K. E. CARMEL CMI SCHOOL, SARISHA

1st Term Examination 2021-22

Subject: Biology Class: X Full Marks: 100 Time: 2hrs.

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)

Question 1

a. Name the following: - **[5]**

i) The phase of mitotic division when daughter chromosomes move to the opposite poles of a spindle.

ii) The state of a cell when it cannot accommodate any more water.

iii) Loss of water as droplets from the margins of certain leaves.

iv) The process of WBCs squeezing out through the walls of the blood capillaries.

v) The organ which filters urea.

b. Fill in to form structure function relation: - **[5]**

i) Histone proteins _____

ii) Lenticels _____

iii) Guard cells _____

iv) Neutrophils _____

v) Loop of Henle_____

c. Fill in the blanks: - **[5]**

i) During photosynthesis, the oxygen in glucose comes from _____.

ii) Hypotonic solution is one in which the solution kept outside the cell has _____ solute concentration than inside the cell.

iii) The 9:3:3:1 dihybrid ratio is due to _____.

iv) Pressure exerted by the cell contents on the cell wall is _____.

v) _____ is the full complement of DNA of an organism.

d. Fill in to form structure location relation: - **[5]**

i) Thylakoids _____

ii) Mitral valve _____

iii) Vasa recta _____

iv) Gene _____

v) Spleen _____

e. Give biological reason for the following: - **[5]**

i) More transpiration occurs from the lower surface of a dorsiventral leaf.

ii) During the starch test the leaf is boiled in water.

iii) If we donate one kidney to a needy patient it would not cause any harm to us.

iv) Gametes must be produced by meiosis for sexual reproduction.

v) A plant cell when kept in a hypertonic salt solution for about 30 minutes turns flaccid.

f. Identify the true and false statements. Rewrite the false statements correctly by changing the words only in first or last place. **[5]**

i) The blood vessel supplying blood to the kidney is dorsal aorta.

ii) A gene that can express only when in a similar pair is recessive gene.

iii) Crossing-over between chromatids can occur only between homologous chromosomes.

iv) Exosmosis may cause bursting of a cell.

v) Xylem helps in downward flow of sap.

g. Note the relationship between first two words and suggest the suitable word for the fourth place. **[5]**

i) Chlorophyll : Magnesium :: Haemoglobin : _____

ii) Coronary artery : Heart :: Hepatic artery : _____

iii) Total absence of skin pigment : Albinism :: Extra fingers and toes : _____

iv) Bile pigments : Hepatitis :: Albumin : _____

v) Respiration : Carbon dioxide :: Photosynthesis : _____

h. Give one point of difference between the following pairs as asked against it: - **[5]**

i) Light reaction and Dark reaction (End products)

ii) Universal donor and Universal recipient (Antibody)

iii) Bowman's capsule and Malpighian capsule (Structure)

iv) Animal cell and Plant cell (Mitosis)

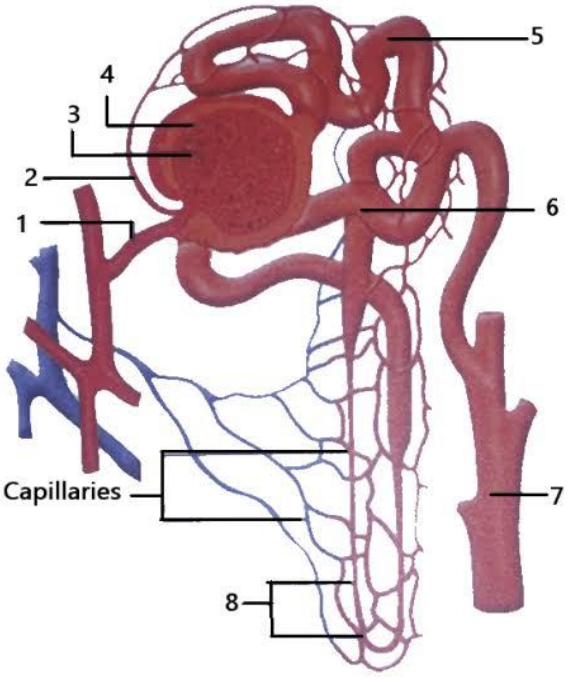
v) Plasmolysis and Deplasmolysis (Definition)

Section II (40 marks)

(Attempt any four questions from this section)

Question 2

a. Study the diagram and answer the questions that follow: - **[5]**



i. Where does ultrafiltration take place ?

