

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 is the time allowed for writing the answers.

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**Part - I** is compulsory. Attempt **any four questions** from Part II. The intended marks for questions or parts of questions are given in brackets [ ].

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**Part-1**

**(All questions are compulsory.)**

**Question 1**

**A. Name the following:** [5]

1. The official data of registered number of people in a selected area
2. A bundle of axons enclosed in a sheath
3. The pairing of homologous chromosomes
4. The other name for inner ear
5. The physical expression of genes in an individual

**B. Write the expanded form of the following:** [5]

1. PGA
2. ICSH
3. ACTH
4. CNS
5. GnRH

**C. Given below are a few sets of terms. In each case arrange and rewrite each set of terms so as to be in logical sequence.** [5]

1. sperm duct, seminiferous tubule, urethra, ejaculatory duct, epididymis
2. pupil, eye lens, cornea, optic nerve, vitreous humour, fovea
3. tympanum, auditory canal, cochlea, ear ossicles, auditory nerve
4. reduction of CO<sub>2</sub>, radiant energy, formation of glucose, splitting of water into H<sup>+</sup> and OH<sup>-</sup> ions, production of oxygen
5. cortical cells, midribs, soil water, endodermis, root hair, xylem.

**D. Choose the correct option and write the alphabet and the answer in the answer sheet** [5]

1. Which structures must be present in a cell for osmosis to take place?  
A. cell (sap) vacuole and cell wall  
B. cell wall and cell membrane  
C. chloroplast and cytoplasm  
D. cytoplasm and cell membrane
2. In the ureter of a healthy person, which substance is not found?  
A. glucose  
B. salt  
C. toxins  
D. urea
3. A short-toed animal was crossed with a long-toed animal of the same species. All the offspring had short toes. One of these offspring was crossed with another long-toed animal of the same species. Which ratio of short-toed to long-toed animals should be expected?  
A. 1 : 1  
B. 2 : 1  
C. 3 : 1  
D. 4 : 1
4. In a mesophyll cell, where are chloroplasts found?  
A. between the cell wall and the cell membrane  
B. in the cytoplasm  
C. in the nucleus  
D. in the vacuole
5. A man injures his arm in an accident. Afterwards, he can feel objects touching his hand, but he cannot move his hand away from them. What could cause this?  
A. Receptors in his hand are damaged.  
B. The nerve connection is cut only between the receptors in his hand and his central nervous system.  
C. The nerve connection is cut only between his central nervous system and the effectors in his arm.  
D. Both of these nerve connections are cut.

**E. The first pair in the following list indicates the kind of relationship that exists between both the items. Rewrite and complete the second pair on the similar basis. [5]**

Eg: Eye: Sight :: Ear: Hearing

1. *Diabetes mellitus*: Insulin :: *Diabetes insipidus* : \_\_\_\_\_
2. Cranial nerves: 12 pairs :: Spinal nerves: \_\_\_\_\_
3. Adrenal medulla: adrenaline :: adrenal cortex : \_\_\_\_\_
4. Rods: Rhodopsin :: Cones: \_\_\_\_\_
5. Water vapour: Transpiration :: Water droplets: \_\_\_\_\_

**F. Copy and complete the passage by filling in the blanks using the given words only. [5]**

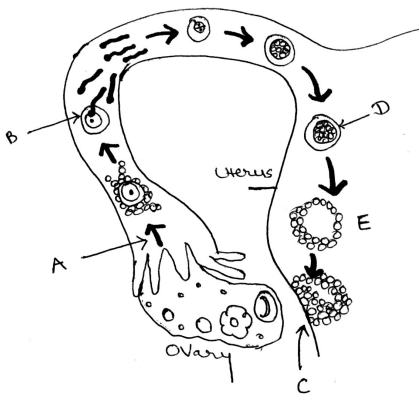
*Diploid gametes haploid meiosis mitosis red blood cells anaphase*

The transfer of inherited characteristics to new cells and new individuals depends on two types of cell division.

During \_\_\_\_\_, the chromosomes are duplicated exactly and \_\_\_\_\_ cells are produced.

However, during \_\_\_\_\_, the chromosome sets are first duplicated and then halved producing \_\_\_\_\_ cells. These cells will become \_\_\_\_\_.

**G. The diagram below shows the sequence of events leading to pregnancy in the/female reproductive system. [5]**



1. Name the processes occurring at A, B and C. [1.5]
2. Give suitable names to structures D and E. [1]
3. Define the process named in C. [1]
4. If process B does not occur, describe what happens in the ovary and the uterus within next 14 days. [1.5]

**H. Given below are certain statements, which are incomplete and hence incorrect. Rewrite the correct form of the statements by inserting suitable word/words at the right place. Do not delete any word already given in the statement. Underline the inserted word/words. [5]**

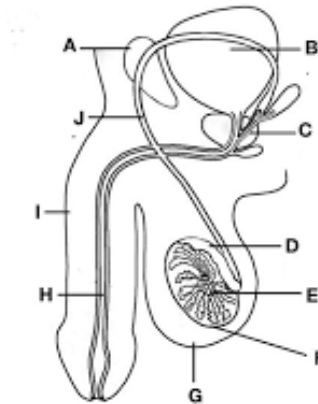
1. A reflex action is a spontaneous response to a stimulus.
2. The eye loses its flexibility in presbyopia.
3. A plant cell kept in solution shows plasmolysis.
4. Erythropoiesis is the formation of blood cells.
5. Population is the number of people in a given area at a given time.

