

THE BRIGADE SCHOOL

Total points **65/80** ?

CLASS: 10
MAX MARKS: 80

TERM ASSESMENT 1

SUBJECT: BIOLOGY
DURATION: 2.30 HOURS

GENERAL INSTRUCTIONS:

1. Fill in your valid email id.
2. Select your school and section correctly.
3. Attempt all the questions. Uploaded file should be renamed with your name and question number. Also ensure to write your details(name, school and class) on the answer sheet used.
4. Ensure that you have completed and revised your paper before submission.
5. You can attempt your paper only once

Email address *

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0 of 0 points

Name : *

Manan Y Mehta ▼

School : *

TBSG ▼



Class *

10 A ▼

SECTION I (40 Marks)

34 of 40 points

CHOOSE THE CORRECT ANSWER

✓ 1. The chlorophyll in photosynthesis is used for *

1/1

- ☒ a) absorbing light ✓
- ☐ b) breaking down water molecule
- ☐ c) reduction of CO₂

✓ 2. For recording the pulse, where exactly does the doctor press on our wrist? *

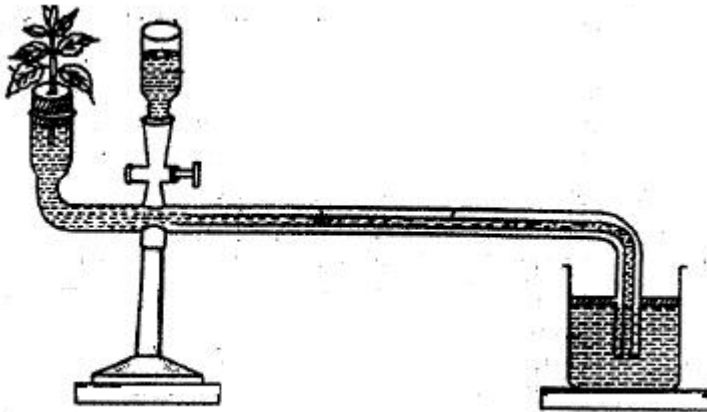
1/1

- ☐ a) nerve
- ☐ b) vein
- ☒ c) artery ✓



✓ 3. Identify which of the following statements is incorrect about the limitation for usage of the instrument given in the diagram . *

1/1



- ☐ a) It is difficult to introduce the air bubble
- ☐ b) Since a twig is used for the set up, it may not remain active for a long time.
- ☒ c) Rate of water intake by the plant cannot be measured



✓ 4. If water enters in a cell, the pressure exerted by its swollen protoplast is *

1/1

- ☐ a) Osmotic pressure
- ☒ b) Turgor pressure
- ☐ c) Imbibition pressure



✓ 5. Which of the following statements is false? *

1/1

- ☐ a) colour blindness is due to the inheritance of a defective recessive gene.
- ☐ b) colour blindness shows criss cross pattern of inheritance
- ☒ c) The defective gene for colour blindness is present on a specific type of autosome ✓

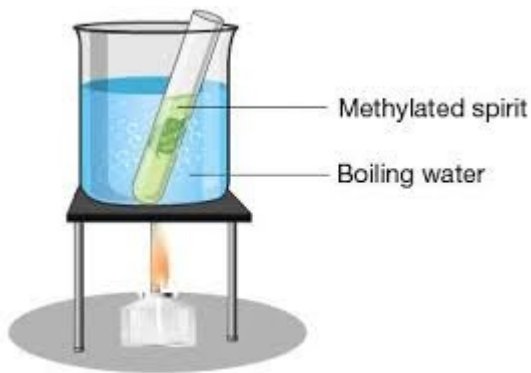
✓ 6. bonds are present between the complementary nitrogen bases of DNA. *

1/1

- ☐ a) Nitrogen
- ☒ b) Hydrogen ✓
- ☐ c) Ester



✓ 7. Why is the leaf boiled in methylated spirit in the given experimental set 1/1 up ? *



