MALAPPURAM BOTANY TEACHERS ASSOCIATION
BOTANY TEST SERIES-I (CHAPTER 1, 2 & 3)

Time 1 hr **Marks: 30**

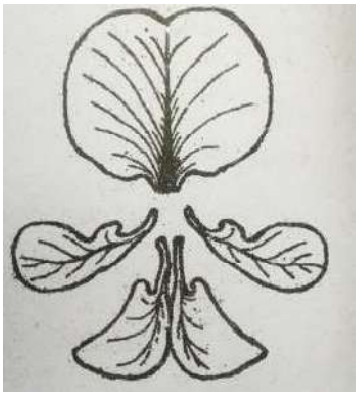
Answer any 4 of the following. Each questions from 1 to 7 carries 1 score.

1. Protein coat of viruses is called……
2. In China rose, the gynoecium occupies the highest position while the other floral parts are situated below it. This type of flowers are called
   a) Hypogynous
   b) Epigynous
   c) Perigynous
   d) Apocarpous

3. Asexual reproduction in liverworts takes place by formation of green, multicellular asexual buds known as……...

4. Who recognized certain microbes (viruses) that cause Mosaic disease of tobacco?

5. The following diagram represents five petals (standard petal, wing petal and keel petal) of a plant belonging to a major family, identify the family.



6. Identify the statement which is applicable to Fungus

a) Unicellular prokaryotes
b) Autotrophic nutrition
c) Cellwall is made up of chitin
d) Aquatic habitat only

7. When the ovules are borne on the central axis and septa are absent, the placentation is called……

a) Marginal
b) Axile
c) Parietal
d) Free central

Answer any 7 of the following. Each questions from 8 to 16 carries 2 score.

8. Find the odd one and justify your answer

a) Rhizome,Corm,Tendril,Tuber
b) Spirogyra, Agaricus, Sargassum,Chlamydomonas

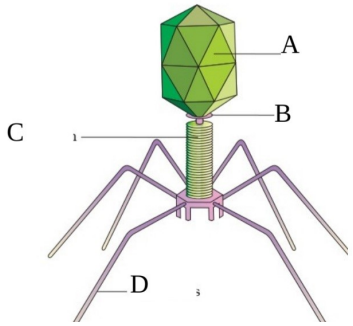
9. Fill up the blanks by observing the relationship with the first pair

a) Plasmogamy : Fusion of protoplasms
…….. : Fusion of two nuclei
b) Association of algae with fungi : Lichen
Association of fungi with roots of higher plants : ……

10. **Match the following**

Rhizophora---------- Stilt root
Banyan tree ----------Fibrous root
Sugarcane ---------- Respiratory root
Grass ---------- Prop root

11. The figure given below is a bacteriophage. Label the parts A, B, C & D



12. Give reason for the following

- Bryophytes are called the 'amphibians of the plant kingdom'.
- Viruses are called 'biological puzzle'.

13. Five kingdom arrangement of organism was given by R.H Whittaker. State the criteria followed by Whittaker for his classification

14. Even though algae are primary producers in aquatic ecosystem, man is benefited by algae in variety of ways. Write any four points in favors of this statement.

15. Use appropriate terms for the following description

a) In flowers of China rose, all the filaments of stamens are united to form single bundle

b) In flowers of Citrus, all the filaments of stamens are united to form more than two bundles

16. Differentiate between staminate flower and a staminode

Answer any 4 of the following. Each questions from 17 to 22 carries 3 score.

17. Write the name of the stored food and major pigment of algal classes in the table given below

Class	Special pigment	Stored food
Phaeophyceae	……A…….	Mannitol,Laminarin
Rhodophyceae	……B……	……C……

18. Write any three distinguishable characters of bryophytes?

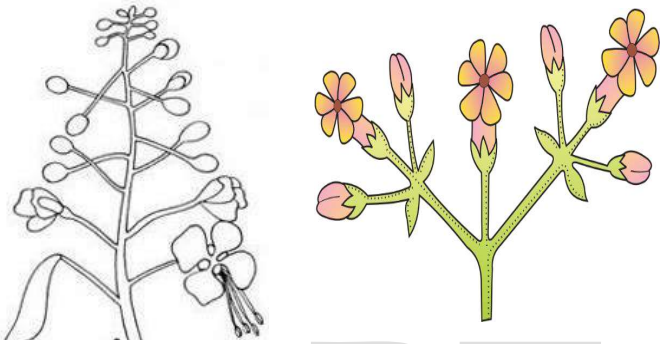
19. Briefly describe Actinomorphic, Zygomorphic and Asymmetric flowers

