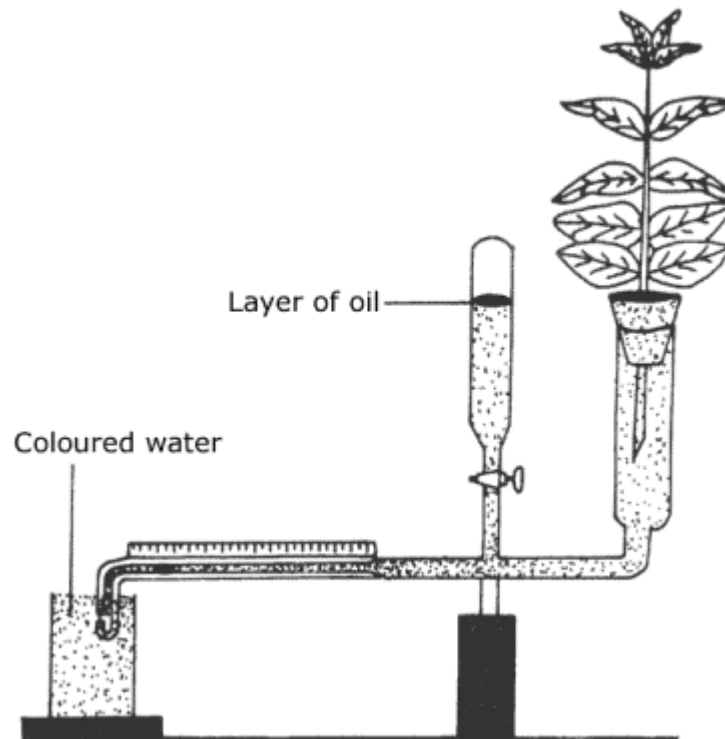
(ii) State any *three* functions of the Red Cross. [5]

(Contd. on Pg-5)

Question 7

(a) The potometer shown below is set up to investigate a certain physiological process in plants.

Refer the given diagram and answer the following questions:



- (i) State the aim of the experiment.
- (ii) What is the use of oil layer in the water reservoir?
- (iii) What happens to the movement of air bubble if the apparatus is kept
 1. in sunlight
 2. in the dark
 3. in front of a fan.

[5]

(b) Explain briefly the role of the following health aids:

- (i) Antiseptics
- (ii) Disinfectants
- (iii) Penicillin
- (iv) Sulphonamides
- (v) Vaccines.

[5]