- ☐ a) To kill the cells of the leaf
- ☒ b) To remove the chlorophyll pigments from the leaf cells. ✓
- ☐ c) To remove starch stored in the leaves

✓ 8. A technique in which the genetic constitution of an organism is altered 1/1 by introducing new genes into its chromosome. *

- ☐ a) Variation
- ☒ b) Genetic engineering ✓
- ☐ c) Mutation



✓ 9. Which of the following forces is responsible for raising water up to 100 m in tall plants? * 1/1

- ☐ a) Root pressure
- ☐ b) Capillary action
- ☒ c) Transpiration pull



✓ 10. In a human female an egg cell will contain * 1/1

- ☒ a) only X chromosome
- ☐ b) both X and Y chromosome
- ☐ c) either X or Y chromosome



✓ 11. Which one of the following contains less carbaminohaemoglobin? * 1/1

- ☐ a) blood in pulmonary artery
- ☒ b) blood in pulmonary vein
- ☐ c) blood in coronary vein



✓ 12. Grass growing under a stone turns yellowish due to the *

1/1

- ☐ a) non formation of new chlorophyll
- ☐ b) disintegration of chlorophyll in the absence of light
- ☒ c) both option a) and b)



✗ 13. Water is lost in a liquid state in some plants through hydathodes. These hydathodes *

0/1

- ☒ remain closed during day
- ☐ remain closed at night
- ☐ remain always open



Correct answer

- ☒ remain always open



✗ 14. Which of the following statements gives the appropriate meaning of the term 'locus'? * 0/1

- ☒ a) Alternative form of a gene, occupying the same position on homologous chromosomes and affecting the same characteristic but in different ways. ✗
- ☐ b) The position on the homologous chromosomes that is occupied by the alleles of a gene
- ☐ c) Outward expression of the genotype

Correct answer

- ☒ b) The position on the homologous chromosomes that is occupied by the alleles of a gene

✓ 15. Carbohydrate synthesized in the leaves is transported through sieve tubes most commonly in the form of * 1/1

- ☐ a) Glucose
- ☒ b) Sucrose ✓
- ☐ c) Starch

✓ 16. Rearrange the following terms in a logical sequence and choose the correct option A -thrombokinase, B- thrombin C- thrombus D - injured cell E- fibrin * 1/1

- ☐ a) B, A, C, D, E
- ☒ b) D, A, B, E, C ✓
- ☐ c) D, C, B, E, A



✓ 17. Which of the following can occur during excessive transpiration? * 1/1

- ☒ a) Wilting ✓
- ☐ b) Increased rate of photosynthesis
- ☐ c) Leaf cells become turgid

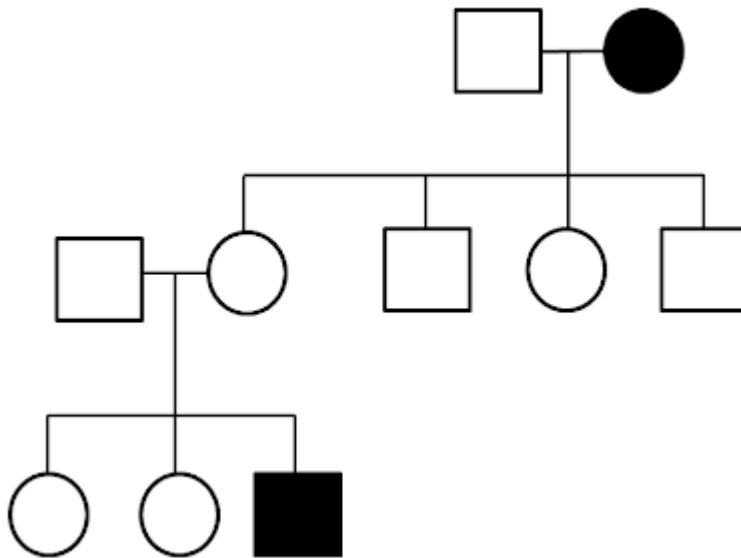
✓ 18. Pick the false statement from the following * 1/1

- ☒ a) Photosynthesis does not require any enzymes. ✓
- ☐ b) Photosynthesis stops at a temperature of above 40 degree Celsius
- ☐ c) Photosynthesis occurs only in cells containing chloroplasts.