20. Following is the floral formula of a family you have studied

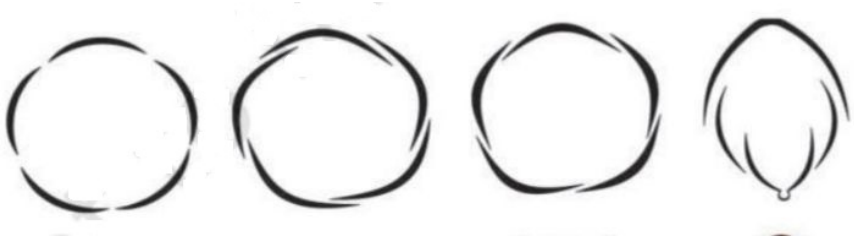
$$Br \oplus \varphi \overset{\frown}{P_{(3+3)}} A_{3+3}\ G_{(3)}$$

a) Identify the family.
b) Write down any two floral characters

21. Arrangement of flowers on the peduncle is given below. They vary depending upon the nature and branching of the peduncle. Can you substantiate your answer with suitable examples?



22. Fill in the blanks by choosing the correct term from the bracket.
a) The arrangement of petals in the flower is known as…….
(Aestivation, Venation, Placentation)
b) Identify the types of arrangement of petals shown in the following diagrams.



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MALAPPURAM BOTANY TEACHERS ASSOCIATION
BOTANY TEST SERIES-II (CHAPTER 4, 5 & 6)

Time 1 hr Marks: 30

Answer any 4 of the following. Each questions from 1 to 7 carries 1 score.

1. Chromatin contains DNA and some basic proteins called……

2. Identify the statement which is not related with Dicot leaf
   a) Stomata are equally distributed on both the epidermis
   b) Mesophyll is divided in to palisade and spongy parenchyma
   c) Dicot leaves are dorsi-ventral leaf
   d) Stomata are more in lower epidermis

3. The infoldings of cell membrane seen in prokaryotes is ……...

4. Pick out the incorrect statement
   a) Elaioplast store oil and fat
   b) Mitochondria is the power house of the cell
   c) Ribosomes are double membrane bound structures
   d) Seive tube cells of vascular plants lack nucleus

5. Many bacteria have small circular DNA outside the genomic DNA called…….

6. During cell cycle, DNA synthesis or replication takes place in-
   a) G2- Phase
   b) S- Phase
   c) G1- phase
   d) M-phase

7. Every chromosome has a primary constriction, on the sides of which disc shaped structures are present known as
   a) Satellite

b) Centromere
c) Kinetochore
d) Chromatid

Answer any 7 of the following. Each questions from 8 to 16 carries 2 score.

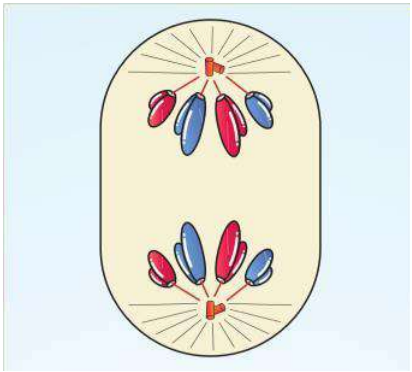
8. Find the odd one and justify your answer
   a) Tracheids, Vessels, Seive tube, Xylem parenchyma
   b) Bacteria, Mycoplasma, Cyanobacteria, Fungus

9. Fill up the blanks by observing the relationship with the first pair
   a) Nucleus : Robert Brown
      …….. : George Palade
   b) Apical meristem : Growth in length
      ……. : Growth in thickness

10. Match the column A with B

A	B
Zygotene	Chiasmata formation
Pachytene	Terminalisation of chiasmata
Diplotene	Formation of synaptonemal complex
Diakinesis	Crossing over

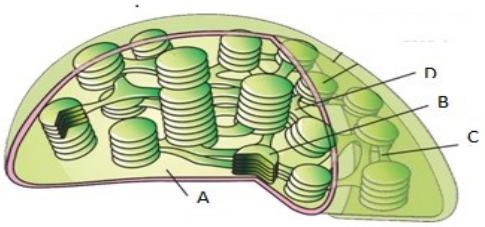
11. Observe the diagram given below representing a stage of mitosis
a) Identify the stage
b) Mention the role of spindle fibres in mitosis



12. A cell with a chromosome number 46 undergoes mitosis and cell with 46 chromosomes undergoes meiosis. Give the chromosome number of daughter cells after mitosis and meiosis. Give reason for your answer.

