

MODEL QUESTION PAPER

BIOLOGY (314)

1. what is kranz anatomy?

2022

Ans: Kranz anatomy refers to a unique leaf anatomy found in certain plants, particularly those adapted to hot, dry environments.

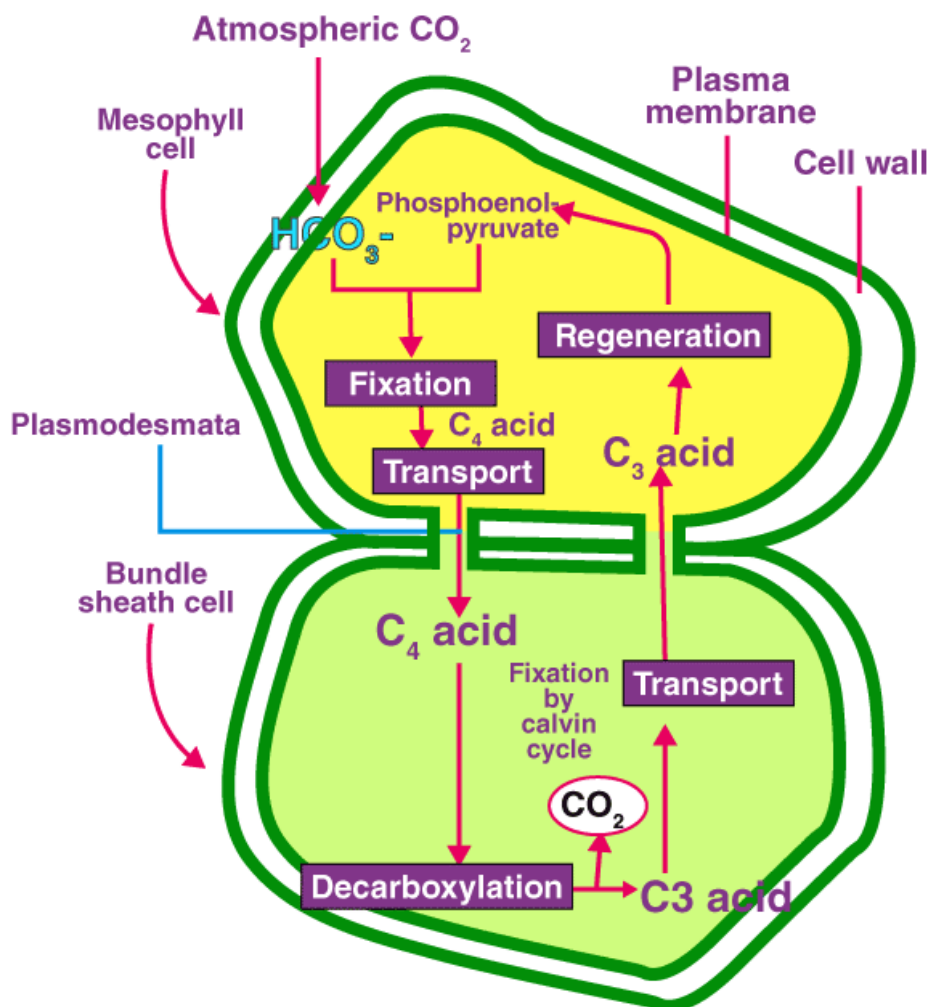
Characteristics:

1. Bundle sheath cells surround vascular bundles.
2. Mesophyll cells are undifferentiated.
3. Chloroplasts are dimorphic (two types):
4. Bundle sheath cells have high concentrations of organelles.

2. Draw a flow chart to show C4 photosynthetic carbon cycle

2018

Ans:



3. How is c3 cycle is different from C4 cycle? Write any 4 differences between them 2023

C_3 plants	C_4 plants
1. Primary or first product of carbon pathway is 3c compound phospho glyeeric acid (PGA).	1. First product of carbon pathway is 4 – c compound oxaloacetic acid.
2. CO_2 acceptor is RuBP in Mesophyll chloroplast.	2. Primary CO_2 acceptor is PEP in Mesophyll cytoplasm.
3. Leaves do not show Kranz anatomy.	3. The leaves have kranz anatomy.
4. Chloroplast dimorphism is not present.	4. Chloroplast dimorphism is present.
5. Photorespiration occurs.	5. No photorespiration.
6. Cell type in which calvin cycle occurs is mesophyll.	6. Bundle sheath.
7. Optimum temperature is much lower. Ex : Mango.	7. Optimum temperature is high. Ex : Zea mays.
8. CO_2 compensation point is high. (25 to 100 ppm)	8. CO_2 compensation point is low. (0 – 10 ppm)

4. Explain the following disease. How we can prevent each one

2018

A) Marasmus

B) Kwashiorkor

Ans : Marasmus is a severe form of protein-energy malnutrition characterized by:

Weight loss, Muscle wasting, Fat loss, Weakness, Poor appetite

Prevention:

1. Ensure adequate calorie intake (1,800-2,000 kcal/day)
2. Consume protein-rich foods (e.g., legumes, nuts, meat)
3. Practice exclusive breastfeeding (0-6 months)
4. Provide complementary foods (6-24 months)

