



INDIAN SCHOOL MUSCAT ANNUAL EXAMINATION BIOLOGY

CLASS: XI

Sub. Code: 044

Time Allotted: 3 Hrs.

20.02.2020

Max. Marks: 70

General Instructions:

- There are a total of 27 questions and five sections in the question paper. All questions are compulsory.
- Section A contains question numbers 1 to 5, multiple choice questions of one mark each.
 - Section B contains question numbers 6 to 12, short answer type I questions of two marks each.
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- Make your Handwriting legible

SECTION – A

1. The correct scientific name of mango plant is 1
a] *Mangifera Indica* b] *Mangifera india* c] *Mangifera indica* d] *mangifera Indica*
2. Group of living organisms which do not have cell wall and capable of living without oxygen is 1
a] Bacteria b] Algae c] Fungi d] Mycoplasma

OR

Heterospory and seed habit is first seen in

- a] Mossess b] Algae c] Pteridophytes d] Gymnosperms
3. Green, multicellular, asexual buds seen in Liverworts are known as 1
a] pyrenoids b] gemmae c] antheridium d] archegonium

4. Which one of the following members of Platyhelminthes will have high power of regeneration? 1
a] *Planaria* b] *Taenia* c] *Fasciola* d] blood fluke

OR

Given below are characteristics of a class of vertebrates.

- a] presence of pneumatic bones
b] digestive system consists of gizzard and crop as additional chambers in the alimentary gland
c] warm blooded animals d] oviparous
5. Enzymes that catalyse interconversion of optical, geometrical or positional isomers are 1
a] Ligases b] Lyases c] Hydrolases d] Isomerases

SECTION B

6. Write the function and name the types of roots in gymnosperms 2
a) associated with fungus
b) associated with cyanobacteria

OR

Name the cell in angiosperms from which embryo sac develops and write down the cells seen in it.

7. Give an example of 2
a] a diploblastic animal b] acoelomate animal
c] pseudocoelomate animal d] a hermaphrodite animal
8. What are stilt roots? In which plant it is seen? 2
9. Classify the following into primary and secondary meristems. 2
Tissues found in shoot apex and root apex, interfascicular cambium, intercalary meristem, cork cambium
10. Mention the location and function of following tissues in animals 2
a] squamous epithelium b] adipose tissue
11. Who proposed cell theory with modification? State the tenets of cell theory. 2
12. Which group of fungi is known as imperfect fungi and why is it called so? 2

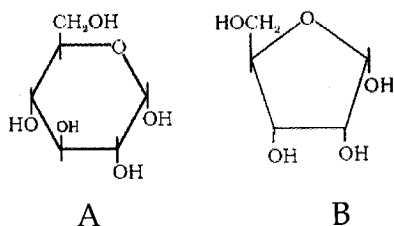
SECTION C

13. How are flowers described based on position of floral parts in respect of the ovary on the thalamus? Explain each. 3

OR

Give two examples of drupe fruits. Guava fruit with seeds is not a parthenocarpic fruit. Justify.

14. a] Why is cockroach known as uricotelic animal? 3
 b] Where is hepatic caeca located in cockroach? What is its significance?
15. a) Name the carbohydrates shown in the diagram and also state its function in living organisms. 3

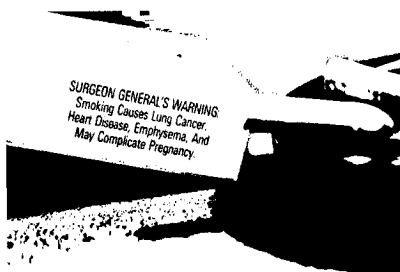


- b) What are biomacromolecules?

OR

Explain the catalytic cycle of an enzyme action? Why is enzyme necessary for metabolism in a living cell?

