

BAI AVABAI F. PETIT GIRLS' HIGH SCHOOL
FIRST PRELIMINARY EXAMINATION (2018 - 2019)
SCIENCE (PAPER-3)
BIOLOGY

STD: X
MARKS: 80

DATE: 04.12.2018
TIME: 2 Hrs. + 15 Mins.
Reading Time.

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 from Section II.
The intended marks for the questions or parts of questions are given in the brackets [].

SECTION I (40 Marks)
Attempt all questions from this section

Question 1

- (a) Name the following : [5]
- The pre - human ancestor.
 - An increase in the toxic materials at each level of food chain.
 - The development of fruit without fertilization.
 - Two non-circulating fluids in our body.
 - Severe pain in the chest caused by the lack of blood supply to the heart muscles.
- (b) State whether the following statements are true or false. If false, rewrite the false statement by changing the first or last word / words only: [5]
- Mitosis is the type of cell division occurring in the cells of injured parts of the body.
 - Low humidity in the atmosphere results in a decrease in the rate of transpiration.
 - A Phyto-hormone that accelerates senescence is gibberellins.
 - Cranium is the major portion of the brain.
 - Origin of new species by gradual modification is called variation.
- (c) Define the following terms [5]
- Noise.
 - Receptors.
 - Mutallon.
 - Apical dominance.
 - Vestigial organs.

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(d) State the exact location and the function of the following:

- i) Medulla oblongata
- ii) SAN
- iii) Lacrimal gland
- iv) Alpha cells
- v) Hydathodes

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(e) Given below in the box are a set of 15 biological terms. Of these, 12 can be paired into six matching pairs. Of the six, one has been done for you as an example. Write the remaining five and number them 1 to 5.

[5]

Insulin shock; Nerve impulse; Abnormal decrease in WBC; Erythropenia; Free of rod and cone cells; Neurotransmitter; Hypoglycemia; Dendrons; Leucopenia; Blind spot; Industrial melanism; Acetylcholine; Leukemia; Karyokinesis; *Biston bitularia*.

Example: Neurotransmitter – Acetylcholine.

(f) Complete the following statements by filling in the appropriate terms.

[5]

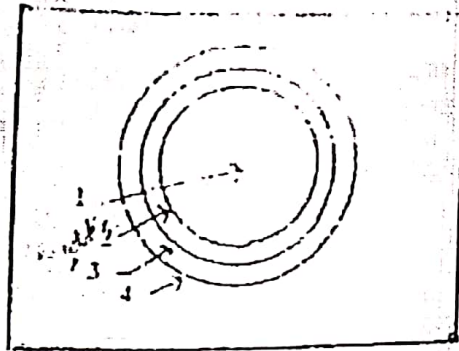
- i) Light independent phase of photosynthesis takes place in _____.
- ii) White blood cells engulf bacteria by a process called _____.
- iii) The cerebral hemispheres are connected by _____.
- iv) ODF stands for _____.
- v) Modern humans have 46 chromosomes. Their sperms and eggs will have _____ chromosomes each.

(g) There are five groups given below with four terms in each. In each group, there is one term which does not fit into the category. Identify the odd term and name the category to which the remaining three belong:

[5]

S. No.	Set	Odd term	Category
i)	Basophils, Neutrophils, Lymphocytes, Eosinophils.		
ii)	Oxytocin, FSH, Prolactin, ACTH.		
iii)	Mitosis, Neuron, Growth, Meiosis.		
iv)	Auxin, Cytokinin, Abscisic acid, Citric acid.		
v)	Pons, Malleus, Incus, Stapes.		middle ear

Q.1 The diagram given is a cross section of a blood vessel. Study the same and answer the questions that follow:



