Thakur Village, Kandivali (E),
Mumbai - 400 101.
Mob. 9821263050.

VIBGYOR HIGH

VIBGYOR HIGH

Second Preliminary Examination

2018-2019

BIOLOGY

Grade: X **Max. Marks : 80**

Date : 10/01/2019 **Time Allowed : 2 hours**

INSTRUCTIONS:-

- **Answers 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 intended marks for the questions or parts of questions are given alongside the questions.**
- **Attempt all questions from section I and any four questions from section II**

SECTION I (40 marks)

Attempt all questions from this section.

Question 1

a) **Name the following:** **[5]**

i) The phase of heartbeat in which both the atrio-ventricular valves are closed.

ii) The cleanliness campaign started by the Government of India to eliminate open defecation.

iii) The plant growth hormone which increases the yield of sugarcane by internodal elongation.

iv) The bundle of axons enclosed in a tubular sheath.

v) The period between two successive mitotic divisions.

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

i) Photolysis of water releases: 1. Electron, 2. Proton, 3. Oxygen

Choose the correct combination:

A. 1 and 2

B. 2 and 3

C. 1 and 3

D. 1, 2 and 3

ii) What change would occur in the DNA content, during S-phase?

A. No change

B. The amount of DNA per cell doubles

C. The amount of DNA per cell increases four folds

D. The amount of DNA per cell decreases

iii) Which of the following is not involved in a knee jerk reflex?

A. Muscle spindle

B. Motor neuron

C. Brain

D. Inter neurons

iv) The first man like ancestor is represented by:

A. *Homo habilis*

B. *Homo erectus*

C. *Homo sapiens*

D. *Homo sapiens sapiens*

v) The 9:3:3:1 dihybrid ratio is due to:

A. Segregation

B. Crossing over

C. Independent assortment

D. Homologous pairing

c) **Identify the odd term in each set and state the category to which the remaining three belong.** [5]

Example: Ovary, Fallopian tube, Ureter, Uterus
Odd term: Ureter
Category: Parts of the female reproductive system

i) Adrenal gland, Thyroid gland, Prostate gland, Pituitary gland

ii) Conjunctiva, Cornea, Sclera, Lens

iii) Cow-dung, Plastic bags, Electronic waste, Metallic cans

iv) Coronary artery, Hepatic artery, Renal artery, Pulmonary artery

v) Diaphragms, Sperm killing agents, Condom, Hormonal pills

d) **Given below are certain functional activities of a specific structure/device in the body of the living organisms. Name the structure/device responsible for:** [5]

i) Protecting the foetus and enclosing it in a fluid.

ii) Loss of water in the form of droplets from the leaf margins in plants.

iii) Entry of carbon dioxide into the leaf for photosynthesis.

iv) The secretion of potassium and foreign chemicals into the urine that is being formed.

v) Preventing implantation of embryo when it fits inside the uterus.

e) **Given below are five sets of terms each. Rewrite the terms in correct order in a logical sequence.** [5]

i) Blastocyst, Zygote, Foetus, Morula, Embryo

ii) Tympanum, Oval window, Cochlea, Pinna, Ear ossicles

iii) Cortex, Endodermis, Xylem, Epidermis, Pericycle

iv) Implantation, Ovulation, Parturition, Gestation, Fertilization

v) Afferent arteriole, Renal artery, Vasa recta, Efferent arteriole, Renal vein

f) **Given below are groups of terms. In each group the first pair indicates the relationship between the two terms. Rewrite and complete the second pair on a similar basis:** [5]

i) Chloroplasts : Photosynthesis :: Leaf spines : _____

ii) Darwin : Natural selection :: Lamarck : _____

iii) Neutrophils : Engulf bacteria :: Basophils : _____

iv) Bile pigments: Liver :: Carbon dioxide and water vapour : _____

v) Cranial nerves: 12 pairs :: Spinal nerves : _____

g) **A thin strip of epidermal cells from the fleshy scale of an onion bulb was examined in a drop of water under a microscope. All epidermal cells looked as shown in the figure given below. The thin strip was then transferred to a few drops of strong sugar solution on a slide and reexamined under the microscope after about five minutes. Answer the questions that follow:** [5]

i) Make a labelled drawing of one of the epidermal cells as it would appear after immersion in the strong sugar solution.

ii) What is the scientific term for the condition drawn in (i) above?

iii) What can be done to bring this cell back to its original condition? Give the technical term for this process of recovery.

