

**SECOND MODEL EXAMINATION 2018-2019**

**BIOLOGY**

**SCIENCE Paper -- 3**

**STD X**

*(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 I and any four questions from Section II*

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

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**SECTION I (40 marks)**

Attempt all questions from this section.

**Question I**

a. Name the following.

[5]

- (1) The number of chromosomes present in a nerve cell of a human being.
- (2) The process of conversion of ADP into ATP during photosynthesis.
- (3) The pituitary hormone which stimulates contraction of uterus during child birth.
- (4) The physical expression of gene in an individual.
- (5) The hormone that helps increase the reabsorption of water from kidney tubules.

b. Give the exact location and function of each of the following.

[5]

- (1) Chordae tendinae
- (2) Centrosome
- (3) Myelin sheath
- (4) Adrenal Gland.
- (5) Eustachian tube

c. Given below are five sets of terms. In each case, arrange and rewrite each set so as to be in a logical sequence.

[5]

- (1) Pinna, Cochlea, Tympanum, Ossicles, Auditory Canal.
- (2) Water Molecules, Oxygen, Grana, Hydrogen and Hydroxyl ions, Photons.
- (3) Intestine, Liver, Mesenteric Artery, Hepatic Vein, Hepatic Portal Vein
- (4) Synapse, Axon Endings, Cyton, Nodes Of Ranvier, Dendrite
- (5) Afferent Arteriole, Renal Vein, Capillary Network, Glomerulus, Efferent Arteriole.

**This paper consists of 7 printed pages and one blank page.**

d. Given below are five sets of four terms each. In each set a term is odd one 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 belongs.

(5)

No	Set	Odd one	Category
1	Cerebrum, Cerebellum, Thalamus, Hypothalamus		
2	Thymine, Adenine, Pepsin, Uracil		
3	Bile, Urea, Uric acid, Ammonia		
4	ACTH, TSH, ADH, FSH		
5	Transpiration, Guttation, Photosynthesis, Phagocytosis		

e. Differentiate between the following on the basis of what is given in brackets. [5]

- (1) Testosterone and Estrogen (Organ which secretes)
- (2) Demography and Population density. (Definition)
- (3) NADP and ATP (Expand the abbreviation)
- (4) Near Vision and Distant Vision. (Shape of the eye lens)
- (5) Diabetes mellitus and Diabetes Insipidus (Cause)

f. Note the relationship between the first two words and suggest the suitable word or words for the fourth place. [5]

- (1) LUBB: Atrioventricular Valve:: DUP:-----
- (2) Cones: Iodopsin::Rods:-----
- (3) Cytoplasm :Cytokines :: Nucleus:-----
- (4) Foetus:Amnion :: Heart:-----
- (5) GG: homozygous::Gg:-----

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

- (1) Cretinism is caused due to the deficiency of adrenaline.
- (2) The solvent used to dissolve the chlorophyll pigments while testing a leaf for starch is soda lime
- (3) Free movement of solutes in and out of the cell takes place across the cell membrane
- (4) All voluntary actions are controlled by Cerebellum.
- (5) Corpus luteum is the part of brain that carries impulses from one hemisphere of cerebrum to the other.

h. Match the items given in column A with the most appropriate ones in column B and rewrite the correct matching pair. [5]

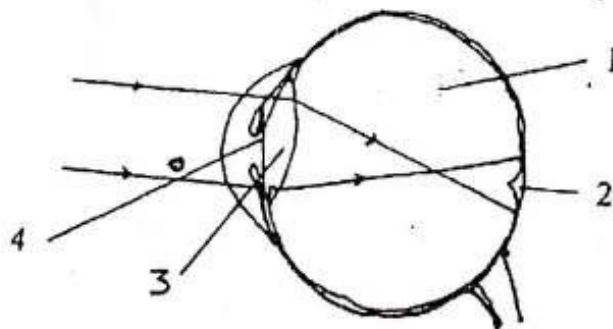
- |                        |  |
|------------------------|--|
| (1) Pacemaker          | -stimulates production of milk by mammary gland  |
| (2) Sacculus           | -transmit impulses from receptor to spinal cord. |
| (3) Prolactin          | -Prostrate gland                                 |
| (4) Uriniferous tubule | -Global warming                                  |
| (5) Sulphur dioxide    | -Kidney  |
|                        | -Associated with static balance.                 |
|                        | -S A Node  |
|                        | -Acid rain                                       |

### SECTION - II (40 marks)

Attempt any **four** questions from this section

#### Question 2

a. Given below is a diagram of human eye depicting a defect, study the same and then answer the question that follow [5]