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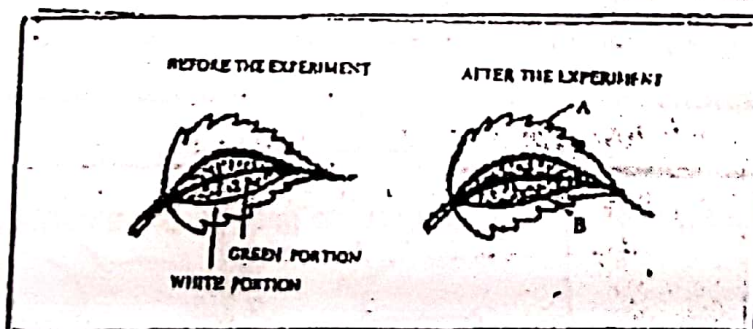
- i) Identify the blood vessel. Give a suitable example of this type of blood vessel.
- ii) Label parts 1 to 4.
- iii) Name the type of blood that flows through this blood vessel.
- iv) State the characteristic feature of the walls of this blood vessel.

Section II (40 Marks)

Attempt any four questions from this section.

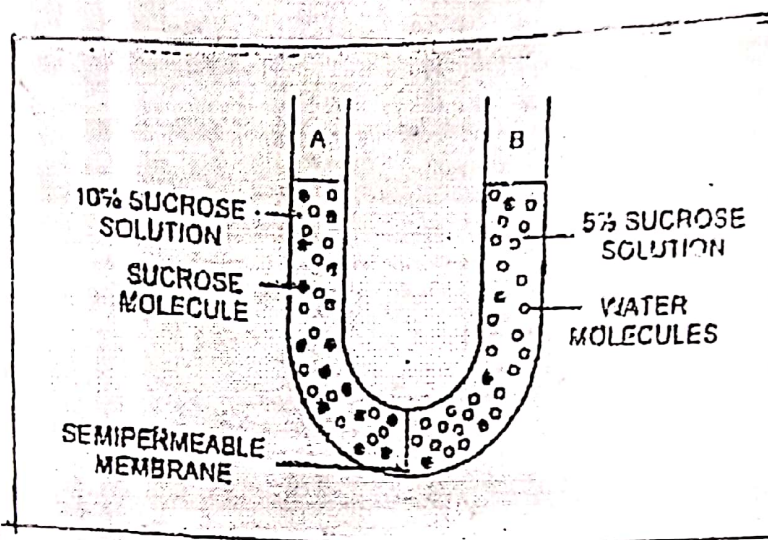
Question 2

- (a) The diagram given below is an experiment conducted to study a factor necessary for photosynthesis. Observe the diagram and answer the questions that follow: (5)



- i) What is the aim of the experiment?
- ii) What type of leaf was used for the experiment? Give an example.
- iii) What is the expected result of the above test on the parts labelled A and B?
- iv) Explain the starch test performed.

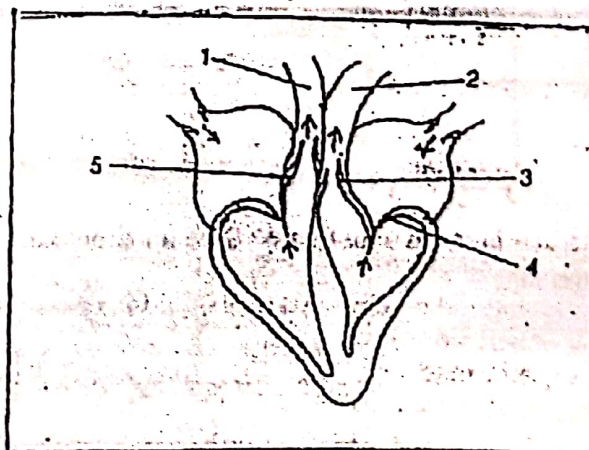
- (b) Given below is the diagram of an experiment just at the start. Study the diagram carefully and answer the questions that follow:



- i) What phenomenon is intended to be shown by this experiment?
- ii) Which limb of the U-tube contains more concentrated sucrose solution?
- iii) Why have the two kinds of molecules been shown in different sizes?
- iv) Why is the membrane separating the two solutions labelled as semi-permeable membranes?
- v) Which limb of the U-tube is functionally comparable to the root hairs of a plant?
- vi) What will be your observation after few hours?
- vii) Redraw the diagram to show the results of the experiments after a few hours.