13. The following is the list of cell organelles
(Nucleus, Chloroplast, Mitochondria, Ribosome)
a) Identify the organelle without double membrane envelope
b) Mention the function of this organelle.

14. Given below is the structure of chloroplast. Mark A, B, C & D



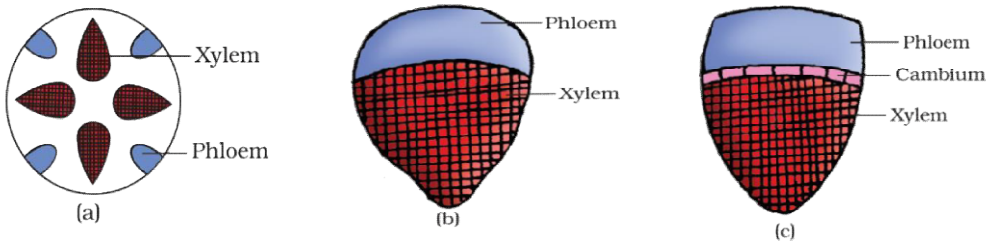
15. After completing the nuclear division, the cell itself is divided into two daughter cells by cytokinesis. State the difference between cytokinesis of plant cell with that of animal cell.

16. The nucleoplasm contains chromatin and small spherical structures. Name that spherical structures and write down its major function

Answer any 4 of the following. Each questions from 17 to 22 carries 3 score.

17. Stomata are structures present in epidermis of leaves.
a) Write any 2 functions of stomata.
b) State any difference of guard cell seen in dicot stomata with that of monocot

18. Diagrammatic representation of vascular bundles are given
a) Distinguish a, b and c
b) State the differences between a and b



19. The following are some of the important events in mitotic cell division. Mention the stages of mitosis during which these events happen

a) Chromosomes are most condensed and moved to spindle equator
b) Chromosomal material condenses to form compact mitotic chromosomes
c) The chromosomes reach at their respective poles and their individuality is lost

20. Two types of plant specimens were given to students for microscopical observation. They were directed to note down the features they observed. Major features noted by students were summarized in the box below

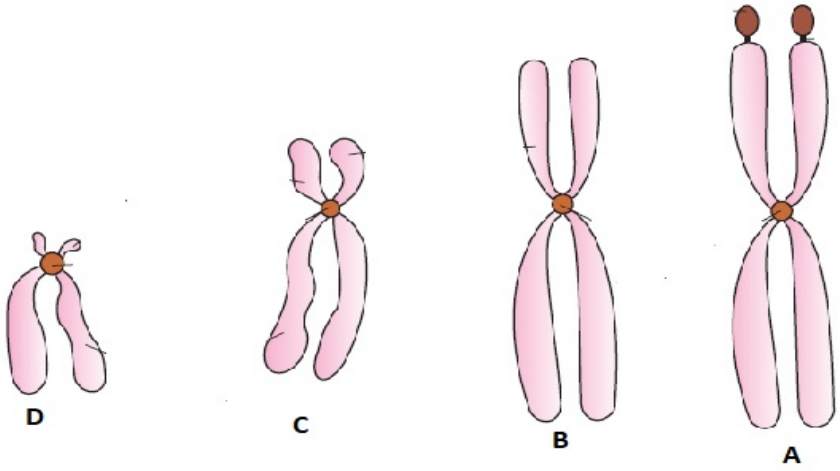
a) Vascular bundle are numerous and scattered
b) Vascular bundles are limited in number and are arranged in a ring
c) Secondary growth is present
d) Cambium present between xylem and phloem
e) Undifferentiated ground tissue
f) Water containing cavities are present within the vascular bundle

Name the two specimens and substantiate your answer by picking up the features of specimens from the box and write them in two columns

21. An accepted model of the structure of a cell membrane was proposed by Sinsger and Nicolson
a) Name the model
b) List the two major biomolecules which this membrane is composed of.

c) Mention two important points of this model from the point of view of function.

22. Different types of chromosomes based on the position of centromere are given below. Classify them and write down the peculiarity of Chromosome "A"?



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MALAPPURAM BOTANY TEACHERS ASSOCIATION
BOTANY TEST SERIES-III (CHAPTER 7, 8 & 9)

Time 1 hr **Marks: 30**

Answer any 4 of the following. Each questions from 1 to 7 carries 1 score.