Kwashiorkor is a form of Protein energy malnutrition characterized by:

Edema (swelling), increased weight, Impaired growth

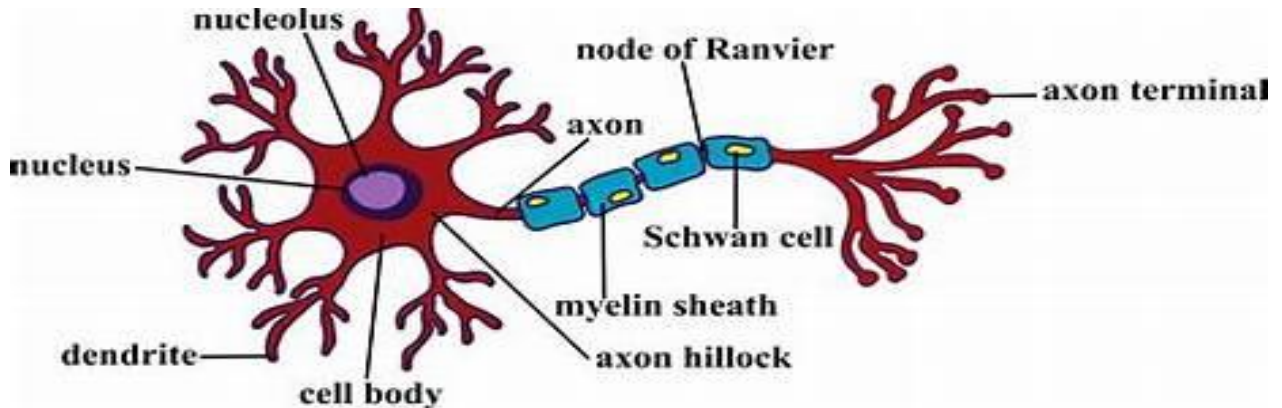
Prevention:

1. Ensure adequate protein intake (0.8-1 gram/kg/day)
2. Consume protein-rich foods (e.g., legumes, nuts, meat)
3. Practice exclusive breastfeeding (0-6 months)

4. Provide complementary foods high in protein (6-24 months)

5. Draw the structure of neuron cell and label it

2020



6. Define mutation? Explain two type of mutation

2023

Ans : A Sudden heritable change in the genome is known as mutations. Mutations can occur naturally during DNA replication or be induced by external factors such as radiation, chemicals, or viruses.

Point Mutation: A point mutation is a change at a single nucleotide base in the DNA sequence.

Chromosomal Mutation: A chromosomal mutation involves changes in the number or structure of chromosomes.

7. What are mutagens? Give examples

2016

Ans : Mutagens are physical or chemical agents that induce genetic mutations, altering the DNA sequence of an organism. Mutagens can be:

1. Physical (radiation)
2. Chemical (chemical substances)
3. Biological (viruses, bacteria)
8. Differentiate between systolic and diastolic blood pressure

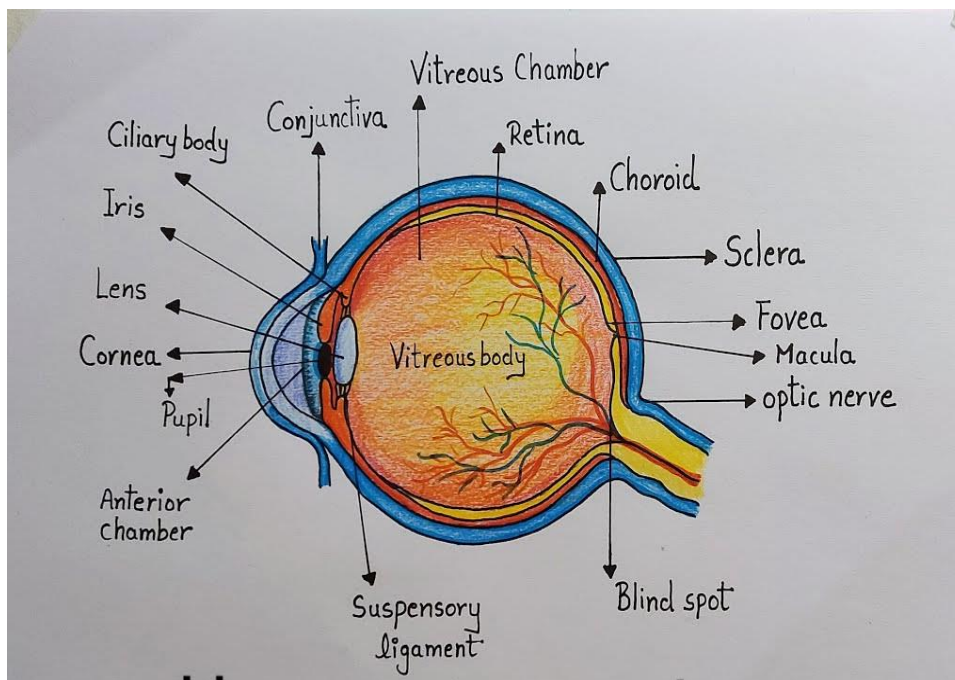
Ans:

DIFFERENCE BETWEEN SYSTOLIC AND DIASTOLIC	
SYSTOLIC	DIASTOLIC
<ul style="list-style-type: none">• Systolic pressure is maximum arterial pressure during the contraction of the left ventricle of the heart.• The normal range is 90-120 mm Hg in adults.• Maximum blood pressure inside the arteries.• Occurs when the left ventricle is contracted.• Occurs in the systolic stage of the cardiac cycle.• Undergoes considerable fluctuations.• Increases with age.	<ul style="list-style-type: none">• Diastolic pressure refers to the minimum arterial pressure during the relaxation of the left ventricle of the heart.• The normal range is 60-80 mm Hg in adults.• Minimum blood pressure inside the arteries.• Occurs when the left ventricle is relaxed.• Occurs in the diastolic stage of the cardiac cycle.• Undergoes few fluctuations.• Decreases with age.

9. Draw a neat and proportionate diagram of human eye and label it

2021

Ans :



10. Explain and give one example of parthenocarpy

2014

Ans: Fruits are developed without fertilization. Such fruits are seedless. Eg: Banana, Grapes

11. what is the role of decomposers in an ecosystem

2018

Ans : Decomposers feed on excretory substances and dead bodies of plants and animals. Bacteria and fungi are decomposers.

1. They breakdown complex organic substances into simpler organic substances
2. Plants use up such simple organic substances again
3. So they play an important role in cyclic pathway of elements

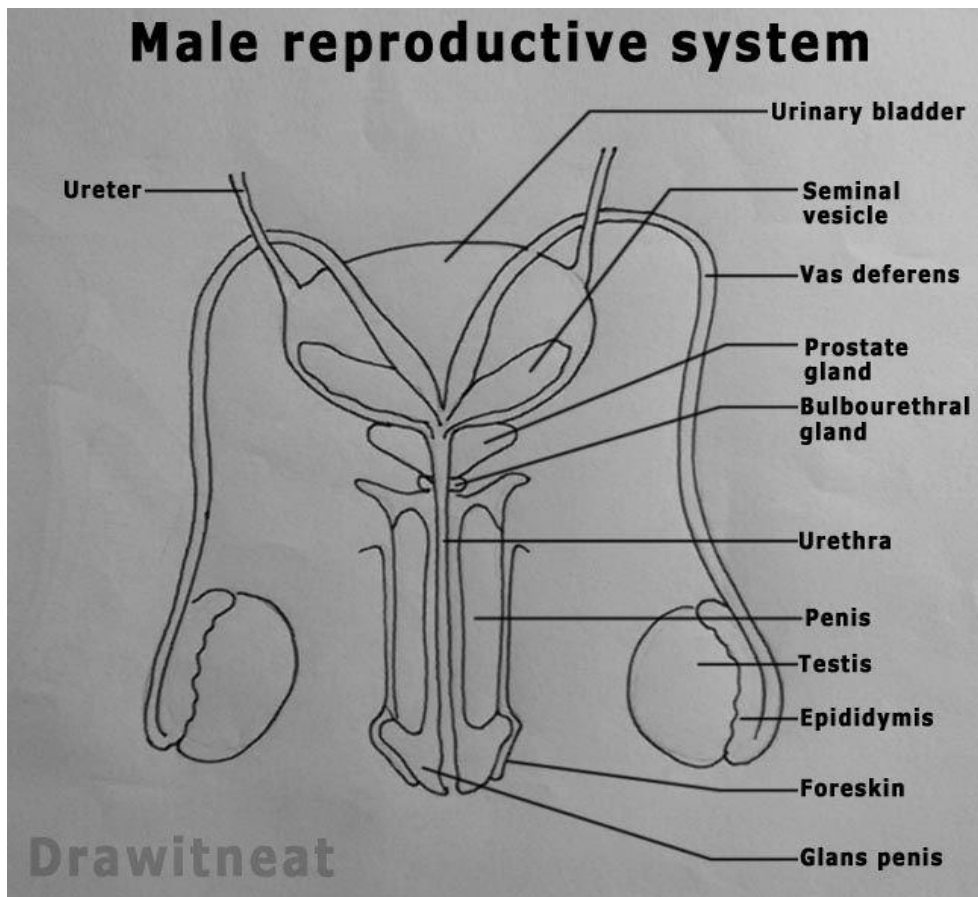
12. Define transcription 2020

Ans: Transcription is the first step of gene expression that involves the formation of RNA molecule from DNA.

13. write the botanical name of Rice 2018

Ans : *Oryza sativa*

14. Draw the diagram of human male reproductive system and label it 2021



15. write four important component of urine of a normal healthy person 2022

Ans: Urine contain Water (95%), urea (2%), creatinine (0.1%), uric acid (0.03%), chloride, sodium, potassium, sulphate, ammonium, phosphate and other ions and molecules in lesser amounts

16. what is leg heamoglobin 2019

Ans : It is an oxygen-carrying phytohemoglobin found in the nitrogen-fixing root nodules of leguminous plants.