

City International School, Mumbai

SECOND PRELIMINARY EXAMINATION 2018 – 2019

Date : 19/01/2018

Marks : 80

Std : X

Subject : Biology (Paper 3)

Time : 2 hrs

Answer 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 answer.

Section A is compulsory. Attempt any four questions from section B.

The intended marks for questions or parts of questions are given in brackets ()

SECTION – A [40 MARKS]

Attempt all questions from this section

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Question 1

- a. Name the following: (5)
- A specific part of the chromosome that determines hereditary characteristics.
 - The canal through which the testes descend into the scrotum just before birth in a human male child.
 - The type of cell division which takes place in the anthers of flowering plants to produce pollen grains.
 - The metallic cation involved in the opening and closing of stomata.
 - The occurrence of minor differences in the characteristics of individuals.
- b. Select the correct answer from the following two options given below: (5)
- Theory which believes in use and disuse of an organ - (Lamarck's theory / Darwin's theory)
 - Retards heart beat - (Sympathetic nervous system / Parasympathetic nervous system)
 - Induces dormancy of buds and seeds - (Gibberellins / Abscisic acid)
 - Vestigial organ in man - (Pinna / Large intestine)
 - Hyposecretion of thyroxine in adults - (Myxoedema / Cretinism)
- c. State whether the following form of the statement by statements are true or false. (5)
If false, rewrite the correctly changing the first word only:
- Plasmolysis is the condition in which the cell content is shrunken and the cell is no more tight.
 - Variation is the sudden change in one or more genes or in the number and structure of chromosomes in the progeny, which normally may not have existed in the parents or grandparents.
 - Leukaemia is a cancer of the tissue forming white blood corpuscles whose number increases manifold at the cost of red blood corpuscles.
 - Stroma is the ground substance of a chloroplast.
 - Puberty is the onset of menstruation in a female at about the age of 13 years.

d. Given below are certain biological statements which are incomplete and hence incorrect. Rewrite the correct form of the statement by inserting a suitable word or words at the right place. Do not delete any word already given in the statement. Underline the inserted word/words. (5)

- i. Fertilisation is the product of the egg nucleus and the sperm nucleus.
- ii. The pulmonary artery arises from the right ventricle and carries blood to the lungs for oxygenation.
- iii. A reflex action is a spontaneous response to a stimulus.
- iv. Concentration of urine by water reabsorption is controlled by anti-diuretic hormone secreted by the pituitary gland.
- v. Lamarck proposed the theory of inheritance of characters.

e. State the exact location and function of each of the following structures: (5)

- i. Palisade cells
- ii. Prostate gland
- iii. Acrosome
- iv. Organ of Corti
- v. Mitral valve

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f. Give one point of difference between the following pairs on the basis of what is given in brackets: (5)

- i. Cobalt chloride paper and goat's bladder (process when it is used)
- ii. Hydrotropism and chemotropism (stimulus used)
- iii. Exocrine and endocrine gland (secretion transported by)
- iv. Transpiration and guttation (define the terms)
- v. Synapsis and synapse (explain the terms)

g. Give the biological/technical term for the following: (5)

- i. Movement of leucocytes out of the capillary walls at the site of injury.
- ii. Fibres which hold the lens of the eye in position.
- iii. The mucous membrane lining the uterus.
- iv. The product of fusion of a male and female gamete.
- v. Outermost tough fibrous membrane of the meninges.

h. Given below are five groups of terms. In each group, arrange and rewrite the terms in the correct order so as to be in a logical sequence. An example has been done for you. (5)

Example: Antigen, active immunity, produces antibodies, lymphocytes, pathogen.