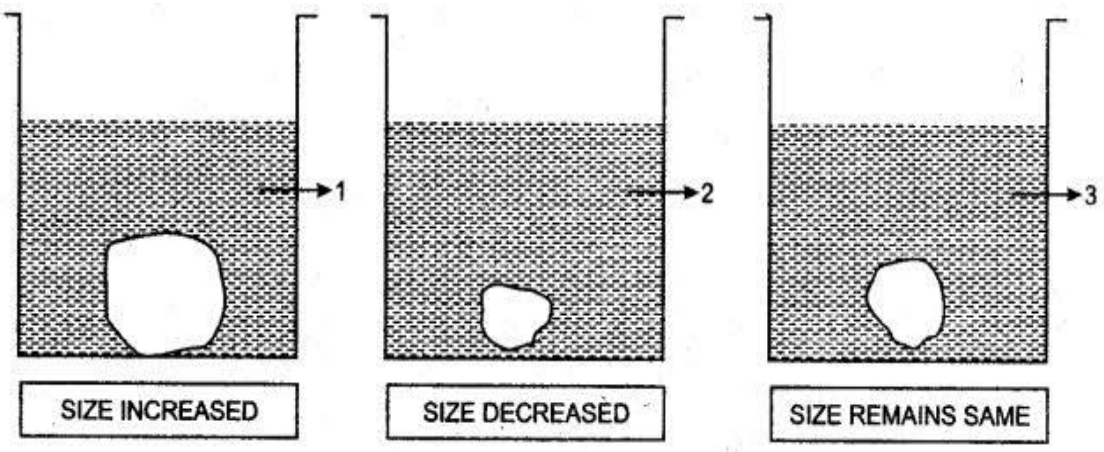
ii. Which structure contains the lowest concentration of urea ?

iii. Where is most water reabsorbed ?

iv. State the reason for the high hydrostatic pressure in the glomerulus.

v. Name the part of the nephron which lies in the renal medulla.

b. Study the diagram and answer the questions that follow: - **[5]**



i) Give the technical terms of the solutions used in beakers 1, 2 and 3.

ii) In beaker 3, the size of the potato cube remains the same. Explain the reason in brief.

iii) Write the specific feature of the cell sap of root hairs which helps in absorption of water.

iv) What is osmosis?

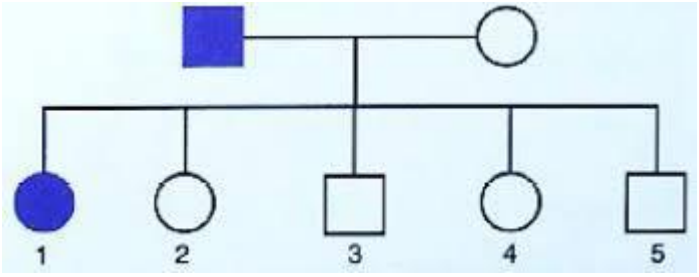
v) How does a cell wall and a cell membrane differ in their permeability?

Question 3 **[5]**

a) Answer the following:-

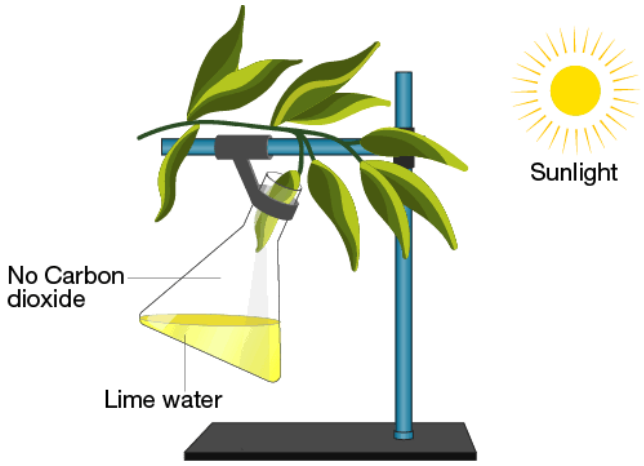
i) List any two features of garden pea with their dominant and recessive traits.

ii) A family consists of parents and their five children and the pedigree chart below shows the inheritance of the trait colour blindness in them.