Question 3

- (a)
 - i) Draw a neat labelled diagram of the chloroplast and mark any four parts. [4]
 - ii) Which are the two lights in which photosynthesis is most effective?
- (b) The diagram given below represents the human heart in one phase of its functions. Study the diagram and answer the questions that follow: [6]

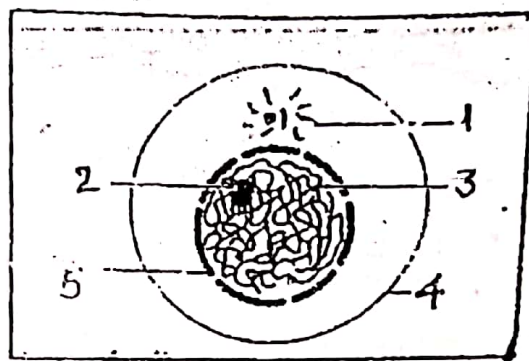


- i) Name the phase.
- ii) Which part of the heart is contracting in this phase? Give a reason to support your answer.
- iii) Label the parts 1 to 5.
- iv) What type of blood flows through '2'?
- v) State the function of the part numbered '5'.
- vi) Name the membrane that covers the heart.

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Question 4

- (a) The figure shown below is of a cell. Study the figure and answer the questions that follow: [5]



- i) Identify the stage of cell cycle.
- ii) Label the parts 1, 2, 3, 4 and 5.
- iii) Write any two characteristics of this phase

- (b) Answer the following questions: [5]

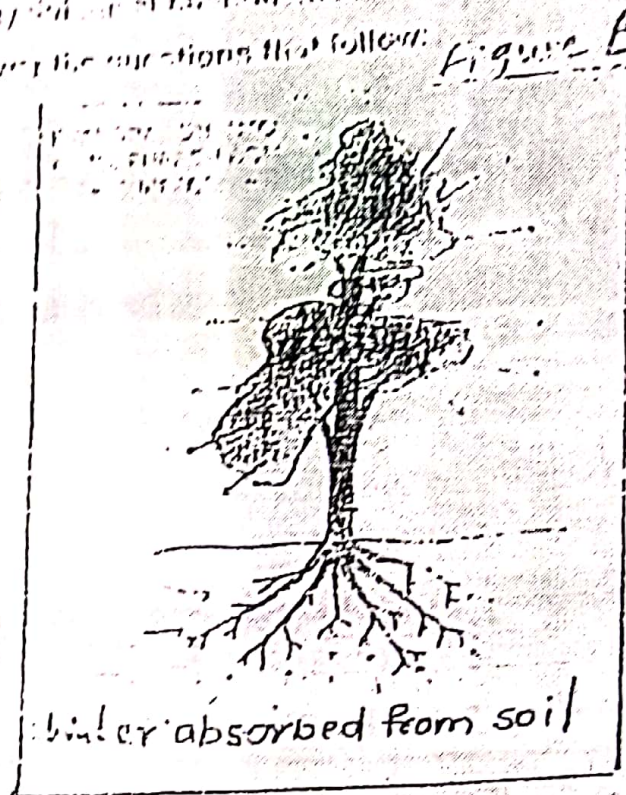
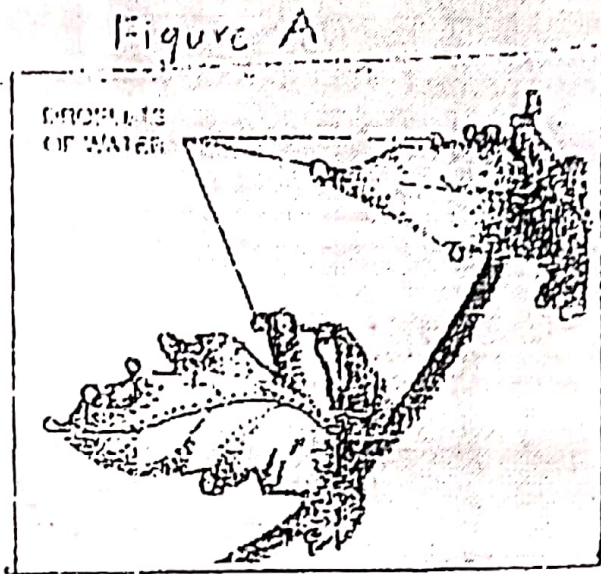
- i) Write two main differences between theories of Lamarck and Darwin.
- ii) Compare the hormonal control with the nervous control with respect to their speed, transmission and effect.

