



**N. L. Dalmia<sup>®</sup>**  
**High School**

of the Faculty of N. L. Dalmia Education Society

ICSE - ISC

ISO 9001:2015

**THIRD PRELIMINARY EXAMINATION**

Class: X

SCIENCE PAPER- 3 (BIOLOGY)

Marks : 80/pgs 7

Date: 20.01.2020

Time : 2 Hrs

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.**

1. The kind of lens required to correct myopia. *concave*
2. Pituitary hormone which stimulates contraction of uterus during childbirth. *oxytocin*
3. The type of valves present in veins and lymph vessels. *Pocket valves*
4. The enzyme secreted by the acrosome of the sperm.
5. The end product of photosynthesis. [5]

**b) State whether the following statements are true or false. If false rewrite the correct form of the statement by changing the word(s) in bold.**

1. Bulbourethral gland opens into the **ureter**.
2. Crossing over is a feature of **mitosis**.
3. **High humidity** in the atmosphere results decrease in the rate of transpiration.
4. **Dilation of the pupil** is brought about by sympathetic nervous system.
5. Glucose is stored in the liver in the form of **glycogen**. [5]

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c) Mention the function of the following

- 1. Coronary artery
- 2. Ureters
- 3. Lenticels
- 4. Ovaries
- 5. Hypothalamus

[5]

d) Note the relationship between the first two words and suggest the suitable word for the fourth place.

- 1. Retina : Eye :: Cochlea : \_\_\_\_\_
- 2. Dynamic equilibrium : semi circular canal :: static equilibrium : \_\_\_\_\_
- 3. Cerebrum : Forebrain :: Cerebellum : \_\_\_\_\_
- 4. Sperm : Testis :: Ovum : \_\_\_\_\_
- 5. Meiosis : 4 cells :: Mitosis : \_\_\_\_\_

[5]

e) Given below are sets of terms. Choose the odd one out of the following and name the category to which the others belong.

- 1. Sneezing, coughing, blinking, typing without seeing.
- 2. ADH, TSH, NADPH, ACTH.
- 3. Condoms, Copper T, Diaphragms, Spermicidal agents.
- 4. Tympanum, cochlea, sacculus, fovea centralis.
- 5. Eosinophils, basophils, thrombocytes, monocytes.

[5]

f) Complete the following paragraph by filling the correct word.

The 1 layer is richly supplied with blood capillaries for providing nourishment to the eye. It contains a dark pigment 2 which prevents 3 rays from 4 and scattering inside the eye. In the front of the eye, it expands to form the 5 body.

[5]

g) Define

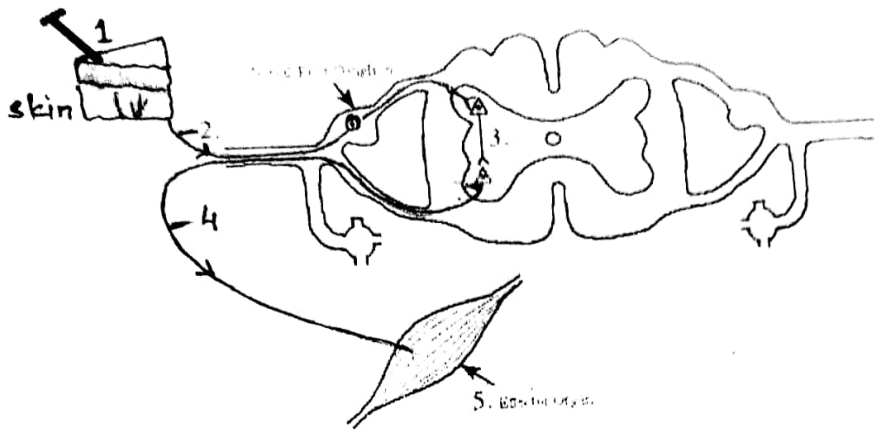
- 1. Puberty
- 2. Sex linked inheritance
- 3. Static balance
- 4. Plasmolysis
- 5. Transpiration

[5]

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Contd .. pg3

h) Given below is a phenomenon of nervous system. Observe the diagram and answer the questions given below.