A. Who is colour blind in the parents – the Father or the Mother?
B. How many daughters and how many sons have been born in the family?
C. What does the child 1 indicate about this trait?
D. On which chromosome is the gene of this trait located?
E. Name one other trait in humans which follows a similar pattern of inheritance.

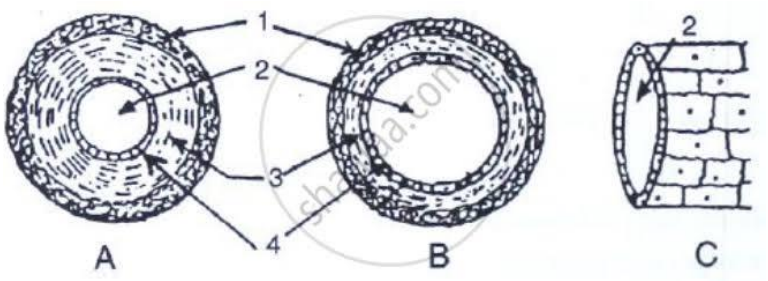
b) Study the diagram and answer the following questions:- **[5]**



i. What is the objective of this experiment ? **[6]**
ii. Will it work satisfactorily? Give reason.
iii. What alteration(s) will you make in it for obtaining expected result ?
iv. Would you take any step before starting the experiment? Describe this step and explain its necessity.

Question 4

a) Study the diagram and answer the following questions. **[5]**



i. Identify the blood vessels A, B and C.
ii. Name the parts labelled 1-4.
iii. Mention two structural differences between A and B.
iv. Name the kinds of blood that flow through A and through B respectively.
v. In which one of the vessels referred to in (a) above does the exchange of gases actually take place?

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

i) Complete the following passage to make it a meaningful description.

In a nephron,the 1_____flows through the 2_____under great pressure. The reason for this great pressure is that the 3_____(outgoing) 4_____is narrower than the 5_____ (incoming). This high pressure causes the 6_____part of the blood to filter out from the 7_____ into the 8_____capsule.

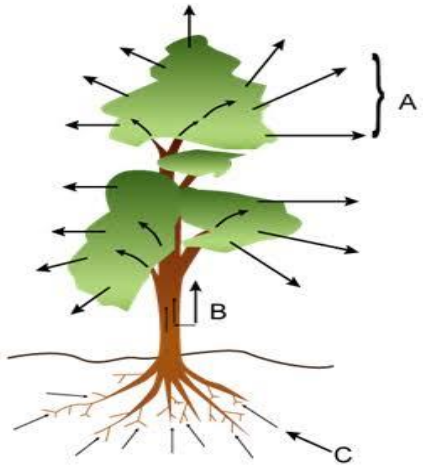
ii) Why does the medulla of the kidney show a striped appearance?

Question 5

a) Define the following: - **[5]**

i) Cell cycle.
ii) Phenotype.
iii) Karyokinesis.
iv) Alleles.
v) Variation.

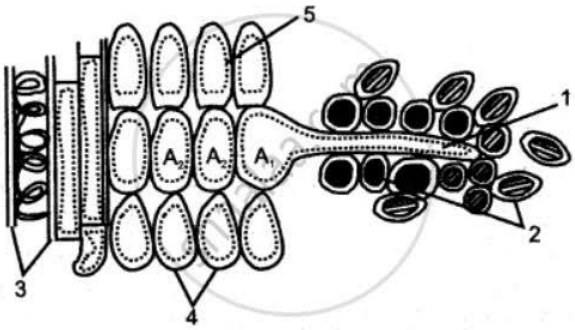
a) Study the diagram and answer the questions that follows. **[5]**



i. Name and define the phenomenon labelled A in the diagram.
ii. Write the significance of the process mentioned in A for the plants.
iii. What do the direction of arrows in B and C indicate? Name the phenomena.
iv. Draw a neat and labelled diagram of an opened stomata.