✓ 19. Identify the representation given in the image below. *

1/1



- ☐ a) Karyotype
- ☐ b) Punnet square
- ☒ c) Pedigree chart



✓ 20. A peel of onion is kept in salt solution. After a few minutes if we observe the peel under the microscope, we are likely to see *

1/1

- ☐ a) Entry of water into the cell
- ☒ b) Exit of water from the cell
- ☐ c) Diffusion of salt into the cell



✓ 21. Pick the odd one out *

1/1

☐ a) sinoatrial node

☒ b) atrio ventricular valve



☐ c) Bundle of HIS

☐ d) Purkinje fiber

✗ 22. In which of the following plants, will there be no transpiration? *

0/1

☐ a) Plants growing in hilly regions

☐ b) Aquatic, submerged plants

☒ c) Plants living in deserts



Correct answer

☒ b) Aquatic, submerged plants

✗ 23. Pick the odd one out *

0/1

☐ a) lymph

☐ b) synovial fluid

☒ c) vitreous humour



Correct answer

☒ a) lymph



✗ 24. The number of water molecules required in the chemical reaction to produce one molecule of glucose during photosynthesis is * 0/1

☒ a) six ✗

☐ b) twelve

☐ c) eighteen

Correct answer

☒ b) twelve

✓ 25. Which of the following cellular structures always disappears during cell division? * 1/1

☐ cell membrane

☐ asters

☒ nuclear membrane ✓

✓ 26. When we are out in strong sunlight our face becomes reddish due to * 1/1

☐ Breakup of RBC and release of haemoglobin

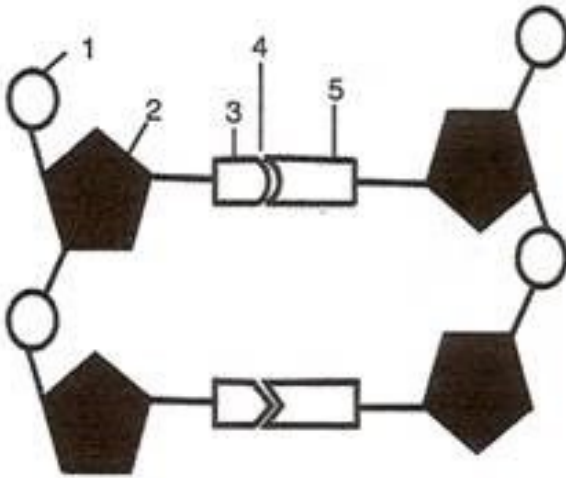
☒ Expansion of blood capillaries ✓

☐ Vasoconstriction



✓ 27. Name the structural unit that comprises of parts 1, 2 and 3 . *

1/1



☐ nucleosome

☐ nucleoside

☒ nucleotide



✓ 28. Which of the following does not play any role in opening and closing of stomata ? *

1/1

☐ a) potassium ions

☐ b) glucose

☒ c) calcium ions



✓ 29. Which of the following statements is true about active transport? * 1/1

- ☐ a) It is a slow process
- ☐ b) Involves less or no expenditure of cellular energy
- ☒ c) A living selective membrane is essential ✓

✓ 30. Carbon monoxide poisoning is the * 1/1

- ☒ formation of carboxyhaemoglobin in blood ✓
- ☐ formation of carbaminohaemoglobin in blood
- ☐ excessive formation of oxyhaemoglobin and reduction in carboxyhaemoglobin in blood.