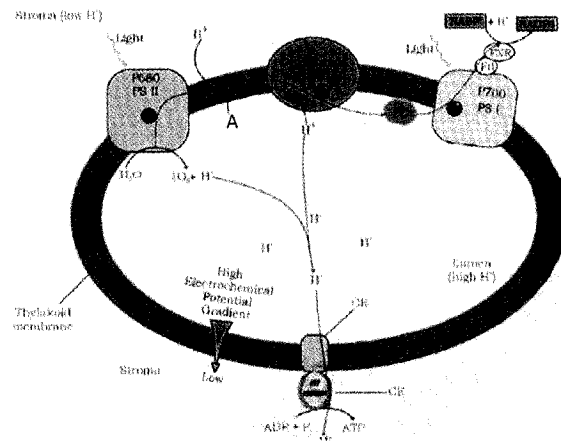
16. a) Enlist the different stages of interphase of a cell. Give an example of a cell which does not exhibit cell division in adult animals. 3
 b) Write two uses of mitotic cell division to organisms.
17. Which two factors determine water potential? What is the water potential of a pure water? Name two membranes in plant cell that determine the movement of molecules into and out of the cell. 3
18. What are the four categories of essential elements? Write two sulfur containing amino acids. 3
19. Draw a diagram with label depicting sigmoid growth curve. In the expression of exponential growth what does 'r' stand for? 3
20. Of cortical and juxta medullary nephrons, which one will produce concentrated urine and explain the mechanism. 3
21. a) Give one example each for pulmonary and cutaneous respiration. 3
 b) State the function of epiglottis.
 c) What is emphysema as mentioned in the warning?



SECTION D

22.

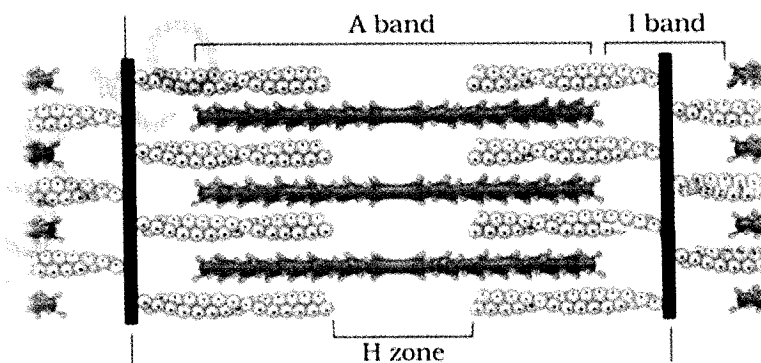
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- The diagram explains the process of photophosphorylation. Name the phenomenon that explains the process.
- Which enzyme is catalyzing NADPH synthesis and where is it located?
- How is proton enriched in lumen of thylakoid?

23.

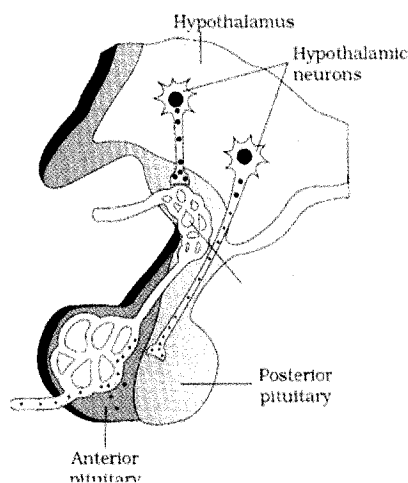
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- The diagram shows the structural and functional unit of a muscle fibre. What is it?
- Name the components of a thin filament.
- Define a theory that explains muscle contraction.

24.

3



- How do hypothalamic hormones reach anterior pituitary gland?

- b) Name two hormones released by posterior pituitary gland and where is it produced? State one function of each.

SECTION E

25. Draw a labelled diagram of fluid mosaic model of plasma membrane. Who proposed this model? 5
What does it explain?

OR

Explain the different stages of prophase I of meiosis.

26. What is the other name of Glycolysis? Why is it called so? Schematically represent glycolysis 5
from glucose to triose biphosphate in flow chart.

OR

What is 'Kranz anatomy'? Explain the different steps involved in C₄ photosynthetic carbon cycle in such plants.

27. Explain the events that occur in the human heart during ventricular systole and ventricular diastole 5
in a cardiac cycle. Name the heart sounds and mention how they are produced.

