PRELIMINARY EXAMINATION 2018-19

Subject: Biology
Std.: X A

Date: January 7, 2019
Time: 2 hours
(Plus 15 minutes reading time)

Marks: 80

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.

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 [ ].

This paper consists of 7 questions on 12 pages.

Section I [40 Marks]

Attempt all questions from this section.

Question 1

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

(i) Origin of new species by gradual modification.

(ii) Chromosomes that bear genes for all body characters other than for sex determination.

(iii) Plant hormone which stimulates growth by cell division.

(iv) Soluble protein in blood plasma that helps in blood clotting.

(v) Tuft of capillaries located within the Bowman's capsule.

b) **State whether the following statements are True or False. If False, rewrite the correct statement by changing the underlined word(s).** **[5]**

(i) <u>Urea</u> is an organic constituent of urine.

(ii) <u>Corpus luteum</u> connects the two cerebral hemispheres.

(iii) Presbyopia is corrected by convex lens.

(iv) Theory of inheritance of acquired characters was proposed by Charles Darwin.

(v) Endometrium is the membranous covering of the heart.

c) **Write the location of the following part:** [5]

(i) Mitral valve

(ii) Loop of Henle

(iii) Cerebellum

(iv) Conjunctiva

(v) Uterus

d) **Differentiate between the following on the basis of instructions given in the brackets.** [5]

(i) Clinostat and Ganong'sPotometer (use)

(ii) *Homo erectus* and *Homo habilis* (Cranial capacity)

(iii) Thigmotropism and Hydrotropism (Meaning)

(iv) Stroma and Thyllakoid (Phase of photosynthesis)

(v) Chordae tendinae and Suspensory ligament (function)

e) **Given below are five sets, with four terms each. In each set, one term is odd and cannot be grouped into the category to which the other three belong. Identify the odd one in each set and name the category to which the remaining three belong.** [5]

(i) Adenine, Thymine, Histamine,Guanine

(ii) Nerium, Banyan, Cactus, Elodea.

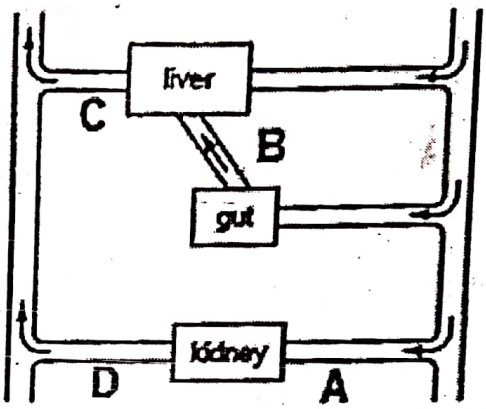
(iii) Cerebrum, Hypothalamus, Medulla oblongata, Thalamus

(iv) Choroid, Amnion, Iris, Sclera

(v) Simple goitre, Cretinism, Acromegaly, Myxoedema.

f) **Select the correct answer out of the four available choices.** [5]

(i) The diagram represents some human organs and their blood vessels. Which blood vessel will have maximum concentration of urea after a protein rich meal?



(ii) In case of peppered moth *(Biston betularia)* the black coloured form became dominant over the light coloured form in England during industrial revolution. This is an example of:

A Inheritance of darker colour character acquired due to the darker environment.

B Protective mimicry.

C Appearance of the darker coloured individuals due to very poor sunlight.

D Natural selection whereby the darker forms were selected

(iii) Root pressure is maximum when:

A Transpiration is high and absorption is very low

B Transpiration is very low and absorption is high

C Transpiration is very high and absorption is high

D Transpiration and absorption both are low

(iv) Stomata of a plant open due to

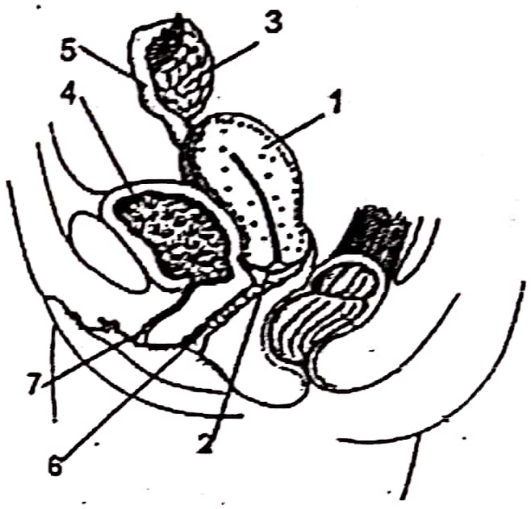
A Influx of potassium ions

B Influx of hydrogen ions

C Efflux of potassium ions

D Efflux of calcium ions

(v)



Identify the parts of the female reproductive system

	Ovary	Uterus	Oviduct	Vagina
A	2	4	5	7
B	1	3	4	2
C	3	1	5	6
D	4	3	7	5

g) Mention the function of the following. [5]

(i) Ovary

(ii) Leydig cells

(iii) Glucagon

(iv) Eustachian tube

(v) Meninges

h) Given below are five sets of terms. In each case, arrange and rewrite each set of terms in a logical sequence. [5]

(i) Cortical cells, Root hair, Soil water, Endodermis, Xylem.