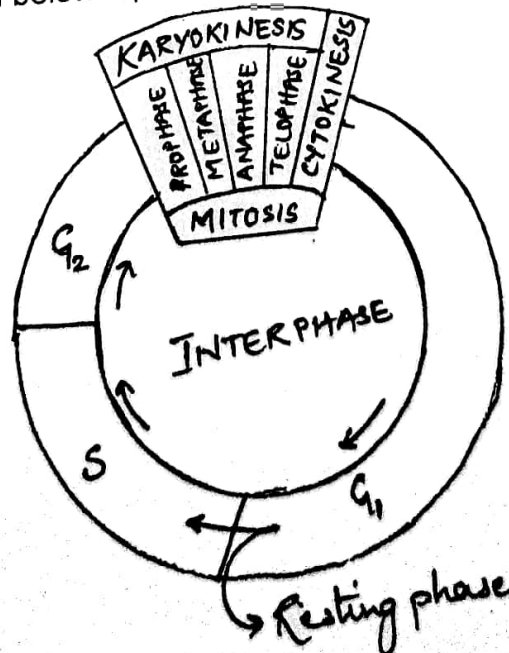
1. Define the phenomenon.
2. Give the technical term for the point of contact between the two nerve cells.
3. Label parts 1,2,3,4.
4. Mention the functions of 4.
5. How does the arrangement of neuron in the spinal cord differ from that of the brain? [5]

**SECTION II (40 Marks)**

Attempt **any four** questions from this Section

**Question 2**

a) The figure given below represents cell cycle. Observe carefully and answer the questions.



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...4...

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1. What does the abbreviation G<sub>1</sub>, G<sub>2</sub>, and S stand for ?
2. State the importance of S phase.
3. How is meiosis important in maintaining the diploid number of chromosome in an organism?
4. Draw a well labelled diagram of a parent plant cell having four chromosomes undergoing anaphase. [5]

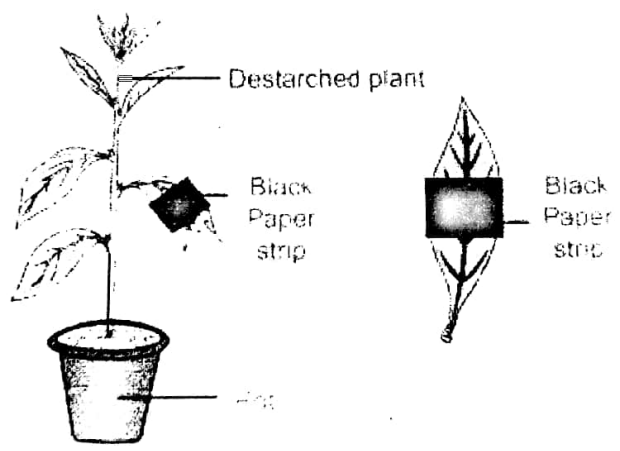
b) State one difference between in each of the following pairs on the basis of what is given in the brackets.

1. Stroma and Grana (phase of photosynthesis)
2. Cerebrum and Cerebellum (function)
3. Diffusion and Osmosis (definition)
4. Basophils and Lymphocytes (function)
5. *Homo habilis* and *Homo erectus* (cranial capacity) [5]

Question 3

a) Draw a well labelled diagram of an internal structure of human eye. [2]

b) The diagram given below is an experiment to prove certain aspect of photosynthesis. Study the diagram and answer the questions.



1. State the aim of the experiment.
2. Why is the plant destarched?
3. Explain the result obtained after starch test performed on the above leaf. [5]
4. Enlist the steps of starch test.

c) Answer the following.

1. Based on the postulates, mention two points of difference between Lamarck's theory and Darwin's theory. [3]
2. Define vestigial organs. [3]

Contd..pg5

## Question 4

a) If a tall plant bearing axial flowers (TTAA) is crossed with a dwarf plant bearing terminal flowers (ttaa).

1. What will be the genotype and phenotype of the F<sub>1</sub> generation.
2. Draw a Punnett square to show the genotypic and phenotypic ratio of the F<sub>2</sub> generation.
3. State Mendel's law of independent assortment.
4. List one application of Mendel's law.

