MARTHOMA RESIDENTIAL SCHOOL, THIRUVALLA
FIRST MODEL EXAMINATION 2018-2019
BIOLOGY
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 answer

*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)
Attempt **all** questions from this section.

Question I

a. Name the following.

1) A sudden alteration in genetic material that can be inherited.
2) The part of the brain that carries impulses from one hemisphere of the cerebellum to t other.
3) The pigment which provide colour to urine.
4) The cell organelle responsible for initiating cell division.
5) The organ of the body where formation of urea takes place. [5]

b. Give the exact location of the following

1) Lacrimal gland
2) Chloroplast
3) Corpus callosum
4) Amnion
5) Tricuspid valve [5]

c. Classify the following actions as simple reflex or conditioned reflex:

1. Playing a guitar.
2. Removing your hand suddenly when pricked by a thorn.
3. Applying sudden brakes when a dog crosses the path.
4. Blinking of eyelids on exposure to light.
5. Tying one's shoe lace

[5]

d,Differentiate between the following on the basis of what is given in brackets.

1) Thalamus and Hypothalamus (function)
2) Piamater and Duramater (location)
3) Industrial Melanism and Mendel's experiment(scientific name of the organism involve
4) Turgid cell and Plasmolysed cell(tonicity of surrounding solution)
5) Hydrotropism and Thigmotropism(Stimulus)

[5]

e. Given below are sets with five terms each. In each case, rewrite the terms in correct order so to be in logical sequence.

1. Cortical cells, Root hair, Xylem, Soil water, Endodermis.
2. Fibrin, Platelets, Thromboplastin, Fibrinogen.
3. Uterus, Parturition, Fertilisation, Gestation, Implantation.
4. Receptor, Spinal cord, Effector, Motor neuron, Sensory neuron.
5. Karyokinesis, S-phase, Cytokinesis, G1-phase, G2 phase.

[5]

f. Write the function of the following

1. Lymphocytes of blood.
2. Organ of Corti.
3. Corpus luteum.
4. Iris.
5. Thylakoids.

[5]

g. Given in the box below are a set of 14 biological terms. Of these, 12 can be paired into 6 matching pairs. Out of the six pairs, one has been done for you as an example.Write out the remaining 5 matching pairs made by you as 1to 5

Chromosomes, Hyperopia, Pea, Androgen, Sperms, Spinal cord, Leprosy, Myopia, Convex lens, Meiosis, Leydig cells, Nucleus, Concave lens, Mendel's Experiment

Example: Mendel's Experiment - Pea

[5]

h. Identify the odd term in each set and name the category to which the remaining three belong.

1. Ovary, Fallopian tube, Ureter, Urethra.
2. Pulmonary vein, Hepatic vein, Renal vein, Post caval.
3. Gibberellins, Auxin, Vasopressin, Cytokinin.
4. Oestrogen, Progesterone, Testosterone, Prolactin.
5. Haemophilia, Colour blindness, Albinism, Night blindness.

[5]

SECTION II (40 marks)

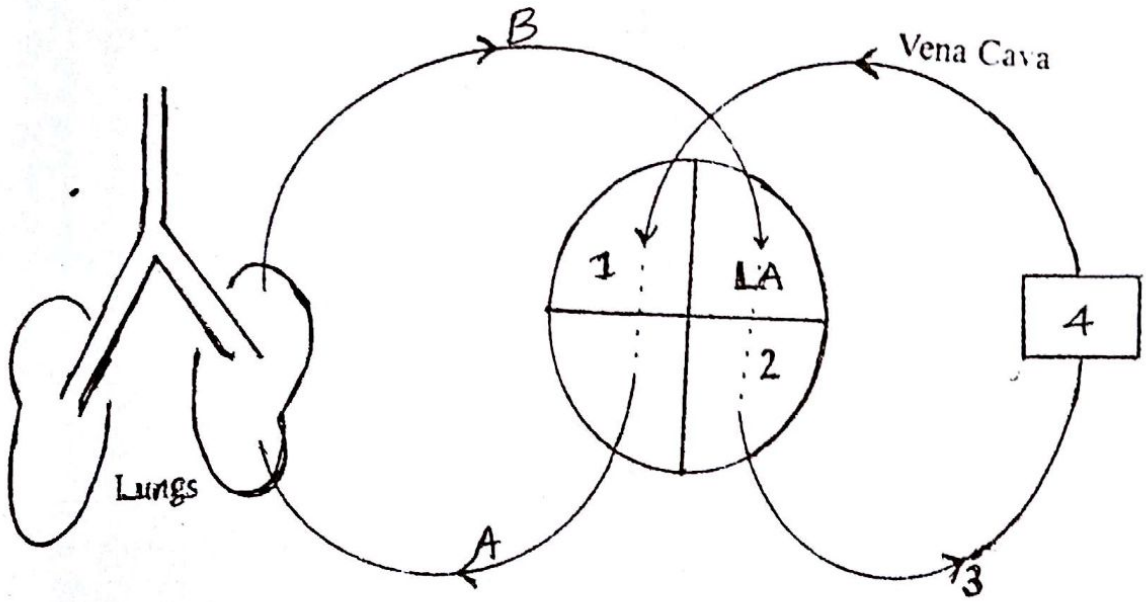
Attempt **any four** questions from this section

