Swami Vivekanand International School

Grade : X | **PRELIM II** | Marks : 80

Date : 10/01/20 | **BIOLOGY** | Time : 2 hrs.

SCIENCE Paper – 3

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 ( ).

Section I (40 marks)

*Attempt **all** questions from this **Section***

Question 1.

a) Name the following: (5)

(i) The process of uptake of mineral ions against the concentration gradient using energy from cell.
(ii) The hormone that inhibits apical dominance.
(iii) Protein that constitutes the chromatin fibre.
(iv) Blood vessel carrying the most oxygenated blood.
(v) The scientist who proposed the evolutionary theory "Inheritance of acquired characters."

b) State the main function of the following: (5)

(i) Cerebrospinal fluid
(ii) Eustachian tube
(iii) Ciliary Muscles of the eye
(iv) Sperm duct
(v) Lenticels

c) Given below are groups of terms. In each group identify the odd term and state the category to which others belong. (5)

(i) Stomata, Lenticels, Cuticle, Hydathode.
(ii) TSH, ADH, ACTH, FSH
(iii) Bowman's capsule, Loop of Henle, PCT, DCT
(iv) Wisdom teeth, Vermiform appendix, Pinna, Neck.
(v) Oil, chemical residues, fly ash, metallic ash.

d) 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 space between the wall and plasma membrane in a plasmolysed cell is filled with.
(A) Isotonic solution (B) Hypotonic solution (C) Hypertonic solution (D) Water

(v) Duplicated chromosomes are joint at a point called _____
(A) Centromere (B) Centriole (C) Centrosome (D) Chromatid

e) Differentiate between the following on the basis of instructions given in the brackets. **(5)**

(i) Clinostat and Ganong's Fotometer (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)

f) State the full forms of : **(5)**

(i) ABA (ii) IAA (iii) GA3
(iv) IUD (v) FSH

g) Given below are sets of five terms each. Without changing the first term, rearrange the remaining four, so as to be in the logical sequence as per the directions given in the brackets for each. **(5)**

(i) **Pinna,** cochlea, tympanum, ear, ossicles, auditory canal. (rout of sound through the ear.)
(ii) **Soil water,** endodermis, xylem, root hair, cells of cortex, (entry of water into the plant from the soil)
(iii) **Ovary,** vagina, uterus, oviduct, cervix (pathway of egg)
(iv) **Renal artery,** efferent arteriole, renal vein, afferent arteriole, glomerulus (pathway.of blood through nephron)
(v) **Xylem,** stoma, mesophyll cells, intracellular space, sub -stomata' space (loss of water due to transpiration)

h) State true or false. If false correct the statement by changing only the underlined word/s. **(5)**

(i) The uterus is called the birth canal.
(ii) Osmosis is termed as active transport.
(iii) Transpiration is the loss of cell sap from any cut or injured part of a plant.
(iv) The auditory canal of the ear is a vestigial organ.
(v) Heterotrophs are organisms that prepare their own food.

Section II (40 marks)

*Attempt **any four** questions from this **Section.***

Question 2

a) Given below are two stage in the evolution of man. Study them and answer the questions that follow : **(5)**

(i) Identify Australopithecus and Neanderthal man from the above pictures.

(ii) Mention two characteristic features each for the two stages.

(iii) Who proposed the theory of 'Natural Selection'?

(iv) Name the organism used as an example to explain 'Industrial Melanism'.

b) Give the exact location of the following. **(5)**

(i) Amnion

(ii) Semi circular canal

(iii) Islets of Langerhans

(iv) Yellow spot

(v) Thyroid gland

Question 3

a) A pea plant that bears homozygous purple flowers is crossed with a pea plant that bears homozygous white flowers. Answer the questions based on the above information. **(5)**

(i) What will be the appearance of the progeny in the F1 generation?

(ii) What will be the appearance of the progeny in the F2 generation?

(iii) What is the genotypic ratio of the F2 generation?

(iv) What type of a cross is this? Give a reason for your answer.

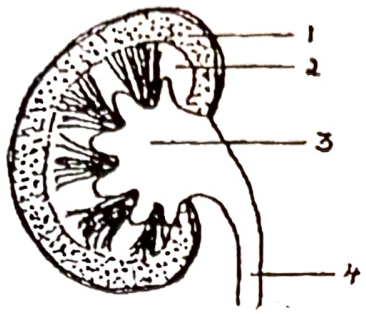
(v) Who is the father of modern genetics? What was the plant he used in his research?

b) Given below is a table. Rewrite the table and complete it. **(5)**

Function	Hormone
(i) Production of milk	
(ii) Reabsorption of water in the nephrons.	
(iii) Controls basal metabolism	
(iv) Releases extra energy in the case of an emergency.	
(v) Contraction of the uterus during childbirth.	

Question 4

a) **The diagram given below shows a section of a human kidney. Study the diagram and answer the questions that follow:** (5



(i) Label the parts numbered 1 to 4:

(ii) Why does part '2' have a striped appearance?

(iii) What is the fluid that passes down part '4'? Name the main nitrogenous waste present in it.

(iv) Mention the structural and functional units of kidneys.