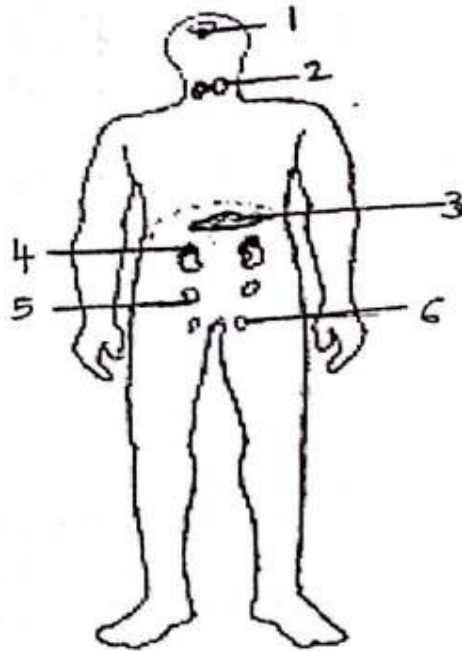


- (1) Name the defect that is shown in the diagram
- (2) Give two possible reasons for this defect in human beings.
- (3) Name the parts labelled 1 - 4
- (4) Name the type of lens used to correct this defect
- (5) Draw a labelled diagram to show how the above mentioned defect is rectified using the lens named above.

- b. (1) Draw a well labelled diagram of the inner ear [5]
- (2) Based on the diagram drawn above, give suitable term for each of the following
    - (i) The sensory cell that help in hearing
    - (ii) The fluid present in the middle ear
    - (iii) The nerve that carry impulses from ear to-brain
    - (iv) The membrane covered opening that connects the middle ear to the inner ear

### Question 3

a. Given below is a diagrammatic representation of the human body showing important glands. (5)



- (1) Name the glands 1-6
- (2) Name the hormones secreted by the part labelled 2. Give one important function of this hormone
- (3) Why is the part labelled 1 called the master gland? Which part of the forebrain controls the gland labelled 1?

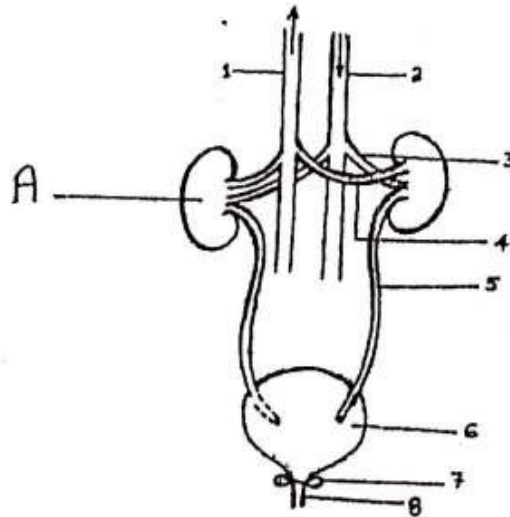
b. Give the biological terms for the following

(5)

- (1) An eye defect in which cornea becomes uneven
- (2) Process of conversion of several molecules of glucose to one molecule of starch
- (3) Squeezing of WBC from the capillaries into the surrounding tissues
- (4) Process of maintaining water and salt balance in the blood
- (5) Thin walled sac of skin that covers the testes
- (6) A mixture of smoke and fog
- (7) The fixing of blastocyst in the wall of the uterus
- (8) A pair of corresponding chromosomes of the same size and shape, one from each parent
- (9) The accessory gland in human male whose secretion activates the sperms.
- (10) The phenomenon by which the living or dead plant cells absorb water by surface attraction.

### Question 4

a. The diagram below shows the excretory system of Human being. Study the same and answer the questions that follow: (5)



- (1) Name the part labelled 1, 2, 3 & 4.
- (2) Give the main functions of the parts labelled 5, 6, 7 & 8.
- (3) Draw a labelled diagram showing the internal structure of the part labelled A.

b. Give biological explanations for the following: [5]

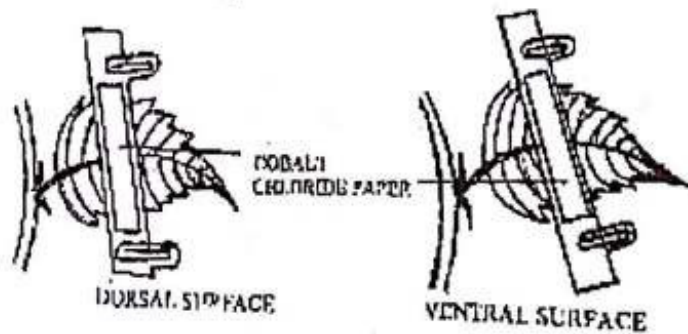
- (1) Colour blindness is more common in men than in women.
- (2) Mature erythrocytes in humans lack nucleus and mitochondria.
- (3) When an ovum gets fertilized menstrual cycle stops temporarily in a woman.
- (4) Throat infections can lead to ear infections.
- (5) The hand automatically shows the direction to turn a cycle without thinking.

### Question 5.

a. In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a). (5)

- (1) What is the phenotype and genotype of F<sub>1</sub> generation if a plant bearing pure axial flowers is crossed with a plant bearing pure terminal flowers?
- (2) Draw a Punnett square board to show the gametes and offsprings when both the parent plants are heterozygous for axial flowers.
- (3) What is the phenotypic ratio and genotypic ratio of the above cross shown in (ii)?
- (4) State Mendel's Law of Dominance.
- (5) Define crossing over.