Question 2

a. Draw a diagram of the human eye as seen in a vertical section and label the part which suits the following functions/descriptions:-

a. The layer which prevents reflection of light.
b. The structure that alters the focal length of the lens.
c. The region of distinct vision.
d. The part which transmits the impulse to the brain.
e. The outermost transparent layer in front of the eye lens.
f. The fluid present in the anterior part of the eye in front of the eye lens. [5]

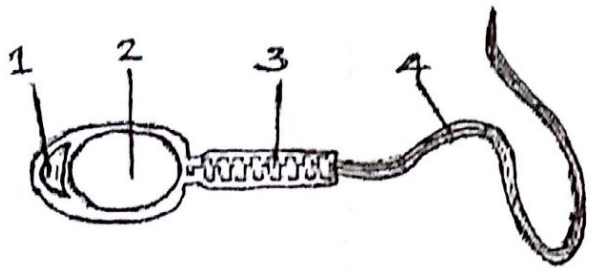
b. Given below is a schematic representation of the circulatory system in man. Study the same and answer the questions that follow:-



1) Label the parts 1to 4 indicated in the diagram.
2) What is the specific name of the type of blood circulation that takes place between the heart and the lungs?
3) Name the valve found at the beginning of the part labelled 3.
4) Draw a well labelled diagram to show the structural difference between the blood vessels A and B
5) Give one difference between the parts 1 and 2 based on :-
   a) their structure
   b) the nature of blood flowing through them. [5]

Question 3

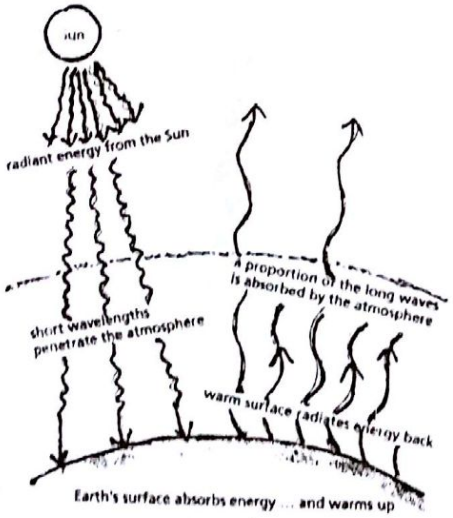
a. Given below the diagram of human sperm. Answer the following questions:-



1) Label the parts1, 2 , 3and 4.
2) Name the milky fluid in which sperms are present.
3) From where do the sperms get energy for their locomotion?
4) Is the nucleus of the sperm haploid or diploid?
5) Name the process by which sperms are produced in testis.
6) Draw a well labelled diagram of human ovum.

[5]

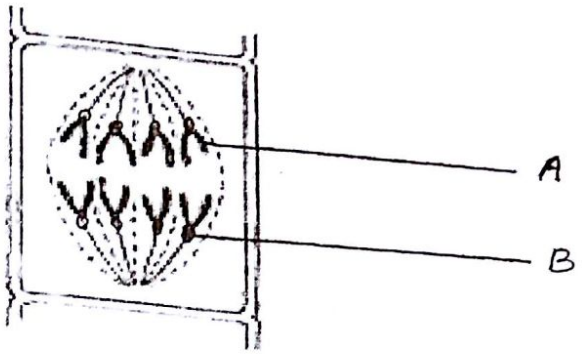
b. The diagram given below shows a certain phenomenon in nature. Study the diagram and answe the questions that follow.



1) Identify the phenomenon.
2) The above mentioned phenomenon leads to certain major problems in nature. Mention a one such problem.
3) Name any two gases which cause this phenomenon.
4) Suggest any two methods to overcome this problem.
5) Mention any two ways by which human life become affected due to this phenomenon.