✗ 31. Which of the following forms an important part of the structure of chlorophyll pigment? * 0/1

- ☐ a) Magnesium
- ☒ b) Potassium ✗
- ☐ c) Phosphorus

Correct answer

- ☒ a) Magnesium



✓ 32. is the preparatory phase of cell cycle *

1/1

☐ prophase

☒ interphase



☐ metaphase

✓ 33. In a developing embryo RBCs are formed in the *

1/1

☐ bone marrow and liver

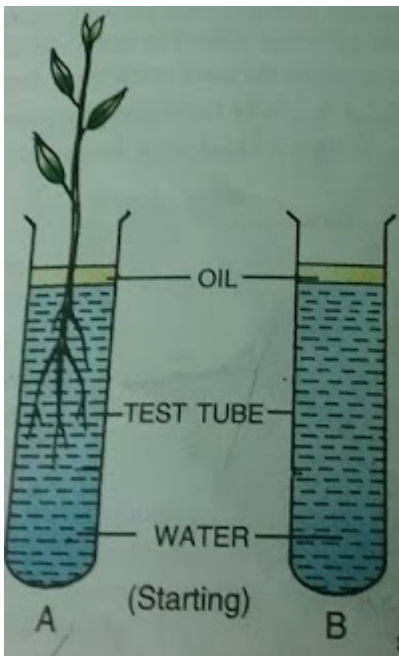
☒ liver and spleen



☐ lymph node



- ✓ 34. a) Observe the diagram and answer the following: oil is poured into the test tube so as to * 1/1



- ☒ a) prevent loss of water by evaporation ✓
- ☐ b) prevent loss of water vapour by transpiration
- ☐ c) prevent absorption of water

- ✓ 34. b) Choose TRUE or FALSE. Test tube B is the control set up in the the given experiment 34 a) * 1/1

- ☒ TRUE ✓
- ☐ FALSE



✓ 34. c) The end result of the above experiment 34 a) is *

1/1

- ☐ a) level of water falls in both test tube A and B
- ☒ b) level of water in test tube A falls but not in test tube B ✓
- ☐ c) there is no change in water levels in both test tube A and B

35. MATCH THE FOLLOWING *

	serum	selectively permeable	cytokinesis	cuticle	plasma	Score	
a layer of wax covering over a leaf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	1/1	✓
membrane of root hair	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1/1	✓
blood without corpuscles and fibrinogen	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1/1	✓
division of cytoplasm	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	1/1	✓

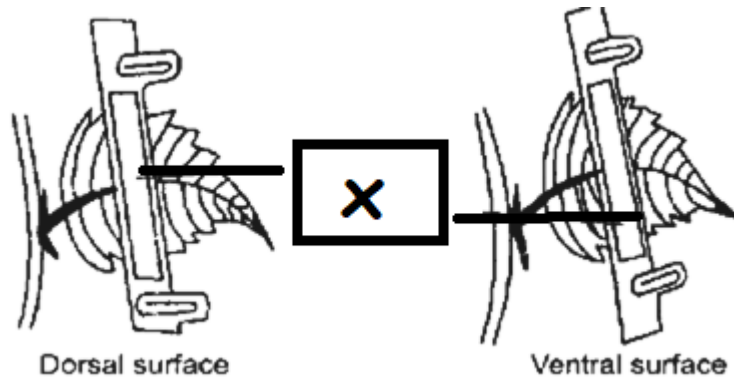
SECTION II (40 Marks)

31 of 40 points

ANSWER THE FOLLOWING



- ✗ 1. a) Observe the diagram and answer the following questions: (i) What is the role of 'X' in the given experiment? (ii) Mention two external factors that can accelerate the below process. (iii) Draw a neat labelled diagram of a structure in leaves through which the process demonstrated takes place. (iv) List any two adaptations in plants that reduces the rate of the given process. *



- (i) X is dry cobalt chloride paper. It is an indicator of moisture. It turns blue when dry and pink when exposed to moisture.
(ii) Intensity of Sunlight - More transpiration occurs during the day.
Temperature - Increase in temperature allows more water to evaporate.
(iv) Narrow leaves, thick cuticle, sunken stomata, loss of leaf are a few adaptations in plants to reduce rate of transpiration.