iv) Suggest one method of preventing spoilage of meat or fish on the principle illustrated in the above procedure.

v) State the difference between turgor pressure and wall pressure on the basis of their meaning.

h) **Match the items given in Column A with the most appropriate ones in Column B and rewrite the correct matching pairs:** [5]

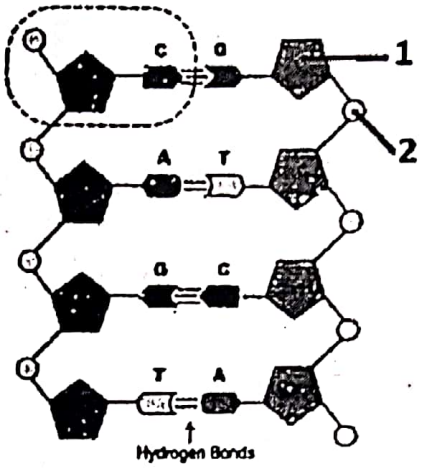
Column A	Column B
i) Imbibition	A. Pink
ii) Dry cobalt chloride paper	B. Induces fruit ripening
iii) Ethylene	C. Insulin
iv) Conditioned reflex	D. Surface attraction
v) Beta cells of islets of Langerhans	E. Playing a musical instrument
	F. Induces parthenocarpy
	G. Cohesion
	H. Blue
	I. Peristaltic reflexes
	J. Glucagon

Section II (40 marks)

Attempt any four questions from this section

Question 2

a) **Given below is the schematic diagram of a portion of DNA. Observe the same and answer the questions that follow:** **[5]**



i) Label the parts numbered 1 and 2.

ii) Give the collective term for the parts labelled as A, T, G, C.

iii) Name the DNA unit constituted by the parts shown in the circle. How many such units have been shown in each strand?

iv) Define the unit of heredity.

v) What is mutation?

b) **Give one difference between each of the following pairs on the basis of what is given in the brackets:** **[5]**

i) Transpiration and Guttation (time of occurence)

ii) Sympathetic system and Para sympathetic system (effect on the pupil of the eye)

iii) Auditory canal and Semicircular canal (function)

iv) Ultrafiltration and Reabsorption (explain)

v) Mineralocorticoid and Glucocorticoid (principal action)

Question 3

a) **Answer the following as per the specifications given in the brackets:** **[5]**

i) Bowman's capsule (location and function)

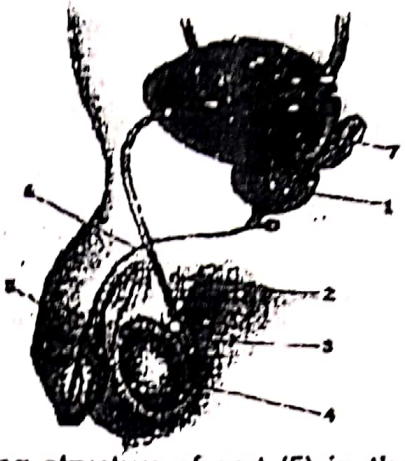
ii) Light and Dark adaptation (changes in rhodopsin)

iii) Insulin shock (explain the term)

iv) Synapse (define)

v) Cro-magnon (two main characteristics)

b) **Given below is the diagram of the human male reproductive system. Study the same and answer the questions that follow:** [5]



i) Label the parts 1 to 4.

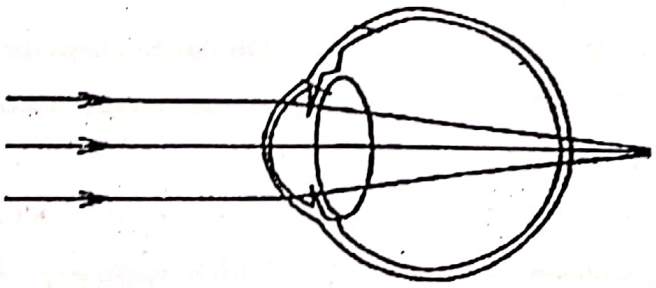
ii) Name the corresponding structure of part (5) in the female reproductive system.

iii) State the function of parts 6 and 7.

iv) Draw a neat and labelled diagram of a mature female gamete.