OR

- a) Draw the basic structure of a neural synapse and label the following parts in it Presynaptic cell, Postsynaptic cell, Vesicles, Neurotransmitter, Receptor, Synaptic cleft.
b) Give any two differences between chemical synapses and electrical synapses.

End of the Question Paper

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SET B



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SECTION – A

1. In taxonomic hierarchy, each category/rank is referred as 1
 a] Genus b] Species c] Taxon d] Family
2. The role of heterocysts in blue green algae is to 1
 a] absorb phosphorus from the surroundings b] fix atmospheric nitrogen
 c] carry out photosynthesis d] recycle nutrients in nature

OR

Viroids cause

- | | |
|----------------------------------|-----------------------------------|
| a] Late blight of potato disease | b] red rust disease in wheat |
| c] potato spindle tuber disease | d] citrus canker disease in lemon |

3. Prothallus is a 1
 - a] green, thalloid, photosynthetic sporophyte of alga
 - b] green, thalloid, photosynthetic sporophyte of ferns
 - c] green, thalloid, photosynthetic gametophyte of ferns
 - d] green, thalloid, photosynthetic gametophyte of a flowering plant
4. Which one of the following biomolecules is considered as substituted methane? 1
 - a] Fatty acids b] glycerol c] amino acids d] glucose
5. The excretory organ of animals belonging to Annelida is 1
 - a] Nephrons b] flame cells c] Nephridia d] Green glands

OR

Which animals are marine but for spawning they move to fresh water?

- a] Chondrichthyes b] Osteichthyes c] Protochordata d] Cyclostomes

SECTION B

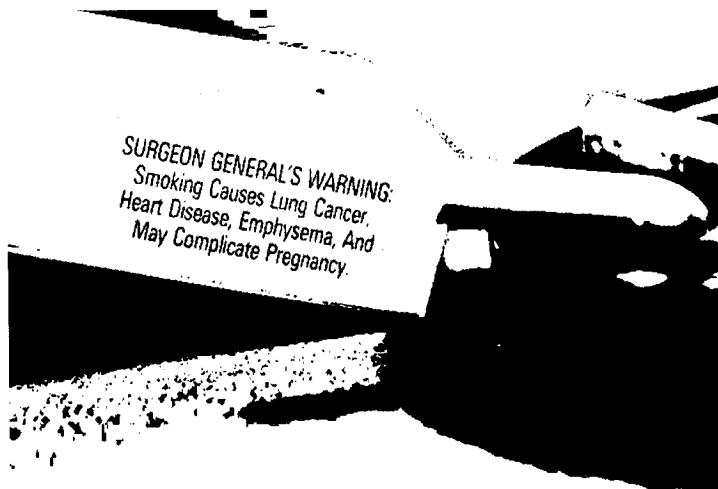
6. Give a reason 2
 - a] Pulp of guava fruit is gritty in nature.
 - b] Collenchyma will provide mechanical support to young growing parts of a plant such as petiole of a leaf.
7. Give an example of 2
 - a] a diploblastic animal b] acoelomate animal c] pseudocoelomate animal
 - d] a hermaphrodite animal
8. Mention the location and function of following tissues in animals 2
 - a] squamous epithelium b] adipose tissue
9. What are stilt roots? In which plant it is seen? 2
10. Which group of fungi is known as imperfect fungi and why is it called so? 2
11. Who proposed cell theory with modification? State the tenets of cell theory. 2
12. Write the function and name the types of roots in gymnosperms 2
 - a) associated with fungus
 - b) associated with cyanobacteria

OR

Name the cell in angiosperms from which embryo sac develops and write down the cells seen in it.

SECTION C

13. a] What is mosaic vision? 3
b] Where is Malpighian tubules located in cockroach? What is its significance?
14. Draw a diagram with label depicting sigmoid growth curve. In the expression of exponential growth what does 'r' stand for? 3
15. a) Why is meiosis necessary for sexually reproducing organisms? 3
b) Write four stages of karyokinesis in mitosis.
16. a) Give one example each for pulmonary and cutaneous respiration. 3
b) State the function of epiglottis.
c) What is emphysema as mentioned in the warning?