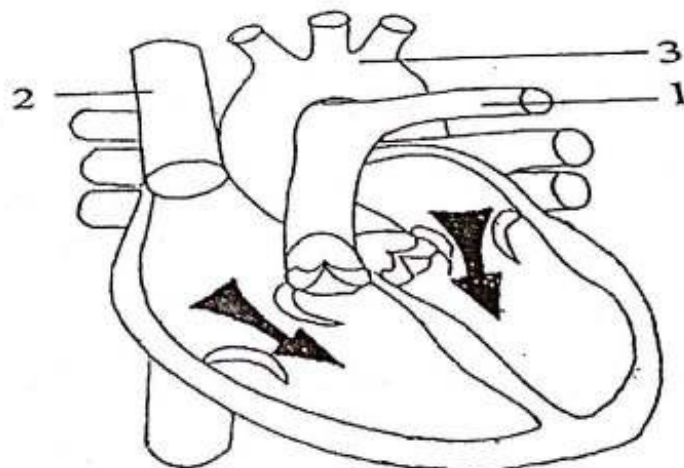
b. Given below is an experimental set up to demonstrate a particular process. Study the same and answer the questions that follow: (5)



- (1) Name the physiological process being studied.
- (2) Explain the process mentioned above,
- (3) What is the aim of the experiment?
- (4) What would you observe in the experimental set up after an hour? Give a reason to support your answer.
- (5) Mention any three adaptations found in plants to overcome the physiological process mentioned in (1) above.

**Question 6.**

a. The diagram given below represents human heart in one phase of its functional activity. Study the same and answer the questions that follow:

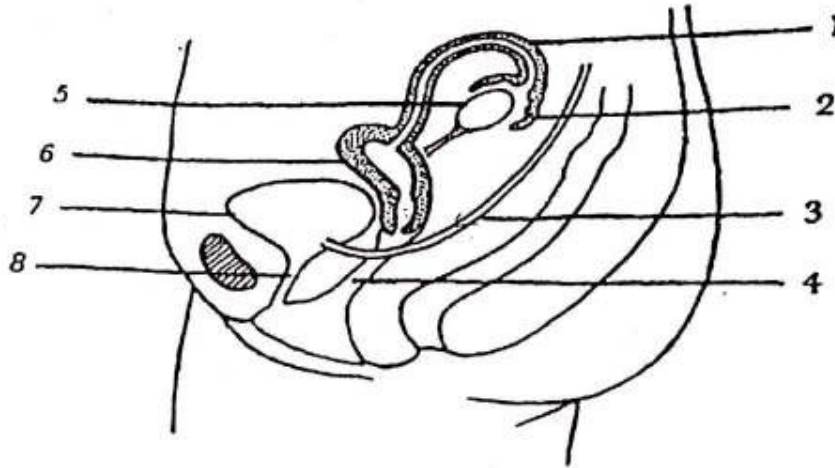


- (1) Name the phase
- (2) Label the parts 1, 2 & 3
- (3) Which part of the heart is contracting in this phase? Give a reason to support your answer.
- (4) Draw a diagram of the blood cells as seen in a smear of human blood.

- b. (1) List two harmful effects of prolonged noise such as the one produced by crackers. Suggest any two measures to minimise the effects of noise pollution. [5]
- (2) (i) Who launched Swacch Bharat Abyan and when?  
(ii) Mention any four objectives of this campaign.

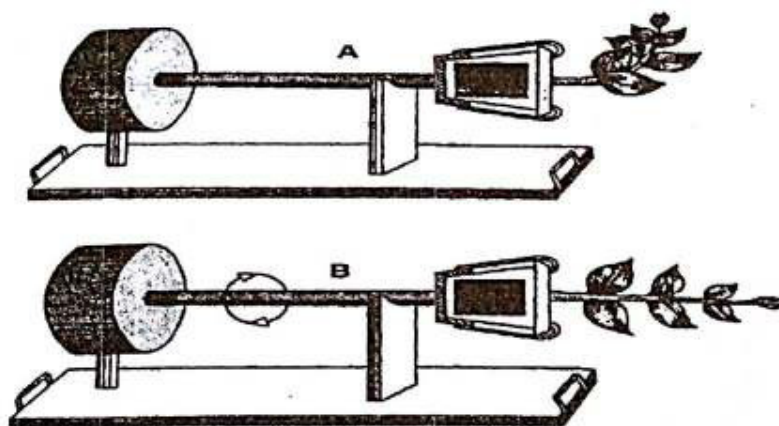
**Question 7**

- a. The following diagram represents the vertical view of the human female reproductive system. (5)



- (1) Label the parts indicated by the guidelines 1 to 8.  
(2) How does the uterus prepare for the reception of a zygote?  
(3) What happens to the uterus if fertilization takes place?

- b. Given below is the diagram of an apparatus used in the laboratory to study a physiological process in plants. Study it carefully and answer the questions that follow: (5)



- (1) Identify the apparatus and name the process under study.  
(2) Define the physiological process  
(3) Why do the plant in A bent and that of B shows no bending?  
(4) Name the type of movement shown by roots and shoots.  
(5) Name a natural auxin found in plants.  
(vi) Name a gaseous hormone.