Question 4

a) **The schematic diagram given alongside represents a defect of vision of the human eye. Study the same and then answer the questions that follow:** [5]



i) Give the technical term for the defect and state its effect on the vision.

ii) Mention one cause for this defect.

iii) How can this defect be rectified?

iv) Draw a neat labelled diagram to show how this defect is rectified.

v) List two functions of the vitreous humour.

vi) Explain one way in which the yellow spot is different from the blind spot.

b) Give the **biological/ technical terms for the following:** [5]

i) The stage of cell division in which the centrioles move to the opposite poles of the cell.

ii) The muscle or gland that responds to motor nerve impulse by contracting or secreting substances.

iii) The number of individuals per square kilometre at any given time.

iv) The part of chloroplast where the dark reaction of photosynthesis takes place.

v) The measure of the tendency of a solution to take in water by osmosis.

vi) The exchange of chromatin material between the two members of a homologous pair of chromosomes during meiosis.

vii) The development of fruits without fertilization.

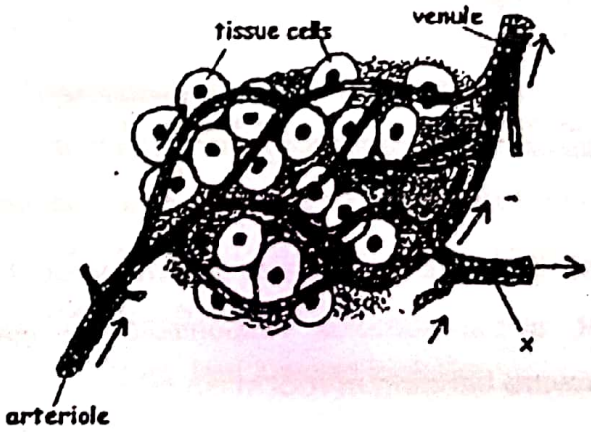
viii) The kind of ratio obtained by crossing two pairs of contrasting characters.

ix) The thin, delicate, web like middle layer of the meninges.

x) The openings on the stem through which transpiration occurs.

Question 5

a) **The diagram below shows part of the capillary bed in an organ of the human body. Study the diagram and answer the questions that follow:** [5]



i) What is the liquid from the blood which surrounds the cells called?

ii) Some of the liquid surrounding the cells does not pass directly back into the blood but enters vessel X. Identify vessel X and name the fluid present in vessel X.

iii) Which cellular blood component is a part of this fluid?

iv) State two functions of the fluid present in vessel X.

v) Explain how the movement of fluid in vessel X is brought about.

b) **A colour blind man (X^cY) marries a carrier woman (XX^c). Answer the questions that follow:** [5]

i) Make a Punnett square for finding out the progeny of the above mentioned genetic cross.

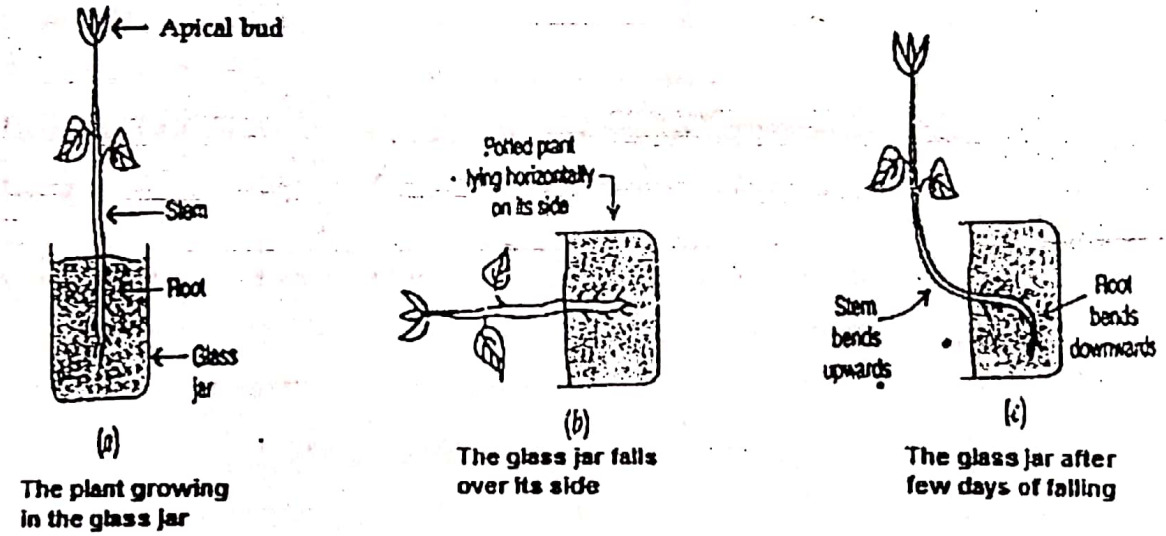
ii) What percentage of the progeny are colour blind?

iii) What is the ratio of carrier progeny to colour blind progeny?

iv) Explain criss-cross inheritance.

