

Answer to this paper must be written on the paper provided separately.

You will not be allowed to write during 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.

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

(Attempt **all** questions from this Section.)

Question 1

[15]

Select the correct answers to the questions from the given options. (Do not copy the question. Write the correct answer only):

1. Which of these genotypes would result in a normal vision?
 - a) $X^{\circ}X, X^{\circ}Y$
 - b) $X^{\circ}X, XY$
 - c) $X^{\circ}X^{\circ}, X^{\circ}Y$
 - d) $X^{\circ}X^{\circ}$
2. Reena and Nidhi despite being biological sisters have dissimilarities in their facial features. Which of the following phenomenon do you think are directly responsible for this?
 - a) Metaphase in mitosis
 - b) Crossing over during meiosis
 - c) Replication of DNA in interphase
 - d) Sexual reproduction
3. Which of these chromosome number representation is not possible in any cell of a women's body ?
 - a) $22 + X$
 - b) $22 + Y$
 - c) $44 + XX$
 - d) 23pairs
4. Which of these materials can replace a semi-permeable membrane during experiments related to osmosis?
 - a) Cellophane paper or egg membrane
 - b) Silk cloth or muslin cloth
 - c) Cellophane paper or rubber sheath
 - d) Muslin cloth or a visking bag

5. Assertion(A) : Vaccines save us from deadly diseases
Reason(R) : vaccine kill the deadly germs that enter into body.
 - a) A is true but R is false
 - b) R is true but A is false
 - c) Both A and R are true and R is the correct explanation of A
 - d) Both A and R are false
6. In professional sports the players have to undergo a dope test(drug test) right after their performance to detect illegal use of performance enhancing drug.This is often conducted on the urine samples collected from the players.Which of the following functions of kidney do you think plays a key role in this test?
 - a) Removal of urea from the blood
 - b) Tubular secretion
 - c) Ultrafiltration
 - d) Reabsorption of extra water
7. Which of the following conditions are necessary for closing of stomata?
 - a) More K⁺ ion in the guard cells and bright sunlight
 - b) Moving out of K⁺ ions from the guard cells and bright sunlight
 - c) More K⁺ ions in the guard cells and darkness
 - d) Moving out of K⁺ ions from the guard cells and darkness
8. Assertion(A) : Blood can not clot inside the blood vessels.
Reason(R): clotting is dependent on the exposure of blood to air.
 - a) A is true and R is false
 - b) R is true and A is false
 - c) Both A and R are false
 - d) Both A and R are true
9. Which of these is the correct sequence of decreasing thickness of blood vessels ?
 - a) Arterioles,renal artery,aorta
 - b) afferent arteriole, glomerulus, efferent areteriole
 - c) Afferent arteriole, efferent arteriole,glomerulus
 - d) Venule,vena cava,renal vein
10. In a certain mendalion cross a pea plant with purple flowers was crossed with a pea plant with white flower. In the next generation it was seen that 50 percent of the plants were producing purple flowers and other 50 percent were producing white flowers. Considering that the purple colour is dominant over white colour , what is the correct genotype of the parents?
 - a) PP,PP
 - b) PP,Pp
 - c) PP,pp
 - d) Pp,pp
11. Which of these examples do not relate to any 'Mendel's laws of inheritance '
 - a) Men are more prone to colour blindness than women
 - b) It's possible for a pea plant to show dominant and recessive traits of two different characters on the same plant
 - c) A carrier women can produce a colorblind son.
 - d) Radioactive radiations can lead to cancer in people .

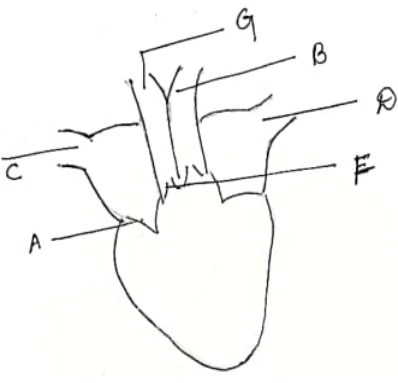
12. Which of these forces do not contribute to ascent of sap?
- Root pressure
 - Capillarity
 - Guttation
 - Suction force
13. Mitosis is not necessary for:
- Growth in height
 - Variation in generation
 - Healing of wound
 - Asexual reproduction
14. Given here is a plant cell placed in tap water and then observed under microscope. Name the condition of the cell.
- endosmosis
 - Exosmosis
 - Turgid
 - Flaccid
15. Neeta is suffering from 'Hay fever' an allergic reaction to pollen/dust. Which of these cells do you think would be higher than normal in her blood sample?
- RBCs
 - Eosinophils
 - Lymphocytes
 - Thrombocytes



Question 2

- (i) **Name the following.** [5]
- A phytohormone that is a gas at room temperature.
 - The point of attachment between two non-sister chromatids of a pair of homologous chromosomes.
 - The blood vessel which is most likely to contain maximum glucose right after a meal.
 - The cells that form the upper layer of mesophyll cells.
 - Membranous covering that protects the heart. .
- (ii) **Given here are set of some terms. Choose the odd one out and write the category to which the rest three belong:** [5]
- Pulmonary artery, aorta, renal artery, hepatic artery
 - Neutrophils, eosinophils, monocytes, lymphocytes
 - Increased intensity of light, increased atmospheric pressure, increase in temperature, increase in velocity of wind.
 - G1, G2, cytokinesis, S phase
 - starch, NADPH, ATP, oxygen gas,

- (iii) Given below is a structure of a human heart. Match the structures marked (a) to (e) with their correct function.