(v) Name the two major steps in the formation of the fluid mentioned in (iii) above.

b) **Draw a neat labelled diagram of 'Malpighian capsule'** **(2)**

c) **Explain the following terms.** **(3)**

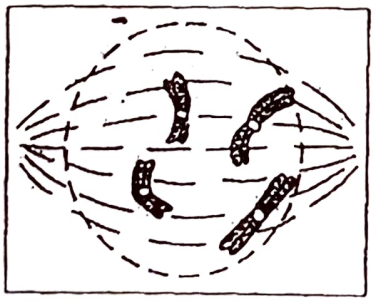
(i) Speciation

(ii) Growth rate of population

(iii) Biomedical waste

Question 5

a) **Given below is a diagram representing a stage during mitotic cell division. Study it carefully and answer the questions which follow:** **(5)**



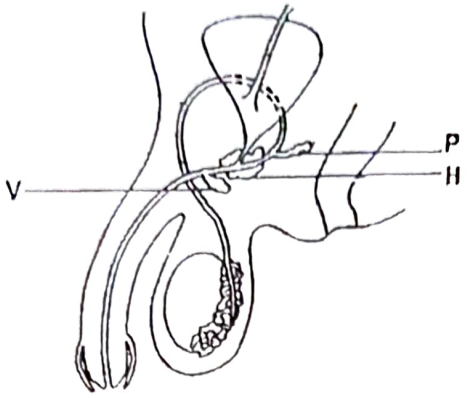
(i) Is it a plant cell or an animal cell? Give a reason to support your answer.

(ii) Identify the stage shown.

(iii) Name and draw the stage which follows the one shown here.

(iv) How will you differentiate between mitosis and meiosis on the basis of the chromosome number in the daughter cells?

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.

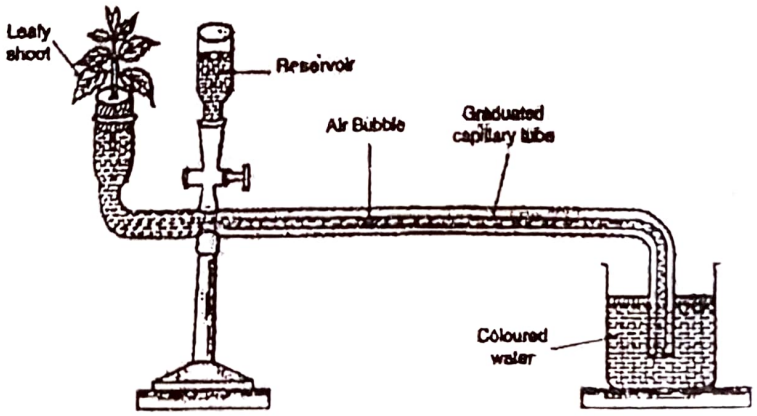
(v) Why are millions sperms released in a single ejaculation?

(vi) Name the site of sperm maturation.

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

Question 6

a) **The diagram below demonstrates a particular process in the plants. Study the same and answer the following.** **(5)**



(i) Name the apparatus.

(ii) Which phenomenon is demonstrated by this apparatus?

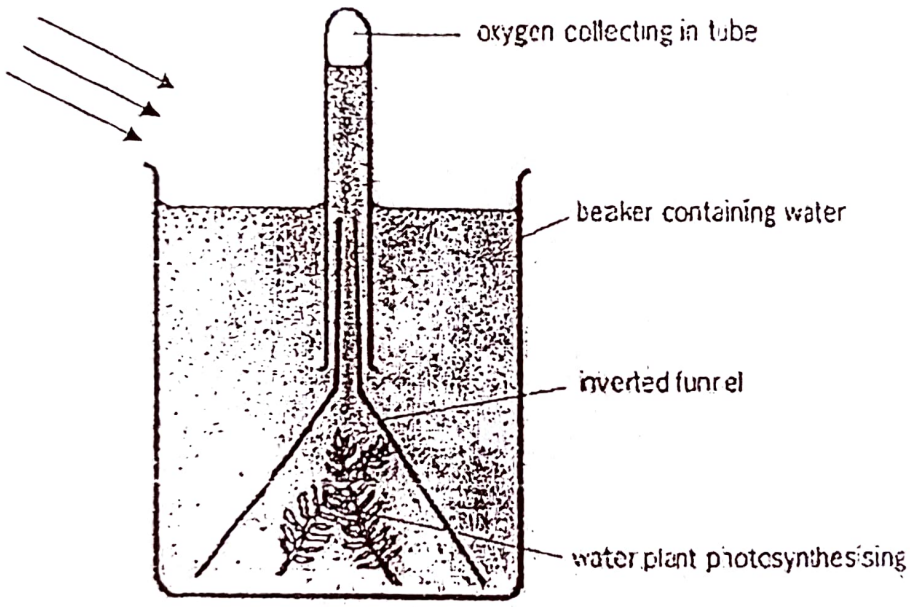
(iii) Explain the phenomenon mentioned in the (2) above.
(iv) State two limitations in using this apparatus.
(v) What is the importance of the air bubble in the experiment?
(vi) Name the structures in a plant through which the above process takes place.

b) Give scientific reason for the following. (5)

(i) Some women ha facial hair like beard and moustache.
(ii) Cutting of trees should be discouraged.
(iii) The left ventricle of the heart has a thicker wall than the right ventricle.
(iv) We cannot distinguish colours in moon light.
(v) When an Ovum gets fertilized, menstrual cycle stops temporarily in a women.

Question 7

a) Study the set up given below and answer the questions that follow: (5)



(i) Identify the physiological process.
(ii) State the aim of the experiment.
(iii) Will any change be observed in the given set up during night-time?
Give a reason to support your answer.
(iv) What will you observe when sodium bicarbonate is added in the water?
(v) Write a balanced equation for the physiological process identified in i)

b) Draw neatly labelled diagram of stomatal apparatus. (5)

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