Question 6

a) **The diagram given below shows a plant growing in a glass jar in three different conditions- the glass jar is placed in sunlight (figure a), the glass jar falls over its side (figure b), the glass jar after few days of falling (figure c). Study the diagram and answer the questions that follow:** [5]



(a) The plant growing in the glass jar

(b) The glass jar falls over its side

(c) The glass jar after few days of falling

i) Name the tropic movements shown by root and shoot in figure (a).

ii) What is the stimulus responsible for upward bending of stem and downward bending of root in figure (c)?

iii) Name the plant hormone responsible for bending of the stem in figure (c). How does the hormone work?

iv) What will happen if the stem tip is cut in figure (a)?

v) If the plant in figure (b) was placed on a Clinostat and rotated at a slow speed for some days, then what would be your observation? Give an account for the same.

b) Give biological reasons for the following statements: [5]

i) Burning of garbage is harmful.

ii) Transpiration increases with the velocity of wind.

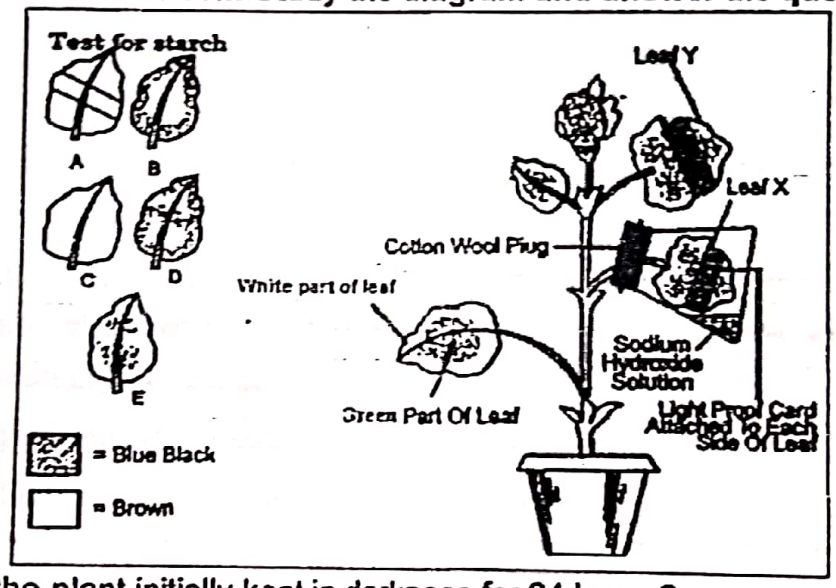
iii) Chloroplasts are called energy convertors.

iv) Gametes have haploid number of chromosomes.

v) Injury to the medulla oblongata results in death.

Question 7

a) A well watered healthy potted plant with variegated leaves was kept in darkness for about 24 hours. It was then set up as shown in the diagram and exposed to light for about 12 hours. At the end of the time, leaf X and leaf Y were tested for starch. Study the diagram and answer the questions that follow: [5]



i) Why was the plant initially kept in darkness for 24 hours?

ii) What is the function of sodium hydroxide solution in the flask?

iii) Select the correct leaf from the five available choices shown in the diagram as A, B, C, D, E. Rewrite the sentence after filling in the appropriate letter for the following:

1. After the starch test, leaf X would look like _____.
2. After the starch test, leaf Y would look like _____.

iv) The experiment with leaf X shows that photosynthesis requires the presence of a certain factor. Mention the factor.

v) Choose the appropriate word from the bracket and rewrite the statement:
The oxygen gas released during photosynthesis is formed due to breakdown of _____. (carbon dioxide, water, glucose)

vi) List two processes through which the green plant can return the carbon dioxide back to the atmosphere.

b) **Name the hormone and state whether their hypo secretion or hyper secretion leads to the following conditions:** [5]

i) Pituitary dwarfism.

ii) Diabetes insipidus

iii) Exophthalmic goitre

iv) Adrenal virilism

v) Cretinism.

* * * * *