1. The element……. Plays an important role in opening and closing of stomata.
2. The unit of water potential is…….
3. Primary CO_2 accepter of C3 cycle is……
4. …… is the enzyme which catalyses the first step of C3 Pathway
5. The maximum rate of photosynthesis occurs with …….regions of the visible spectrum
    a) Blue and Red
    b) Blue and Green
    c) Red and Green
    d) Red and Violet
6. ATP formation during photosynthesis is called
    a) Photo respiration
    b) Photolysis
    c) Phototropism
    d) Photophosphorylation
7. The enzyme "nitrogenase" is a…….
    a) Fe-Mg protein
    b) Fe- Mn protein
    c) Fe- Mo protein
    d) Fe- Zn protein

Answer any 7 of the following. Each questions from 8 to 16 carries 2 score.

8. Fill up the blanks by observing the relationship with the first pair

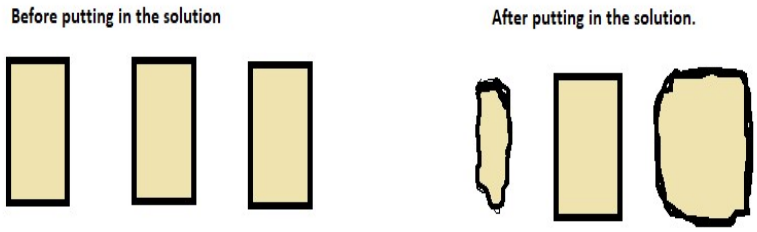
a) Apoplast Pathway : Cell wall
Symplast Pathway: ……
b) ATP: Adenosine Tri Phosphate
PGA: ……

9. Give justification for the following statement.
a) Leguminous plants play an important role in N2 fixation.
b) Dried seeds swell when it is placed in water

10. **Match the following**

Rhizobium	---------- Nitrogen fixing cyanobacteria
Azotobacter	---------- Free living anaerobic bacteria
Rhodospirillum	---------- Free living aerobic bacteria
Anabaena	---------- Symbiotic nitrogen fixing bacteria

11. Three potato pieces of equal weight (2g) were left in three types of solutions (A, B and C) over night, the weight change of potato pieces are as shown in the figure
a) Identify the solution A and C
b) Discuss the reason for not having any change in the piece put in the solution B



12. The differences between cyclic and non-cyclic photophosphorylation are given below. Fill up the column with appropriate terms given in the bracket
(Occurs in lamella of grana, Occurs in the stroma lamella, Z- scheme, Only ATP is synthesized, Photolysis of water occurs, Only PS-I is involved)

Cyclic photophosphorylation	Non cyclic photophosphorylation
Occurs in the stroma lamella	Occurs in lamella of grana
……	……..
……	…….

13. During photosynthesis plants prepare food materials by using carbon dioxide, water and sunlight.

a) Which molecule is the reaction centre of light reaction?

b) Name the photo centers of PS I and PS II

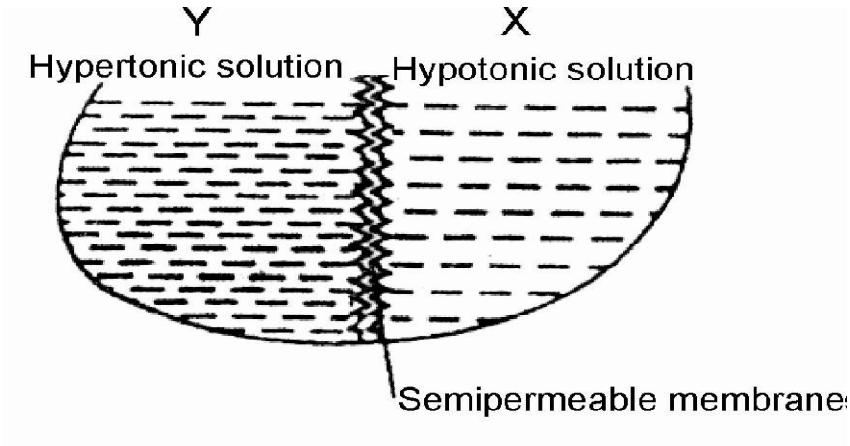
c) In which pigment system oxygen evolution occur?