Individual feedback

1. a) (i) 'X' - Cobalt chloride paper indicates rate of transpiration [1/2] is more from the lower surface of the leaf as it turns blue to pink at a faster rate than that one on the upper surface of leaf. [1/2]

(ii) External factors that can accelerate the rate of transpiration are: increase in intensity of sunlight, increase in temperature, increase in velocity of wind, decrease in humidity, increase in CO₂ levels in air outside, increase in atmospheric pressure. [ANY TWO] [1/2 + 1/2]

(iii) ANY 3 LABELS: diagram ½, guard cell, stomatal pore/ stomatal aperture/ opening/stoma, epidermal cell, chloroplast, nucleus, inner and outer wall of guard cell [½ each]

(iv) List two adaptations in plants so as to reduce the above process.

1. Sunken stomata, 2. Narrow leaves, 3. Fewer stomata, 4. Reduced exposed surfaces, 5. Loss of leaves 6. Thick cuticle. [Any 2] [1/2 each]

MARKS LOST: (i) DIFFERENCE IN RATE OF TRANSPIRATION IN THE TWO SURFACES IS NOT MENTIONED (1/2)



✓ 1. b) i) Define Mutation. Give an example for a condition in humans caused due to mutation. *

2/2

Mutation is a sudden change in one or more genes, or in the number or in structure of chromosomes.

Example - Sickle Cell Anaemia and Radioactive Radiations.

Feedback

Mutation is a sudden change in one or more genes or in the structure of chromosomes. [1]

SICKLE CELL ANAEMIA is a blood disease caused by a gene mutation. [1]



- ✓ 1. b) ii) Give reasons for the following: [A] Soaked seeds when kept in a completely filled closed container burst it open. [B] When the concentration of the soil solutes is low, the absorption of water by root hair is increased. [C] The leaves of a tree that was subjected to girdling experiment is fresh and healthy even after many days of the experiment. 3/3

*

[A]

Imbibition is a phenomenon by which the living or dead plant cells absorb water by surface attraction and turgor pressure is the pressure inside the plant cells due to hydrostatic pressure on the cell wall as a result of endosmosis. The seeds swell up when soaked in water due to imbibition and endosmosis. This imbibition and turgor generate much force together which when kept in a completely filled closed container burst it open.

[B]

The concentration of the soil solutes is low, thus, soil solution is hypotonic as compared to cell sap. Flow of water is always from hypotonic to hypertonic solution. Therefore, as the soil solution is hypotonic due to low concentration of solutes, the water will flow into the cell due to endosmosis, thus increasing absorption of water by root hair.

[C]

By girdling, a ring around the stem is cut which is deep enough to penetrate through the phloem but not xylem. Hence xylem, which transports water and salts, remains unharmed. Thus, the leaves of a tree that was subjected to girdling experiment is fresh and healthy even after many days of the experiment as the leaves continue to get supply of water through the deeper located xylem.

Individual feedback

1. b) ii) [A] Water enters in the seed when soaked in it for a long time - IMBIBITION . The imbibition develops large pressure called IMBIBITION PRESSURE. The imbibition pressure makes the seedlings penetrate the seed coat and germinate out of it . [1]

[B] The surrounding water will move into root hair by OSMOSIS as the concentration of solute in the cell sap of the root hair is higher the surrounding soil water. [1]

[C] The fresh, healthy condition of the leaves proves that the leaves continue to get a supply of water [1/2] through the deeper located XYLEM [1/2]

EXCELLENT !!