**Part II (attempt any four questions)**

**QUESTION 2**

**A. Given along side is the diagram of male reproductive system (side view), study the diagram and answer the following question.**

[5]



- i. The organ F is held out side the abdominal cavity. Name F and the part that holds it. [.5]
- ii. Why should F be outside the abdominal cavity? [.5]
- iii. Name and give the label of the part associated with vasectomy. What is the importance of this technique? [1]
- iv. What is semen? [1]
- v. Name the part (give the label) that is common for reproductive and excretory system. Identify and give the name and label of a part of the excretory system shown in the diagram. [1]
- vi. Identify the part J and I and its homologous part in the female reproductive system. [1]

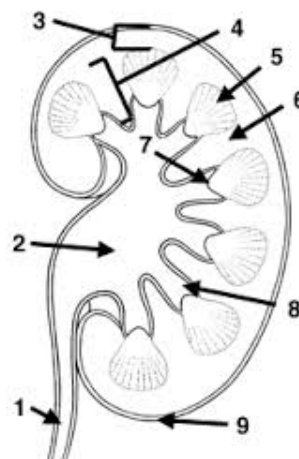
**B. In pea plants, tall (T), round seed (R) are dominant over dwarf and wrinkled seeds: [5]**

- i. What will be phenotypes of the offspring if both parents are heterozygous? [1]
- ii. Give the genotypes of the recombinants in the offspring mentioned in the previous question. [2]
- iii. If you cross any two of these recombinants what will be the phenotypes of the offsprings? [2]

**QUESTION 3:**

**A. The diagram given beside shows a section through a human kidney. Study the diagram carefully and answer the question that follows**

[5]



- i. Label the parts numbered 2, 3, 4 and 6. [1]

- ii. Name structure 1 and give its function. [1]
- iii. Name the fluid passing through 1. What are the steps involved in formation of this fluid? [1]
- iv. Part 3 has a dotted appearance. Mention the structure responsible for this, draw and label it. [2]

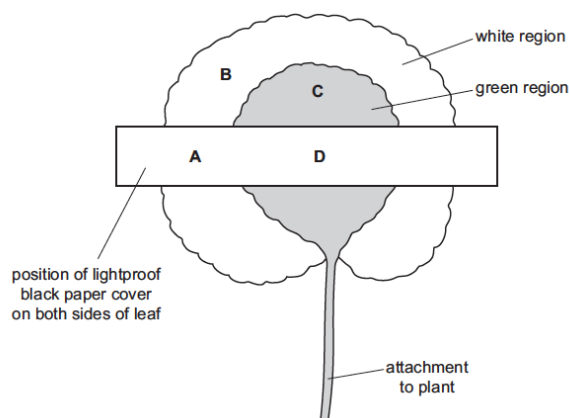
**B. Give one main difference between the following pairs:**

[5]

- i. Emmigration and immigration
- ii. Thermal pollution and radiation pollution
- iii. Embryo and foetus
- iv. Corpus callosum and corpus luteum
- v. Reflex and voluntary action

**QUESTION 4**

- A. Figure given below shows a leaf, with white and green regions, that is attached to a plant. The plant had been kept in the dark for 48 hours and then a lightproof, black paper cover was placed over part of the leaf. The plant is left under a light for 24 hours. After this time the leaf is removed from the plant and is tested for the presence of starch. Observe and answer the questions given. [5]**



- i. Copy and complete table below to record the colour you would see, if you had carried out this test, in each of the areas A, B, C, and D. [1]

| Area | Colour |
|------|--------|
| A    |        |
| B    |        |
| C    |        |
| D    |        |

- ii. Explain the results for area B and D. [1]
- iii. Why was the plant kept in dark first and then in light? [2]
- iv. What can you conclude from the experiment? [1]