Question 6 **[5]**

a) Study the diagram and answer the questions that follow:-



i) Is the root hair cell unicellular or multicellular?
ii) Explain what would happen to the root hair cell if some fertilizer is added to the soil close to it.
iii) Name the process responsible for the entry of water molecules from the soil into A_1 and then into A_2.
iv) What pressure is responsible for the movement of water in the direction indicated by arrows?
v) How is this pressure set up?

b) Answer the questions: - **[5]**

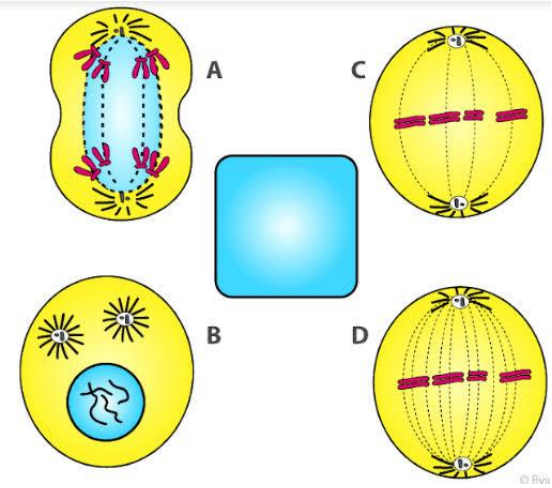
i) Complete the following food chain by writing the names of appropriate organisms in the blanks.

1_____ → Mouse → 2_____ → Peacock.

ii) Define wilting.
iii) Name the compound which stores energy in the cells.
iv) Briefly explain how the rate of transpiration is affected by humidity of the atmosphere.
v)How do the thinness of the leaf favour increased photosynthesis ?

Question 7

a) Study the diagram and answer the questions that follow: - [5]



i) Is it a plant cell or an animal cell? Give two reasons.

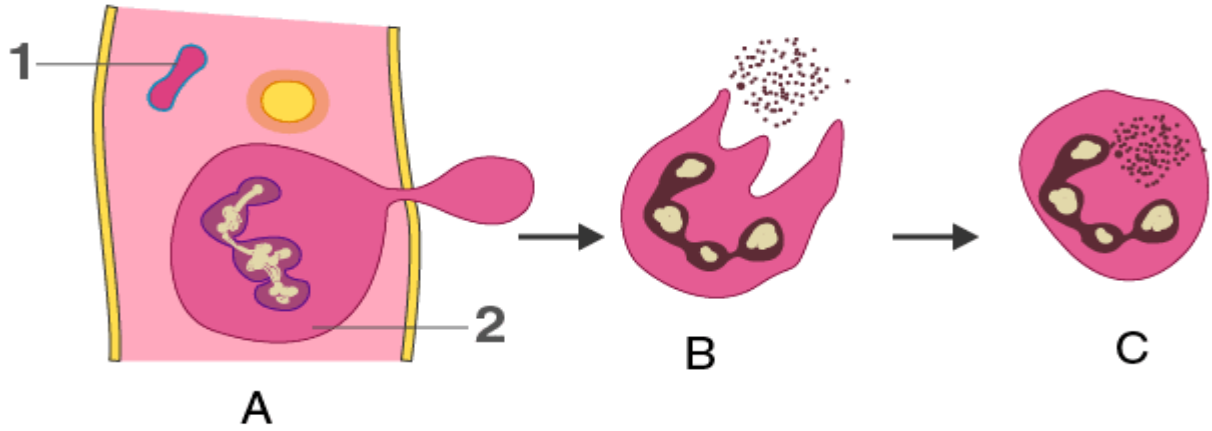
ii) Is it undergoing mitosis or meiosis?

iii) What should be the correct sequence of these four stages among themselves?

iv) Name the stage that should precede the earliest of these stages.

v) Draw the stage named above in (iv).

b) Study the diagram and answer the questions that follow: - [5]



i) Name the cell labelled 1.

ii) Identify the phenomenon occurring in A.

iii) Mention two structural differences between 1 and 2.

iv) Name the process occurring in B and C and state the importance of this process in the human body.

[Internal Assessment = 20 Marks]