Upload your answer here for QUESTION 1 a) iii) [write your name, school, class and section in the answer sheet used for uploading] *



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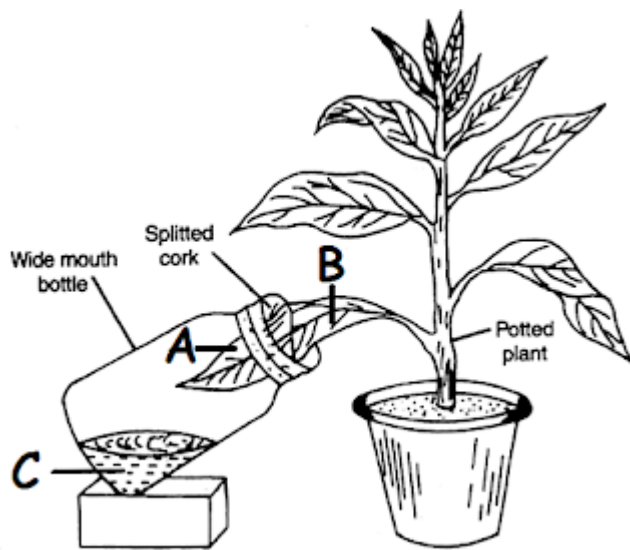
Individual feedback

VALUED



- ✗ 2. a) Observe the diagram given and answer the following: i) What aspect of photosynthesis is being investigated in the given experiment? ii) What would be the control set up for this experiment and state the reason? iii) The plant used here was de-starched before starting the experiment. How and why is this procedure done? iv) What is the observation made with respect to Part A and Part B of the leaf at the end of the experiment? *

3.5/5



- (i) The aim of this experiment is to prove that carbon dioxide is necessary for photosynthesis.
- (ii) The control for this experiment would be the half of the leaf outside the flask as it is exposed to atmospheric air.
- (iii) The leaf should be kept in dark for 24 to 48 hours to destarch the leaves. This procedure is done to remove all the starch from the leaves and stored in storage organ. The leaves will not show presence of starch.
- (iv) Part - B becomes blue-black in colour where as no change in colour is seen in Part - A.

Individual feedback

2. a) i) Carbon dioxide is required for photosynthesis [1]

ii) Absence of potassium hydroxide solution in the flask as it absorbs Carbon dioxide inside the flask which is the factor demonstrated in the experiment. [1]

iii) The plant is placed in the dark for 24 to 48 hours for de starching. [1/2] This removes all the starch from the leaves and storage organs. Thus the leaves will not show presence of starch [1/2]

iv) At the end of the experiment Part A of the leaf does not turn bluish black on exposure to iodine solution whereas Part B of the leaf turns bluish black on treating with iodine solution. [2]

INCOMPLETE ANSWER: (iv) iodine solution 1/2

INCORRECT ANSWER: (ii)



- ✓ 2. b) i) Give the scientific terms for the following: [A] squeezing out of white blood cells from the capillaries into the surrounding tissues [B] A vein which starts and ends in capillaries. *

2/2

[A] Diapedesis

[B] Hepatic Portal Vein

Feedback

2.b) i) [A] squeezing out of white blood cells from the capillaries into the surrounding tissues - DIAPEDESIS

[B] A vein which starts and ends with capillaries. – PORTAL VEIN



- ✓ 2. b) ii) Differentiate between the following pairs on the basis of what is indicated in the brackets. [A] Blood group antigen and Blood group antibody (based on where they are found in blood) [B] Lubb and Dup (based on the phase of cardiac cycle during which the sound is produced) [C] Blood and Lymph (based on cellular component) *

[A] Blood group antigens are found on surface of RBCs whereas blood group antibody is found in plasma.

[B] Lubb is heard when atrio-ventricular valves get closed at start of ventricular systole where as Dub is heard in beginning of ventricular diastole when semilunar valves at roots of aorta and pulmonary artery get closed.

[C] Blood contains erythrocytes, leukocytes and thrombocytes where as lymph contains only leukocytes (mostly lymphocytes) and not erythrocytes, thrombocytes as its cellular component.