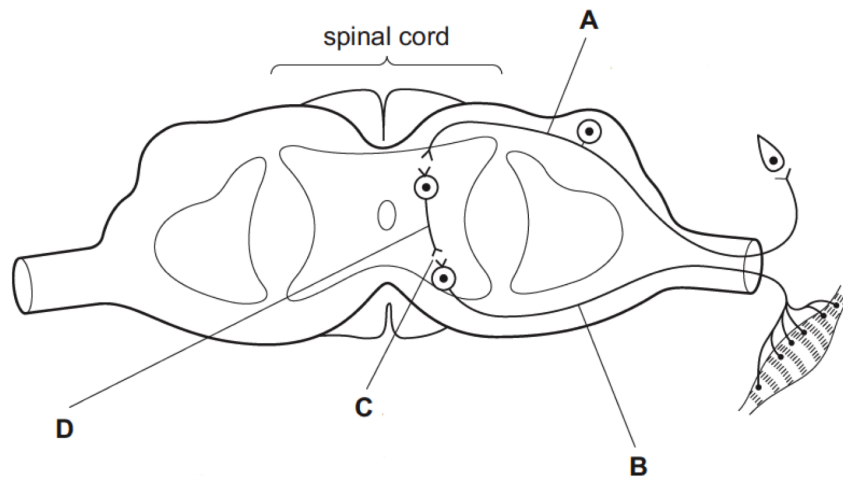
**B. Answer the following questions:**

[5]

- i. Describe two effects of pollution on climate and environment. [2]
- ii. What is sustainable development and how can it be achieved? [1]
- iii. Describe two ways plants can reduce the rate of transpiration. [2]

**QUESTION 5**

**A. The given along side is a figure showing the reflex arc. Answer the questions below based on the diagram. [5]**



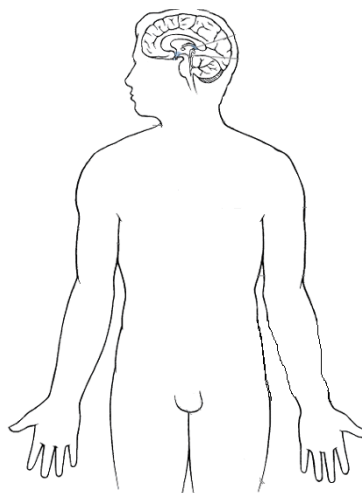
- i. Name the parts of the reflex arc. [2.5]
- ii. What is the difference between part A and B? [1]
- iii. What is structure D and what is its function? [5]
- iv. What is the significance of part C? [1]

**B. Answer the following questions [5]**

- i. Give two differences between natality and mortality. [2]
- ii. Fraternal twins never share a placenta whereas identical twins may. Explain. [1]
- iii. Draw a well labelled diagram of the inner ear. [2]

**QUESTION 6**

**A. The given along side is a figure of the human body trace the figure in your answer sheet draw and mark the glands based on the statements below. (label and give numbers) [5]**



drawing with proper position of gland [1]

- i. The master endocrine gland. [1]
- ii. The butterfly shaped gland [1]
- iii. A mixed gland [1]
- iv. The gland that releases hormone during emergency situations. [1]

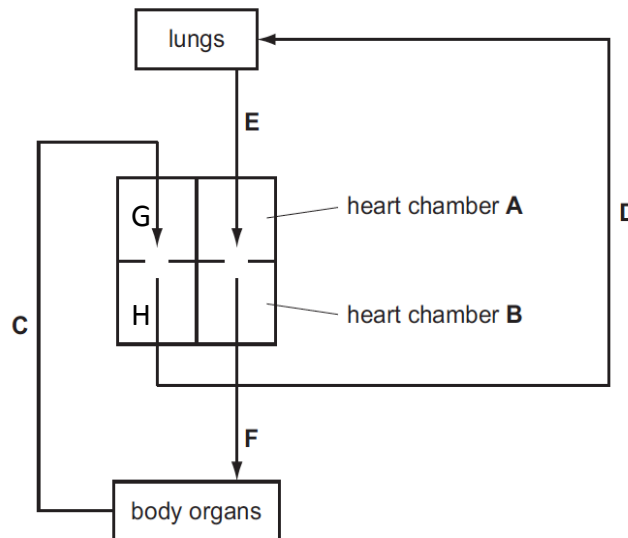
**B. Answer the following questions:**

[5]

- i. How is cytokinesis in a plant cell from an animal cell? [1]
- ii. Give the scientific name of the plant selected by Mendel and the reason for selecting it. [1]
- iii. What are nucleotides? Give two differences between nucleotide in DNA and RNA. [3]

**QUESTION 7**

**A** The given along side is a figure showing circulatory system showing A,B,G and H- heart chambers and C, D, E and F -blood vessels. Study the diagram and answer the following questions. [5]



- i. The circulation in humans is called double circulation. Identify the two routes of circulation as per the diagram using the alphabets given. [1]
- ii. Name the vessels D and E and give two structural difference between them. [2]
- iii. Draw a well labelled diagram of the type of blood vessel F. [2]

**B. Answer the following question**

[5]

- i. Osmosis is a specialised diffusion. Explain.
- ii. Leaves containing chlorophyll appears green. Explain.
- iii. Blood is mostly bright red in the arteries. Give reason.
- iv. Impulses pass from the axon terminal of one neuron to the dendrite of the other. Give reason.
- v. If you spin around for sometime and then stop, you continue to feel dizzy for sometime. Explain.