Question 5.

- (a) Differentiate between the following on the basis of what is given in the brackets. [4]

- i) Hydrotropism and thigmotropism (stimulus).
- ii) Hypotonic solution and hypertonic solution (condition of a plant cell when placed in them).
- iii) Leaf and liver (form in which glucose is stored).
- iv) Reflex action and voluntary action (origin).

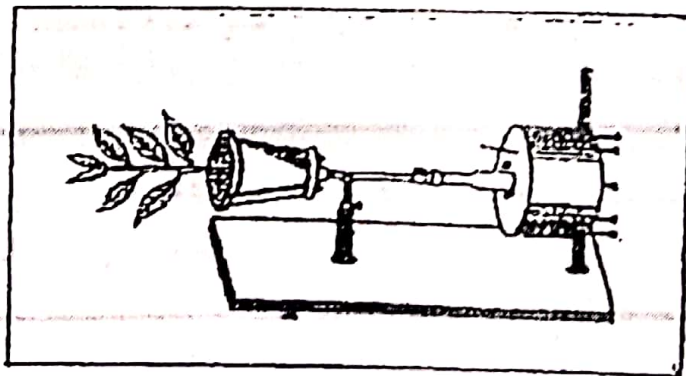
16) The diagram below present certain physical state changes taking place in plants. Observe the diagrams and answer the questions that follow. (5)



- i) Name and explain the process taking place in A.
- ii) Name and define the process seen in B.
- iii) Name any two plants in which A occurs.
- iv) State two ways in which the process B differs from the process of evaporation.

Question 6

(a) Observe the diagram given below and answer the questions that follow : (5)

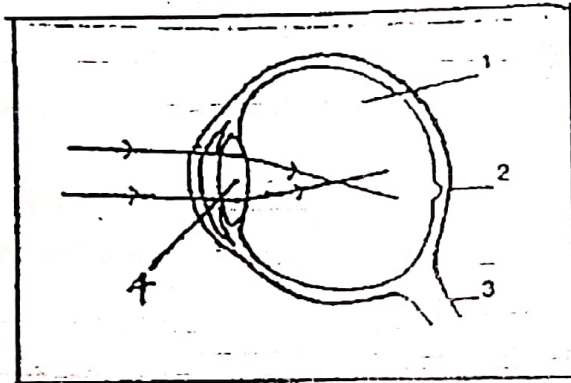


- i) Name the instrument.
- ii) What is the instrument used to demonstrate in the laboratory?
- iii) What will be your observation when the instrument is rotated? Give reason for your answer.
- iv) What will you observe when the instrument is stationary?
- v) Write the full form of IAA.

- (o) In a homozygous pea plant, axial flowers (A) are dominant over terminal flowers (a) [5]
- i) What is the phenotype and genotype of the F_1 generation if a plant bearing pure axial flowers is crossed with a plant bearing pure terminal flowers?
- ii) Draw a Punnett square board to show the gametes and offspring when both the parent plants are heterozygous for axial flowers
- iii) What is the phenotypic ratio and genotypic ratio of the above cross shown in (ii)?
- iv) State Mendel's Law of Dominance.

Question 7.

- (a) Given below is a diagram showing a defect of the human eye. Study the same and answer the questions that follow: [6]



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- i) Name the defect shown in the diagram.
- ii) Give two possible reasons for this defect in eye of human beings.
- iii) Label the parts 1 to 4.
- iv) Name the type of lens used to correct this defect.
- v) Draw a labelled diagram to show how the above mentioned defect is rectified using the lens named above.

- (b) Give biological reasons for the following: [4]

- i) The brain is ordinarily free from shock.
- ii) A plant is de-starched before starting any experiment on photosynthesis.
- iii) People living in hilly regions usually suffer from simple goiter.
- iv) On a bright sunny day, the leaves of certain plants roll up.