(ii) Karyokinesis,S-phases,Cytokinesis,G1 phase,G2 phase.

(iii) Motor neuron , Receptor , Sensory Neuron, Effector, Association neuron.

(iv) Ovum, Graafianfollicle, Uterus, Ostium, Fallopian tube.

(v) Cochlea, Tympanum, Pinna, Auditory canal, Ear ossicles.

Section II [40 Marks]

Attempt any four questions from this Section

Question 2

a) Explain the terms [5]

(i) Guttation

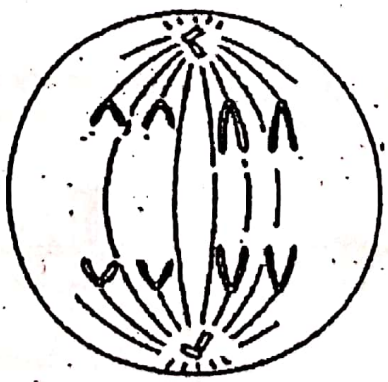
(ii) Natality

(iii) Noise pollution

(iv) Gene

(v) Photophosphorylation

b) Given below is a stage of mitosis observed in an animal cell. [5]
Observe the diagram and answer the questions that follow.



(i) State the characteristics of the given stage of mitosis.

(ii) Draw a neat labelled diagram of the previous phase.

(iii) Where does this type of cell division occur in plants?

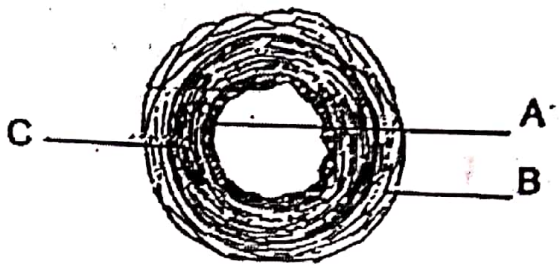
(iv) How many daughter cells are produced after mitotic cell division?

(v) Explain cytokinesis in animal cell.

(vi) Mention two functions of the centromere.

Question 3

a) **Given below is the cross section of an artery. Observe the diagram and answer the questions that follow.** **[5]**



(i) Why does the blood in an artery flow in spurts?

(ii) Name the parts A, B and C

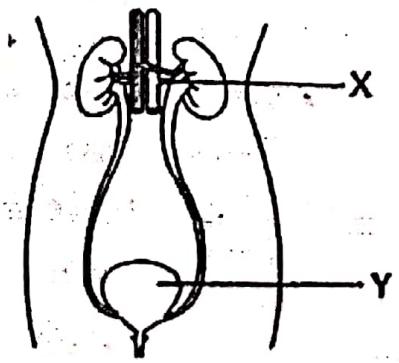
(iii) State two structural features of the blood vessel.

(iv) What is a pulse?

(v) Define Hypertension.

(vi) What is the function of coronary artery?

b) **Observe the diagram of the urinary system and answer the questions that follow.** **[5]**



(i) Why is the right kidney slightly lower than the left kidney?

(ii) State two functions of kidney.

(iii) Which type of blood is carried by blood vessel X?

(iv) Mention the function of the part labelled Y.

(v) How does ADH control concentration of urine?

(vi) Explain the term 'Uremia'.

Question 4

a) **In a homozygous pea plant, green pod colour is dominant over yellow pod colour.** **[5]**

(i) What are the phenotype and the phenotype ratio of the offspring in F2 generation?

(ii) Explain the law of segregation of gametes.

(iii) Why did Gregor Mendel select pea plant for his experiments on inheritance?

(iv) Is the above cross a Monohybrid cross or a Dihybrid cross? Give a reason for your answer.

(v) State the genotype of the F1 generation.

(vi) Define the term Allele.

b) **Give scientific reasons** **[5]**

(i) Abscisic acid is referred as a stress hormone.

(ii) Gametes have haploid number of chromosomes.

(iii) Balsam plants wilt during midday, even if the soil is well watered.

(iv) Walls of ventricles are thicker than atrium.

(v) Use of CFC is banned in many countries.

Question 5

a) In an experiment the apex of the right hand plant was treated, from the seedling stage, at reguiar interval with a plant hormone. The left plant was an untreated control. The picture given below represents the results after the experiment. [5]

Plant: White cabbage (*Brassica oleracea var. capitata*)

(i) Which plant hormone was used in the experiment?