[5]

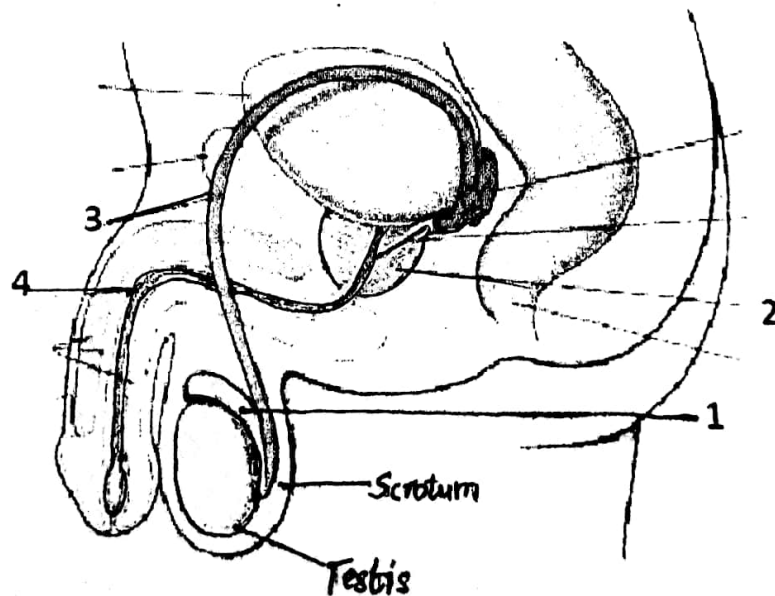
b) Give appropriate technical terms for the following.

1. The cords arising from the muscular projections of ventricle walls.
2. Knot like mass of blood capillary inside Bowman's capsule.
3. A sheet of fibres connecting the two cerebral hemispheres.
4. The hormone that promotes chlorophyll synthesis in chloroplast
5. The vein that begins and ends in capillaries.
6. The pigment present in the retina which is broken down by bright light.
7. The hormone that regulates carbohydrate, protein and fat metabolism.
8. Canal through which the testes descend down shortly before birth.
9. Statistical study of human population.
10. Product of fusion of ovum and sperm.

[5]

## Question 5

a) Given below is the diagram of the male reproductive system and its associated parts in the human body. Study the diagram and answer the questions.



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...6...

1. Label parts 1 to 4.
2. Mention the function of parts labelled 1,2 and 3.
3. What is the composition of semen?
4. State the function of scrotum.

[5]

- b) Draw a well labelled diagram of a neuron as it would appear under electron microscope. [2]

c) State the location and function of the following.

1. Pons varolli
2. Lacrimal glands
3. Conjunctiva

[3]

Question 6 /

- a) Study the picture given below and answer the questions that follow.



1. Identify the types of pollution.
2. Mention two impacts each of these pollution on human health.
3. State one measure each to control these pollutions.
4. Explain how radiation can cause pollution.

[5]

b) Expand the following abbreviations.

1. TSH
2. ACTH
3. ATP
4. FSH

[2]

c) Explain the following terms.

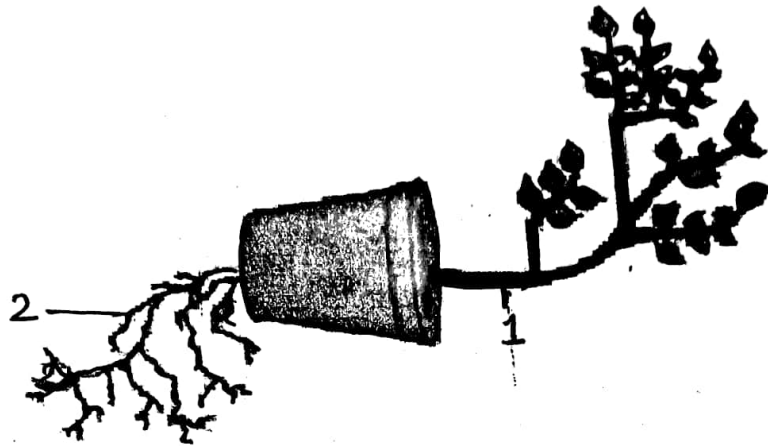
1. Photolysis
2. Root pressure
3. Apical dominance

[3]

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## Question 7

- a) Given below is an experimental set up to demonstrate a particular tropic movement in potted plant. Study the diagram and answer the questions.



1. Name the tropic movement shown by part 1 and 2.
2. Name the stimuli affecting parts 1 and 2.
3. Explain the role of auxins in the movement of part 1.
4. How are the above tropic movements beneficial to the plants.
5. What is chemotropism? Give one example.

[5]

## b) Answer the following questions.

1. List any two features of the plant selected by Mendel for his experiments.
2. Briefly describe how Neanderthal man was different from *Homo erectus* on the basis of height and distribution of body hair.
3. 'Father is responsible for the sex of the child'. Explain.
4. Why is pituitary gland called the master gland?
5. Explain persistence of vision.

[5]

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