14. Ammonia is first oxidized to nitrite and the nitrite is further oxidized to nitrate.

a) Name the process.

b) Give any one example of a bacterium which is involved in this process

15. Given below is a diagram, where hypotonic solution is separated by a semi permeable membrane a hypertonic solution and kept for a few hours.



a. In which direction solvent will move? From X to Y or Y to X

b. Name the process of movement of the solvent.

16. Water is absorbed by the root hairs, it can move deeper into root layers by two distinct pathways such as apoplast and symplast. Which pathway is blocked at the endodermal region and why?

Answer any 4 of the following. Each questions from 17 to 23 carries 3 score.

17. $N_2 + 8e^- + 8H^+ + 16\ ATP \rightarrow 2NH_3 + H_2 + 16ADP + 16Pi$

a. Name the process
b. Which enzyme catalyses the process
c. How the enzyme in this process is protected from oxygen in root nodules?

18. All the pigments except chlorophyll-a are known as accessory pigments.

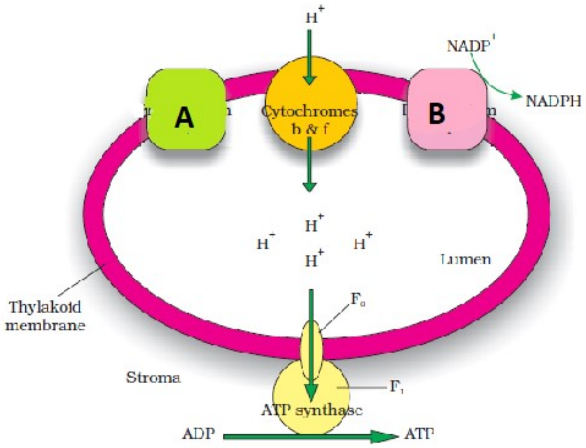
a) Name the important accessory pigments involved in light reaction
b) Write any two functions of accessory pigments

19. Out of the 105 elements, only few are considered essential. Under what criteria are they selected.

20. Two solutions A and B were separated by a semi permeable membrane. The Ψw (water potential) of solution A is -2000 Kpa and B is -1000 Kpa.

a) Which solution has higher Ψw?
b) In which direction will water move?
c) Write the water potential of pure water.

21. Schematic representation of Chemi Osmotic hyposynthesis is given below which explain the ATP synthesis during photosynthesis.



a) Identify the structures A and B on thylakoid membrane
b) Write the causes which result in proton gradient across the thylakoid lumen (any 2 reasons)

22. In C3 cycle CO_2 fixed and sugar is synthesized
a) Name the three stages of dark reaction?
b) Who discovered the sequence of chemical reactions in dark reaction?
c) Work out how many ATP and NADPH molecules will be required to make one molecule of glucose.

23. Light reaction and dark reaction are the two stages of photosynthesis.
a) Where does the light reaction occur?
b) What is its product?
c) Comment on their roles in dark reaction

…….

……..

……..

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MALAPPURAM BOTANY TEACHERS ASSOCIATION
BOTANY TEST SERIES-IV (CHAPTER 10& 11)

Time1hr **Marks:30**

Answer any 4 of the following. Each questions from 1 to 6 carries 1score.

1. The site of perception of light are…….
2. Pyruvic acid+CoA+NAD---------->……+CO2+NADH+H+
3. Ubiquinone is located within the……of Mitochondria
4. The rise in rate of respiration during ripening of fruits is……..
5. The phenomenon of internodal elongation prior to flowering is known as……
6. After glycolysis, fate of glucose in mitochondrial matrix is

(a) oxidation

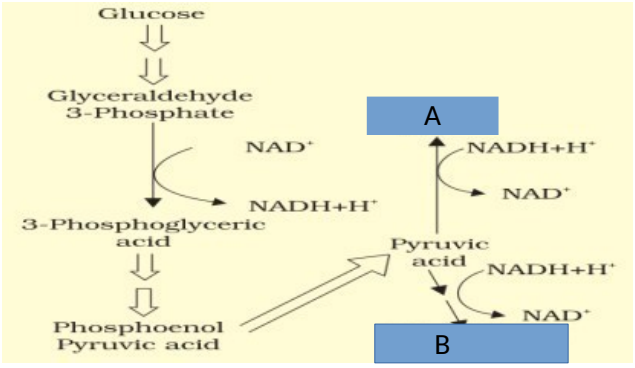
(b) reduction

(c) oxidative-decarboxylation

(d) hydrolysis.

Answer the following questions. Each questions from 7 to 13 carries 2 score.