(ii) What was the effect of the plant hormone on the white cabbage?

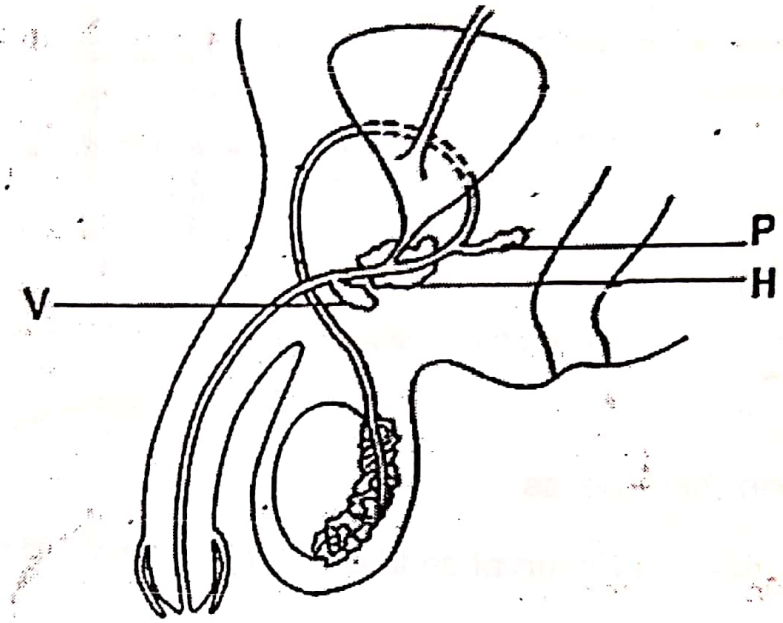
(iii) What is the site of synthesis of the mentioned plant hormone in higher plants?

(iv) Define Parthenocarpy.

(v) Why is this plant hormone commonly used in brewing industry?

(vi) Why are synthetically prepared plant hormone mentioned in (i) above used on fruits?

(b) **Given below is the diagram of the human male reproductive system. Observe the given diagram and answer the questions that follow.** **[5]**



(i) Where are sperms produced in the testis?

(ii) Choose the correct option.

	H	P	V
A	Prostate gland	Seminal Vesicle	Cowper's gland
B	Seminal vesicle	Prostate gland	Cowper's gland
C	Prostate gland	Cowper's gland	Seminal vesicle
D	Seminal vesicle	Cowper's gland	Prostate gland

(iii) What is the function of seminal vesicle?

(iv) State the location of prostate gland.

(v) Why are millions sperms released in a single ejaculation?

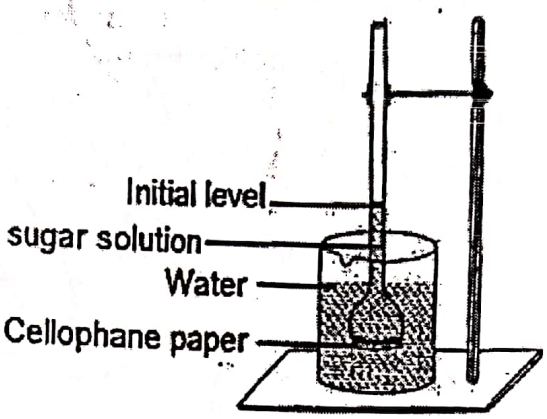
(vi) Name the site of sperm maturation.

(vii) Give the technical term for surgical cutting and ligation of sperm duct.

Question 6

a) Given below is an experimental set up used to study a process. [5]

Observe the set up and answer the questions that follow.



(i) Define the process.

(ii) Mention the observation that occurred after a few hours.

(iii) Suggest a suitable control for the experiment.

(iv) If the setup is compared with a root hair cell, what would the following represent

a) Cellophane paper
b) Sugar solution

(v) Draw a neat labelled diagram of a root hair cell if excess chemical fertilizers are added to the soil.

(vi) How are mineral ions absorbed by the root hair cell?

b) Answer the following questions [5]

(i) Differentiate between :

Australopithecus and Cro-magnon (Face and Eyebrow ridges)

(ii) Mention any four characteristics of Neanderthal man.