Feedback

2. b) ii) [A] Blood group antigen are located on the surface of Red blood cells and Blood group antibody are present in the plasma of blood

[B] Lubb is a heart sound that is produced at the start of ventricular systole and Dup is produced in the beginning of ventricular diastole

[C] Blood consists of erythrocytes, leukocytes, and thrombocytes whereas lymph consists of only leukocytes. [1 mark each]



- ✓ 3. a) i) Draw a neat labelled diagram of the telophase stage in a plant cell 5/5
ii) Name the type of cell division that occurs during: [A] replacement of old leaves by new ones [B] formation of gametes in humans iii) Define the following terms: [A] chiasma [B] nucleosome [C] centromere *

(ii)

[A] Mitosis

[B] Meiosis

(iii)

[A] Chiasma is a X-shaped structure formed due to crossing over between the non-sister chromatids of the paired homologous chromosomes.

[B] The DNA strand winds around a core of eight histones (proteins that help in coiling and packaging of DNA) called histone octamer. Each such complex is called nucleosome.

[C] A small constricted region which serves as the point of attachment of the two sister chromatids is called centromere.

Feedback

3.a) i) label [$\frac{1}{2}$] + diagram [$\frac{1}{2}$]

(ii) [A] replacement of old leaves by new ones: MITOSIS [$\frac{1}{2}$]

[B] formation of gametes in humans: MEIOSIS [$\frac{1}{2}$]

(iii) [A] the X-shaped structure formed due to crossing over between two non-sister chromatids the pair of homologous chromosome. [1]

[B] Nucleosome: The complex formed by DNA strand wound around histone octamer. [1]

[C] centromere: is the constricted region of the chromosome [$\frac{1}{2}$] which forms the point of attachment between two sister chromatids. [$\frac{1}{2}$]



- ✗ 3. b) In Mendel's experiments, purple flowered plants(W) are dominant over white flowered plants (w)(i) What is the phenotype and genotype of the F1 generation if a homozygous purple flowered plant is crossed with homozygous white flowered plant?(ii) Draw a Punnett square when both parents are heterozygous purple flowered.(iii) What is the phenotype and genotype ratio of the above cross (ii) (iv) State Mendel's law of dominance. (v) What is a dihybrid cross? *

(i)

(iii) Phenotype Ratio - 9:3:3:1

(iv) Mendel's Law of Dominance states that out of a pair of contrasting characters present together, only one is able to express itself while the other remains suppressed.

(v) A Dihybrid Cross is a breeding experiment between 2 organisms which are identical hybrids for 2 traits. A dihybrid cross is a cross between 2 organisms, with both being heterozygous for a specific trait.

Individual feedback

(i) Phenotype: All plants of F1 generation are heterozygous purple flowered plant. [1/2]

Genotype: Ww [1/2]

(ii) Punnett square: [1]

W w

W W W W w

purple flowered plant purple flowered plant

w W w w w

purple flowered plant white flowered plant

(iii) PHENOTYPIC RATIO: purple flowered plant : white flowered plant

3 : 1 [1/2]

GENOTYPIC RATIO : WW : Ww : ww

1 : 2 : 1 [1/2]

(iv) Mendel's law of dominance: Out of a pair of contrasting characters present together, only one is able to express itself while the other remains suppressed. [1]

(v) Cross between TWO PURE BREEDING varieties which differ in a PAIR OF CONTRASTING CHARACTERS is called dihybrid cross [1]

NOT ATTEMPTED : (i) and (ii)

INCORRECT ANSWER: (iii) and (v)



Upload your answer here for QUESTION 3 a) i) and 3 b) ii)[write your name, school, class and section in the answer sheet used for uploading] *