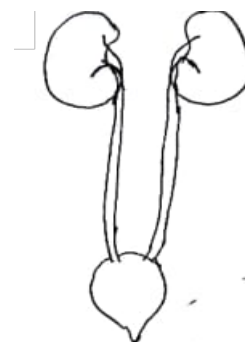
Human heart	Functions
	1. Maintains unidirectional flow of blood from Right auricle to right ventricle
	2. Carries oxygenated blood to heart
	3. Carries deoxygenated blood to lungs
	4. Brings deoxygenated blood from body parts to heart
	5. Biggest artery

- (iv) Nootan a girl studying in class 10, observed a slide under microscope where different cells were undergoing different phases of same cell division. Help Nootan identify the stage of cell division by her following observations: [5]

- The cell with chromosomes arranged in a plane at equator.
- The two sister chromatids of each chromosome separated and moving to opposite poles.
- A cell with its chromatin network, nucleolus and nuclear membrane intact.
- The complete cell plate formation separating one cell into two.
- Identify the type of cell division if these cells were taken from stem of the plant.

- (v) Given below is a diagram of a Human kidney. Read the information below the diagram and fill in the blanks.

The kidneys are two bean shaped organs, located on either side of backbone and protected by last two ribs. The _____ (right/left) kidney is at a slightly lower level than _____ (right/left) one. A tube called _____ (ureter/urethra) arises from notch of each kidney. The expanded end of ureter into kidney is called _____ (pelvis/pelvic). The urine produced is temporarily stored in _____ (gall bladder/ urinary bladder) before expulsion.



SECTION- B

(Attempt **Any Four** questions from this Section.)

Question 3

- (i) Define photosynthesis.
- (ii) Write one functional difference and one structural similarity between pulmonary artery and aorta. Out of an artery and vein which has a narrow lumen and why?
- (iii) Write the gametes produced by a plant having Round seed and Yellow pods (RrYY). How many characters are under study in this plant and what are they?
- (iv) Explain how will ADH adjust the concentration of urine of you have not drunk water for last 12 hours.
- (v) Draw an open stomatal apparatus and label any two parts in it. Write any two functions performed by stomata.

Question -4

- (i) Expand 'ORS'.
- (ii) What is a nucleotide made up of? Why is sequence of nucleotides in one's DNA so important for any living being?
- (iii) Write the function of a Ganong's potometer. Write its two limitations .
- (iv) Where is SAN located in heart? Fill in the blanks to complete the sequence of impulse of heart beat as is related to ventricles:
SAN → 1. _____ → bundles of HIS → interventricular septum → ____ 2. _____ fibres.
- (v) Draw a malpighian capsule and label bowman's capsule and glomerulus in it. Mention the three major steps of urine formation.

Question-5

- (i) Define 'Parthenocarpy'.
- (ii) Write any two differences between the constituent of the blood present in renal artery and renal vein.
- (iii) Write two functional difference between auxin and cytokinin.
- (iv) Which organisms make the starting of point of every food chain and why? Give an example of food chain with 5 members .
- (v) Complete the given table:

Hormone	Function	Site of synthesis
1. GA ₃	4. _____	7. _____
2. ABA	5. _____	8. _____
3. Ethylene	6. _____	9. _____

Question-6

- (i) Mention two main constituent of chromatin.
- (ii) Write the sequence of nucleotides of the complementary strand of a DNA strand with the sequence ATGCCATTA. What is a nucleosome? What is the structure of DNA?
- (iii) Write two differences between Osmosis and active transport. Write two ways in which imbibition helps a plant?
- (iv) How does loss of nucleus and mitochondria make an RBC more efficient? Explain.
- (v) Draw a well labelled experimental apparatus / setup showing release of oxygen during photosynthesis in a

water plant what is Original colour of a cobalt chloride paper?

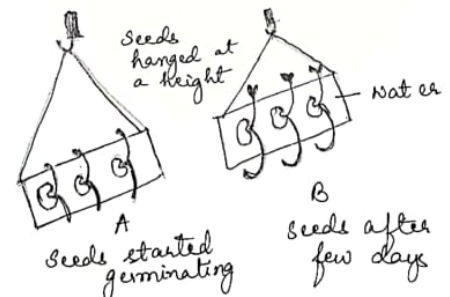
Question -7

- (i) What is a destarched plant?
- (ii) Why does a marine fish put in river water dies? Explain.
- (iii) Which blood group is called as 'universal donor's and why? Can the same person take blood from AB-? Explain.
- (iv) Write four functions of lymph for the body.
- (v) Draw a punnett square depicting the genotype of the children of a couple which are both heterozygous for tongue rolling(Rr). Write the genotypic and phenotypic ratio for the same.

Question 8

- (i) Write full form of IAA.
- (ii) Write the location and function of chloroplast in a plant cell. Mention the site of light reaction and dark reaction in the same .
- (iii) Write the balanced equation for photosynthesis. What is the source of raw materials needed for photosynthesis?
- (iv) Write the two significance of 'hepatic portal system' for the body.
- (v) Given alongside is the set of certain experiment to study the impact of two important stimulus for plant. Study the same and answer the following questions:

- b) Which two stimulus are under study?
- c) What will be your observation right after germination and a few days afterwards? What does it prove?
- d) Name two stimulus towards which roots show positive movement.



*****ALL THE BEST *****