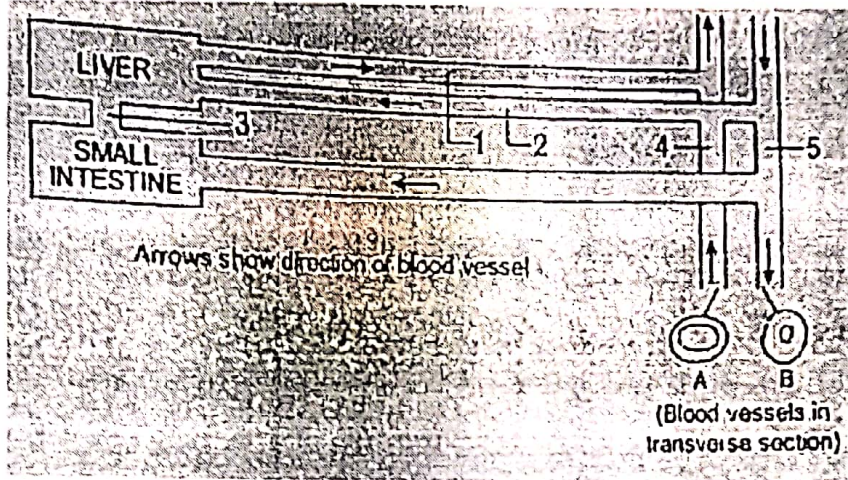
Answer: Pathogen, antigen, lymphocytes, produces antibodies, active immunity

- i. Ear ossicles, oval window, tympanum, auditory canal, cochlea.
- ii. Implantation, parturition, fertilisation, ovulation, gestation.
- iii. Clot, thrombin, fibrinogen, prothrombin, fibrin.
- iv. Water molecules, oxygen, grana, photolysis, photons.
- v. Endodermis root hair, xylem, soil water, cells of cortex.

SECTION – B [40 MARKS]
Attempt any four questions from this section.

Question 2

a. The figure below represents the liver of a mammal and its blood supply. (5)



- i. Name blood vessels 1, 2, 3, 4 and 5.
- ii. About 2 hours after a meal which blood vessel would be loaded with food material in solution?
- iii. Why does blood vessel 3 join the small intestine to the liver?
- iv. Why does blood vessel B have a narrow lumen than blood vessel A?
- v. Name the three layers of which the walls of A and B are made.

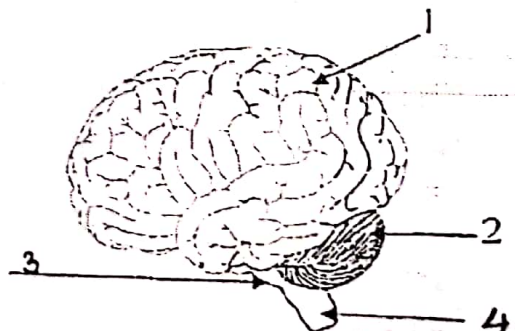
b. i. Write these phases of the menstrual cycle in the proper sequence. Follicular phase, Luteal phase, Menstrual phase, Ovulatory phase (5)

- ii. If you are planning an experiment to show the effect of light on photosynthesis:
 1. Which light will you select - green light or white light? Give reason.
 2. Why would you select a destarched plant for this experiment on photosynthesis?

Question 3

a. The following diagram represents the human brain as seen in an external view. Study the same and then answer the questions that follow: (5)

- i. Label parts 1-4.
- ii. Mention the difference in the arrangement of the nerve cells in parts marked 1 and 4.
- iii. Name the fluid that surrounds the brain. State its function.
- iv. What is stimulus?
- v. What are mixed nerves?
- vi. Why does an alcoholic person walk clumsily when drunk?