Question 4

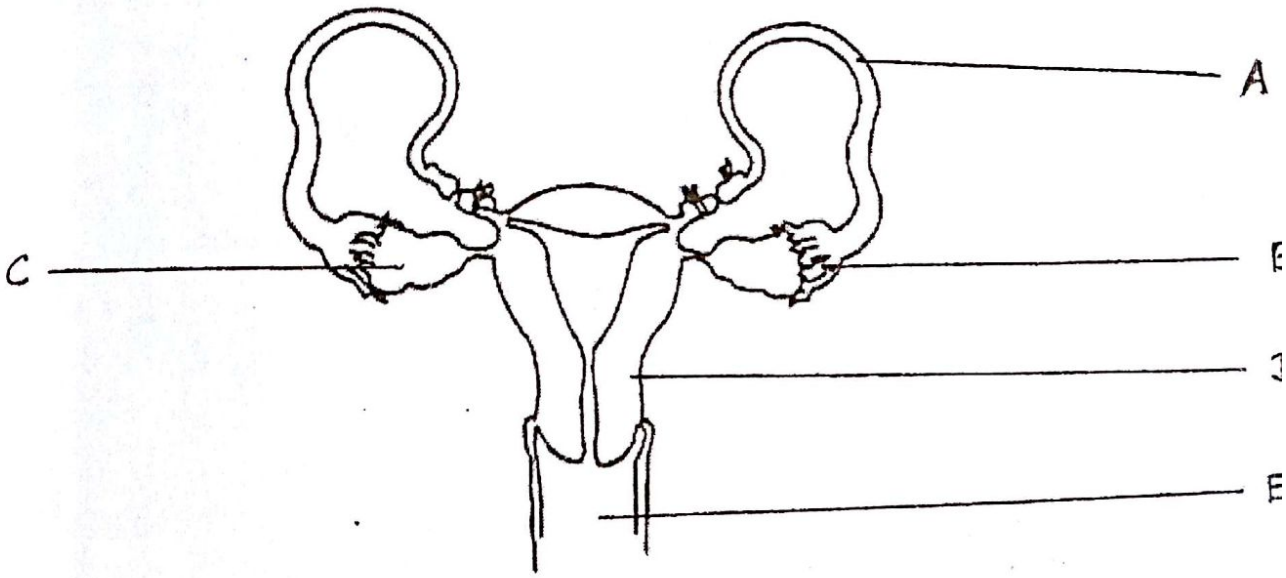
a. The diagram given below represents a certain stage of mitosis:



1) Identify the stage of cell division. Give a reason to support your answer.
2) Name the parts labelled A and B.
3) In what two ways is the animal cell different in the mitotic division from plant cell?
4) Draw a well labelled diagram of the stage which comes prior to the above shown stage. Name the stage.
5) Name the type of cell division that occurs during:
   a) Growth of a shoot.
   b) Formation of pollen grains.

[5]

b. The diagram below represents a surgical sterilisation method in females. Study the same and answer the following questions.



1) Name the parts marked A, B, C, D and E.
2) Give the name of the surgical method represented in the diagram.
3) Which part is ligated or cut?
4) Name the corresponding surgical method conducted on males.
5) Name the part which is ligated in males and why?

[5

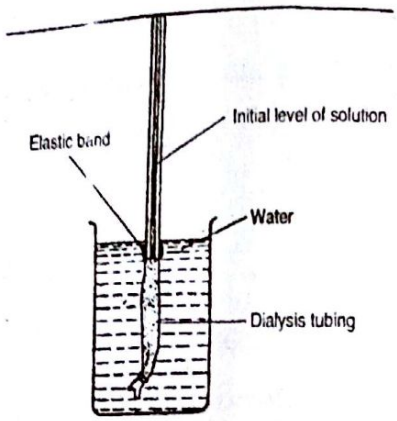
Question 5

a. A homozygous tall plant (T) bearing red coloured (R)flowers is crossed with a homozygous dwarf (t) plant bearing white (r) flowers:-

1) Give the genotype and phenotype of the plants of F_1 generation.
2) Mention the possible combinations of the gametes that can be obtained from the F_1 hybrid plant.
3) State the Mendel's law of Independent Assortment.
4) Mention the phenotypes of the off springs obtained in F_2 generation.
5) What is the phenotypic ratio obtained in F_2 generation?

[5]

b. The apparatus shown below signifies an important process. Observe carefully and answer the questions that follow:



1) Name the process demonstrated.
2) Where does this process occur in plants?
3) Name the solution placed inside the dialysis tubing.
4) What happens to the level of the solution in the capillary tube?
5) Define the process mentioned in Q 5 b (1)
6) List any three materials that can be used as semi permeable membrane. [5

Question 6

a. Write briefly about the following.

1) Industrial melanism.
2) Vestigial organs.
3) Neanderthal man.
4) Apical dominance.
5) Destarched plant.

b. Draw neat labelled diagrams of the following:

1. Chloroplast.
2. A myelinated Neuron.
3. Malphigian capsule

Question 7

a. Give the biological/ technical terms for the following:

1) The canal through which the testes descend into the scrotum just before the birth of a male baby.
2) A constituent that causes pollution.
3) The onset of menstruation in a young girl.
4) Structure which connects placenta with the foetus.
5) The fluid present between the layers of meninges.
6) Permanently open structures seen on the bark of an old woody stem.
7) The biological process which is the starting point of the food chain.
8) The change in an organism resulting due to a stimulus.
9) An antiseptic present in tears.
10) The repeating components of each DNA strand lengthwise. [5]

b. Give reason for the following:

1) Some women have facial hair like beard and moustache.
2) There is frequent urination in winter than in summer.
3) We feel blinded for a short while entering a dark room when coming from bright sunlight.
4) Veins are provided with valves.
5) Injury to Medulla oblongata results in death. [5]