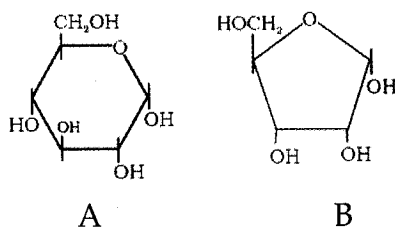


17. How are flowers described based on position of floral parts in respect of the ovary on the thalamus? Explain each. 3

OR

Give two examples of drupe fruits. Orange fruit with seeds is not a parthenocarpic fruit. Justify.

18. a) Name the carbohydrates shown in the diagram and also state its function in living organisms. 3



- b) What are biomacromolecules?

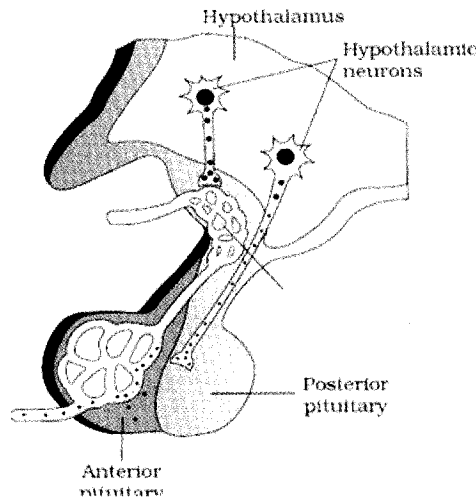
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Explain the catalytic cycle of an enzyme action? Why is enzyme necessary for metabolism in a living cell?

19. What is micturition reflex? Explain the mechanism of micturition in human? 3
20. What are the four categories of essential elements? Write two sulfur containing amino acids. 3
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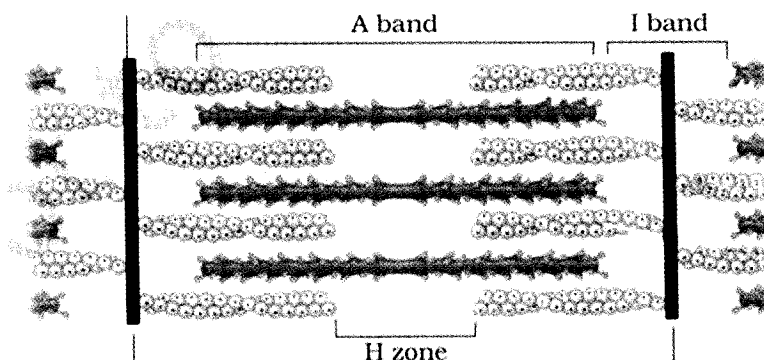
SECTION D

22. 3

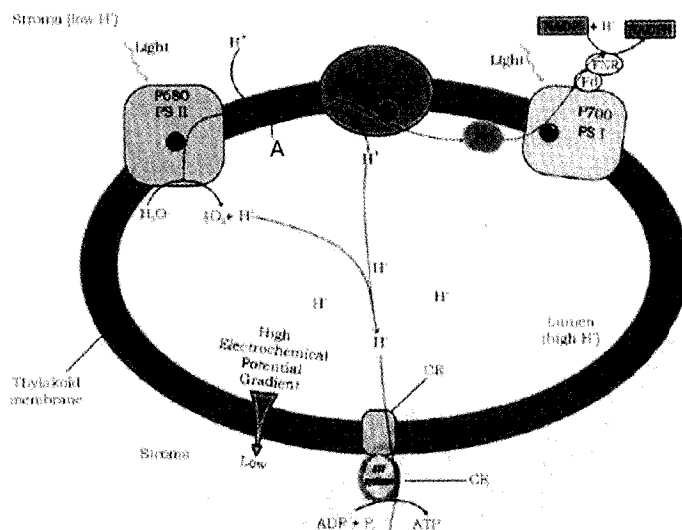


- a) How do hypothalamic hormones reach anterior pituitary gland?
- b) Name two hormones released by posterior pituitary gland and where is it produced? State one function of each.

23. 3



- a) The diagram shows the structural and functional unit of a muscle fibre. What is it?
- b) Name the components of a thin filament.
- c) Define a theory that explains muscle contraction.