- b. i. Name the following cells that:
1. Conduct impulses
 2. Help in opening and closing of the stomata
 3. Produce testosterone
 4. Determine the sex of a baby

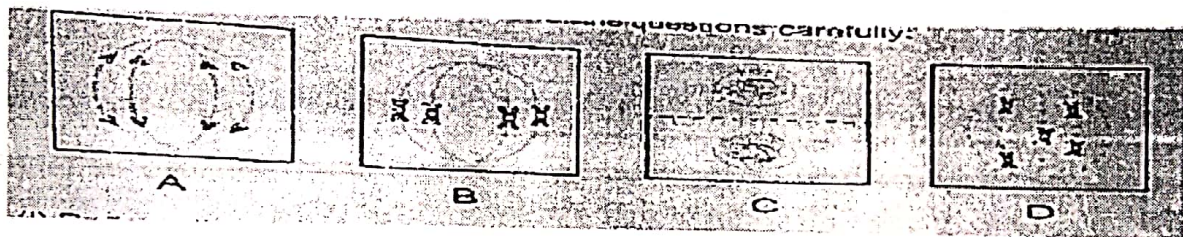
ii. Explain: Apical dominance

iii. Draw a diagram of the internal ear and label the following: Semicircular canal, utricle, saccule, cochlea.

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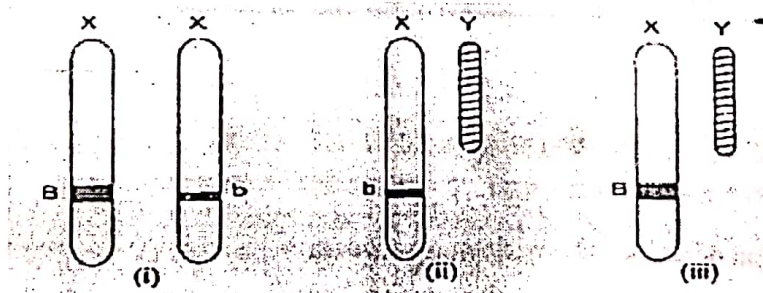
Question 4

a. The diagram here represents four stages of cell division which are not in sequence. Study the diagrams and then answer the questions carefully: (5)



- Redraw the diagrams in your answer sheet in a sequential order.
- Name the stages after arranging them in a correct order.
- Label any four parts which are visible in the diagrams.
- Is it a plant cell or animal cell? Give a logical reason.

b. Red—green colour blindness is a sex-linked inherited character. Gene b for colour blindness is recessive to gene B for normal vision. This gene b is carried only on the X chromosome. (5)



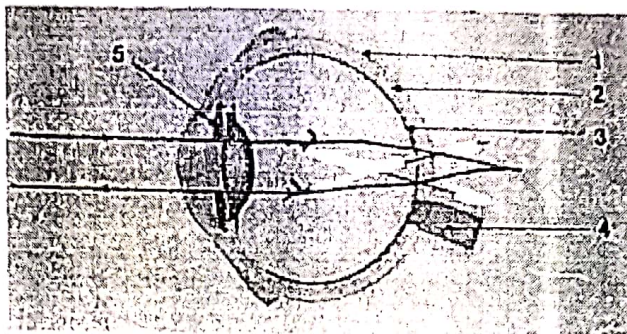
- Describe the phenotypes of (i), (ii) and (iii).
- Explain why red-green colour blindness is more likely to occur in men than in women.
- Give any 2 reasons why Mendel selected pea plant for his experiments.
- Copy and complete the following table of contrasting characters given by Mendel.

Sr. No.	Character	Dominant	Recessive
1.	Plant height		
2.	Seed shape		

Question 5

a. The diagram given below shows a vertical section of the human eye.