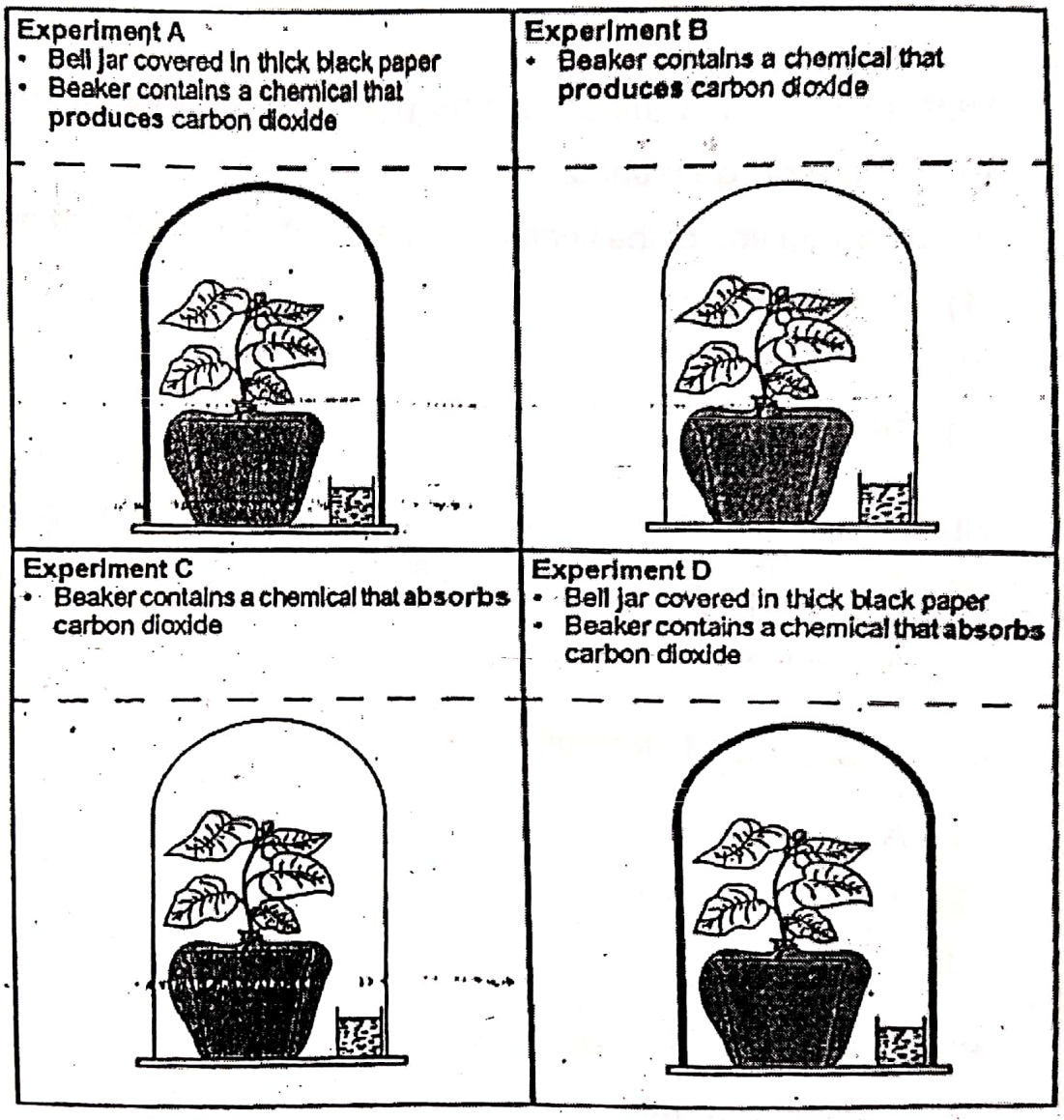
(iii) Write characteristics of Apes on the basis of :

1) Dental arch
2) Simian gap

(iv) What is the aim of Swachh Bharat Abhiyan?

Question 7.

a) The diagrams given below show four experiments used to investigate the conditions needed for a process in plants. Four well watered destarched green plants were placed in glass bell jars, which were sealed onto greases glass plates. The soil in each pot was covered with a polythene sheet. Each apparatus was then subjected to different environmental conditions. Observe the diagram and answer the questions that follow. [5]



(i) Name the physiological process studied in the experiment.

(ii) Write a balanced chemical equation to explain the physiological process.

(iii) Which set up would show the increase in biomass?

(iv) Name the chemical that absorbs carbon dioxide.

(v) What would be your observation if the leaves from each set up were tested for the presence of starch?

(vi) Which chemical is used to detect the presence of starch?

(vii) What is meant by destarched plant?

b) **With reference to the endocrine glands in the human body. Answer the following questions.** [5]

(i) Draw an outline of the human body and mark the location of:

1) Pancreas
2) Thyroid gland
3) Pituitary gland

(ii) State one function of:

1) Thyroxine
2) Adrenaline

(iii) Write the complete form of:

1) ACTH
2) TSH
3) HGH

(iv) State the cause of:

1) Adrenal virilism
2) Diabetes mellitus

X