- The diagram explains the process of photophosphorylation. Name the phenomenon that explains the process.
- Which enzyme is catalyzing NADPH synthesis and where is it located?
- How is proton enriched in lumen of thylakoid?

SECTION E

25. Draw a labelled diagram of mitochondria and explain its structure. 5

OR

Explain the different stages of prophase I of meiosis.

26. Explain the events that occur in the human heart during ventricular systole and ventricular diastole in a cardiac cycle. Name the heart sounds and mention how they are produced. 5

OR

- Draw the basic structure of a neural synapse and label the following parts in it Presynaptic cell, Postsynaptic cell, Vesicles, Neurotransmitter, Receptor, Synaptic cleft.
- Give any two differences between chemical synapses and electrical synapses.

27. What is the other name of citric acid cycle? Where does it occur? Schematically represent this cycle. 5

OR

What is 'Kranz anatomy'? Explain the different steps involved in C4 photosynthetic carbon cycle in such plants.

End of the Question Paper

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SET C



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SECTION – A

1. In taxonomic hierarchy, the basic taxon is 1
 a] Genus b] Species c] Kingdom d] Family
2. Fusion of protoplasm between two motile or non -motile gametes is known as 1
 a] karyogamy b] oogamy c] plasmogamy d] anisogamy

OR

Mad cow disease in cattle is caused by

- a] Viroids b] virus c] prions d] bacteria
3. Numerical taxonomy involves 1
 a] cytological information like chromosome number, structure, behavior
 b] chemical constituents of the plant

- c] computer where observable characters are given number and codes
d] floral characters for classification
4. Which one of the following is not a nucleoside? 1
a] Adenosine b] Thymidylic acid c] Guanosine d] uridine
5. Which one of the following features is seen in Ctenophora? 1
a] Bioluminescence b] metagenesis c] presence of notochord d] water vascular system

OR

Placoid scales are seen in

- a] cyclostomes b] Osteichthyes c] Chondrichthyes d] reptiles

SECTION B

6. i) Name the phloem component absent in a) monocotyledons b) primary phloem. 2
ii) Why some vascular bundles are said to be open and conjoint?
7. Give an example of 2
a] a diploblastic animal b] acoelomate animal c] pseudocoelomate animal
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9. What are stilt roots? In which plant it is seen? 2
10. What are 'red tides'? how do they affect marine organisms? 2
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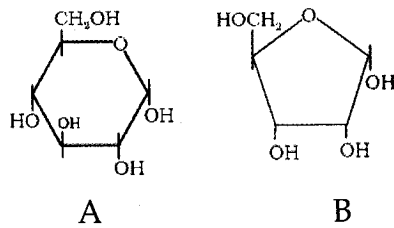
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Name the cell in angiosperms from which embryo sac develops and write down the cells seen in it.

SECTION C

13. a) Why is meiosis necessary for sexually reproducing organisms? 3
b) Write four stages of karyokinesis in mitosis.
14. Schematically show the movement of water from soil to root xylem in a flow chart. 3
15. What is micturition reflex? Explain the mechanism of micturition in human? 3

16. Mention the biochemical components of root nodule and describe their structure and role in nitrogen fixation. 3
17. a) Name the carbohydrates shown in the diagram and also state its function in living organisms. 3