7. Given below is the flowchart of anaerobic respiration.Name the compounds A and B



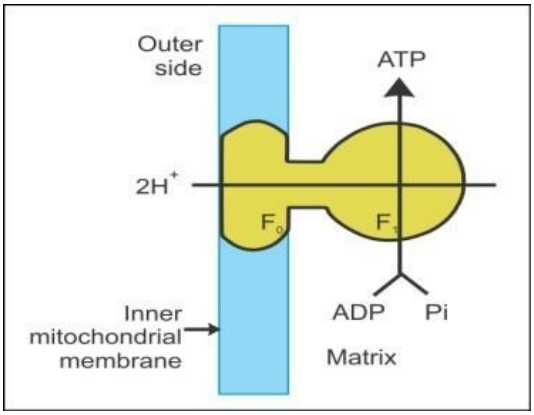
8.Give justification for the following.

a)Decapitation is widely employed in tea plantations

b)Abscissic acid is known as the stress hormone

9. What does the diagram represent?

1. Write the role of F0-F1unit in the process?
2. What is oxidative phosphorylation?



10.Substrate level phosphorylation also occurs in TCA cycle .Do you agree with the statement.
write down the step in which substrate level phosphorylation occurs in krebcycle ?

11.Match the following

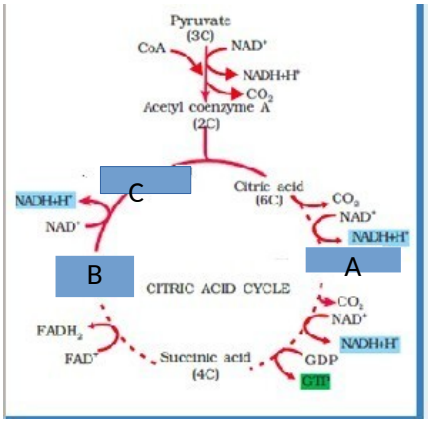
Plant growth regulator	Physiological response
Improve yield of sugarcane	Ethylene
Increase lateral shoot growth	Abscisic acid
Influences femaleness in cucumber flowers.	Cytokinin
Hinder seed germination	Gibberellic acid

12.How ethylene is helpful in deep water rice plants.

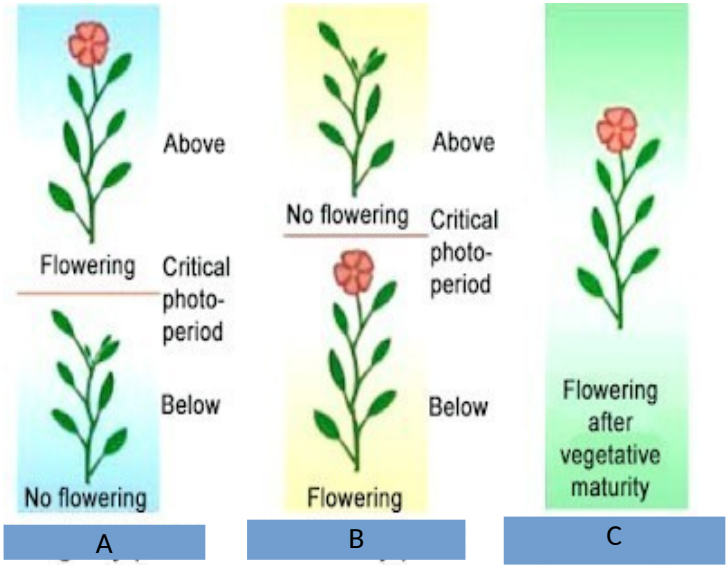
13.Comment on the statement – Respiration is an energy producing process but ATP is being used in some steps of the process. justify with referance to glycolysis

Answer any 4 of the following. Each questions from 14 to 18 carries 3 score.

14.Given below is the flow chart of krebs cycle.Please identify the compounds A,B and C. How many carbon atoms are present in these compounds



15.Plants require a periodic exposure to light to induce flowering.Given below is the different types of plants.Categorise them according to the criitical duration of photoperiod.Name A,B,C



16.In the last step of aerobic respiration(ETS)oxidation of reduced co-enzymes produced in glycolysis and Krebs cycle occur.

a)What are the important reduced coenzymes?

b)Which is the final hydrogen acceptor in ETS

c)Name the complex **V** in ETS

17. List out two sets of plant growth regulators having antagonistic action.

18.The energy yield in terms of ATP is higher in aerobic respiration than during anaerobic respiration. Explain.

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