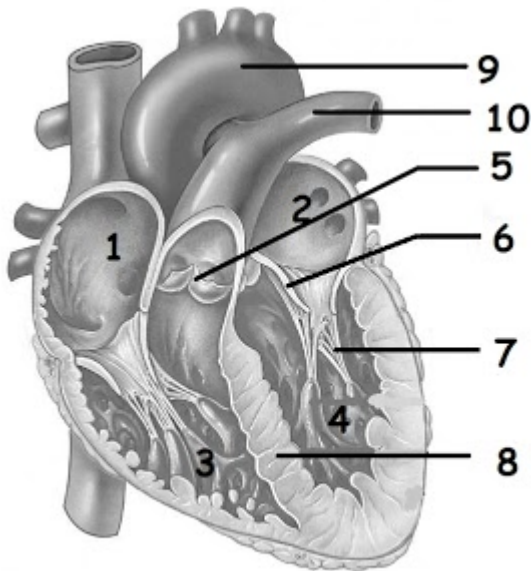
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Individual feedback

VALUED: 3 a) i) CORRECT ANSWER
3b) ii) NOT ATTEMPTED



- ✗ 4.a) The diagram given below is a sectional view of the human heart. 2/5
- Answer the following questions: (i) Name the protective double walled membranous covering of the heart. (ii) Label 6, 7 and 8 in the given diagram (iii) What is the role of 5? (iv) Identify the blood vessel that arises from 3 and the blood vessel that drains blood into 1 respectively. (v) What do you mean by double circulation of blood? *



- (i) Pericardium
(ii) 6 - Left Coronary Artery
7- Bicuspid (Mitral) Valve
8 - Septum
(iii) Pulmonary Artery from 3 and Anterior Vena Cava to 1
(iv) It allows deoxygenated blood to flow from the right ventricle to the lungs as it prevents its backflow
(v) Blood flows twice in the heart before completing one round - short pulmonary circulation and long systemic circulation, which is called double circulation.

Individual feedback

- (i) pericardium [1/2]
(ii) 6- bicuspid valve or mitral valve [1/2] 7- chordae tendineae [1/2] 8- septum [1/2]
(iii) 5- (pulmonary semilunar valve) prevents backflow of blood from the pulmonary artery to the right ventricle. [1]
(iv) The blood vessels that arise from 3 : PULMONARY ARTERY 1: VENA CAVA [1/2 + 1/2]
(v) Blood flows twice through the heart before completing one round of circulation. Hence circulation in humans is called as double circulation of blood [1]

INCORRECT ANSWER: (ii) 6, 7
QUESTION NUMBERS SWITCHED (iii) and (iv) NO MARKS



✓ 4. b) (i) Define the two methods of exudation in plants. *

2/2

Guttation - Guttation occurs from edges of leaves by hydathodes in uninjured plants, where it exudates mainly water with some dissolved minerals. It occurs during early mornings or late nights.

Eg : Nasturtium

Bleeding - Bleeding occurs from any cut of a injured part of a plant, where it exudates mainly plant sap and sugars . It occurs at the time of injury.

Eg : All injured plants.

Feedback

4. b)(i) Guttation is the loss of water as droplets along the margins of leaves.
Bleeding is direct flowing out of plant sap from any cut surfaces in case of injury.

✓ 4. b) (ii) Name the specific site in the plant cell where the light reaction of 3/3 photosynthesis takes place. Briefly explain the two major events that occur during this photochemical reaction. *

It occurs in thylakoids containing chlorophyll of the chloroplasts.

1. Activation of Chlorophyll

The chlorophyll on exposure to light energy becomes activated by absorbing photons.

2. Splitting of Water

The absorbed energy is used in splitting the water molecules into its 2 components (hydrogen and oxygen) and releasing electrons.

Feedback

4. b) (ii) THYLAKOID / GRANA is the specific site in the plant cell where the light reaction of photosynthesis takes place. [1]
Step 1 : ACTIVATION of CHLOROPHYLL: [1/2] the chlorophyll on exposure to light energy becomes activated by absorbing photons. [1/2]
Step 2: SPLITTING OF WATER/ PHOTOLYSIS: [1/2] the absorbed energy is used in splitting the water molecule into hydrogen and oxygen and releasing electrons. [1/2]



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