(5)



- Label parts 1-5.
- What is the function of the part labelled 2?
- Name the defect illustrated by the diagram.
- Give a possible reason for this defect.
- What lens is used to correct this defect?
- The power of glasses used is mentioned in plus or minus for this defect.

b. Account for the following facts:

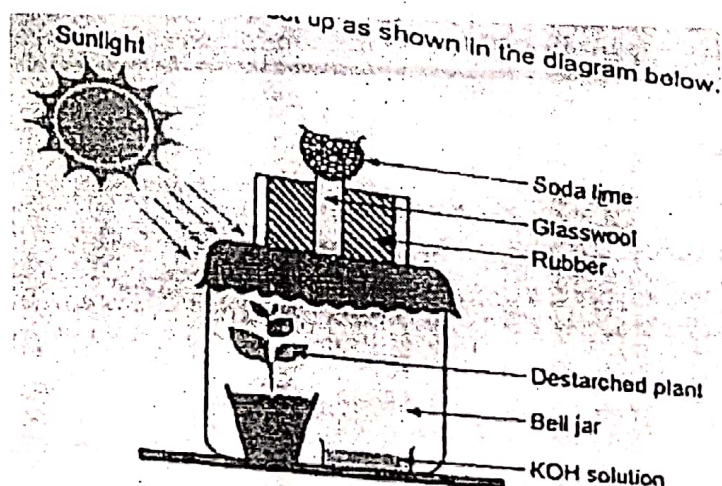
(5)

- Transpiration is the price paid for photosynthesis.
- It is necessary to maintain a normal osmotic concentration of blood.
- Our resources cannot keep pace with the rising population of the country.
- Older people to feel more cold than youngsters.
- The fully grown embryo respire and does not breathe.

Question 6

a. An experiment was set up as sunlight shown in the diagram below.

(5)



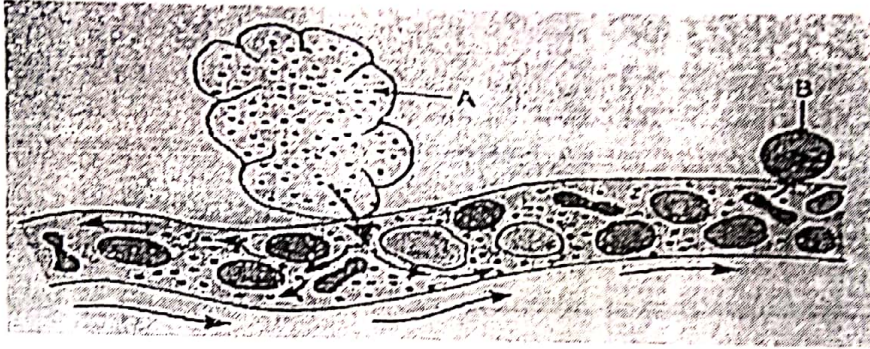
- What is the aim of the experiment?
- Why is KOH solution kept inside the bell jar?
- What is the use of soda lime?
- What would be the next and final step in this experiment?
- What would be the result of the final step?

- b. Describe the role of:
- Ethylene
 - Crystalline lens
 - Hypothalamus
 - Penis
 - Seminal vesicles

(5)

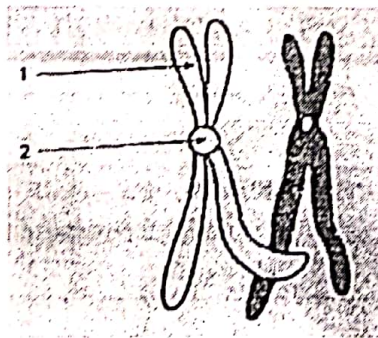
Question 7

- a. Given alongside is a schematic representation of secretion of gland A and a blood capillary in its close proximity. (5)



- What do the arrows outside the blood capillary indicate?
- What does the arrow coming out of gland A indicate?
- Choose the name of gland A from the following options: sweat, Salivary, Pituitary
- What is the error shown in the given diagram?
- If B is one of the target cells in the thyroid, name the secretion being poured out of gland A.

- b. The diagram shows a schematic representation of the start of a certain phenomenon in cell division. (5)



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- Name the phenomenon.
- Name the type of cell division in which this phenomenon occurs.
- Label parts 1 and 2.
- What is the most significant aspect of this type of cell division?
- Explain briefly the phenomenon by using the following terms: Homologous chromosomes, chromatids, crossing over