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OR

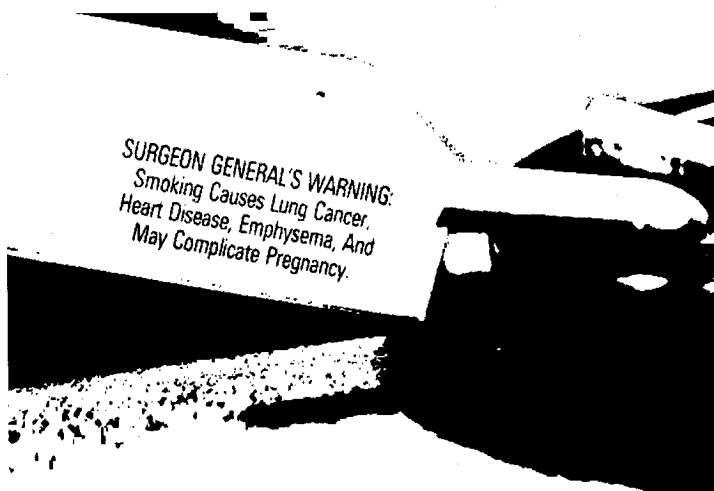
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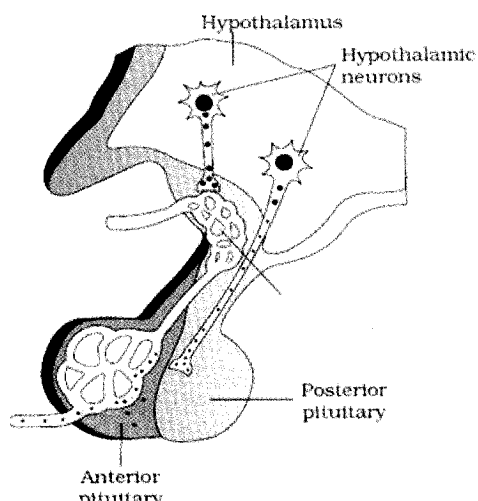


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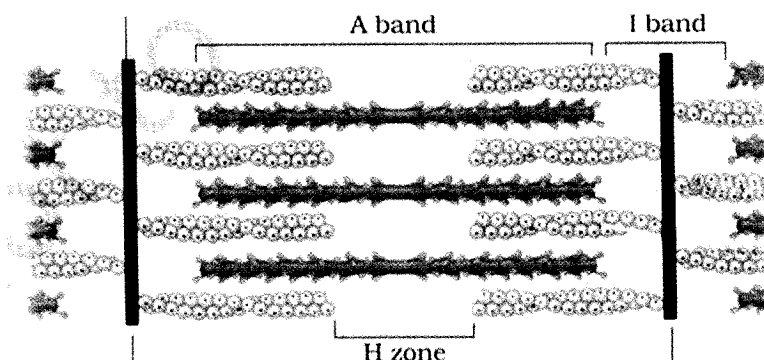
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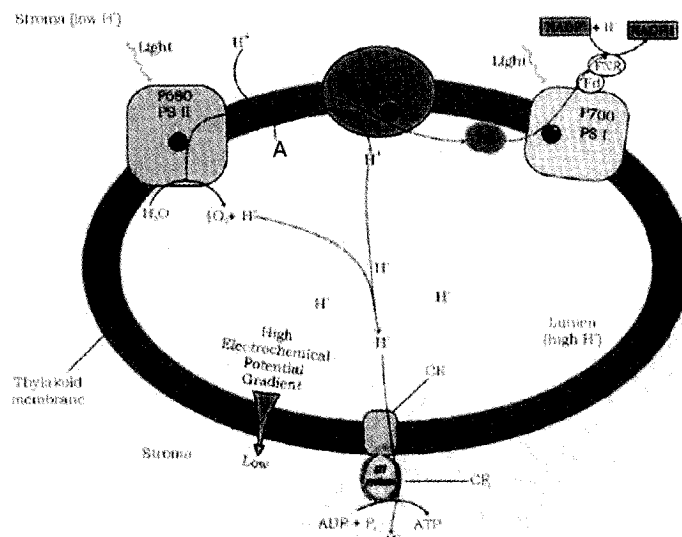
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- The diagram explains the process of photophosphorylation. Name the phenomenon that explains the process.
- Which enzyme is catalyzing NADPH synthesis and where is it located?
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SECTION E

- In a standard ECG, what does P-wave, QRS complex and T-wave stand for? How one can calculate heartbeat of a person using ECG? What is its clinical significance? 5

OR

- Draw the basic diagram showing knee jerk reflex and label the following parts, muscle spindle, afferent pathway, motor end plate, inter neuron.
 - Name the point of sharpest vision and the point of no vision in the eye.
- What is the other name of citric acid cycle? Where does it occur? Schematically represent this cycle. 5

OR

What is 'Kranz anatomy'? Explain the different steps involved in C4 photosynthetic carbon cycle in such plants.

- Draw a labelled diagram of mitochondria and explain its structure. 5

OR

Explain the different stages of prophase I of meiosis.

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