

BIO- BOTANY

TAXONOMY OF ANGIOSPERMS

One mark questions

1. Name of the book that was published by Linnaeus – **Species plantarum.**
2. Artificial pr Sexual system of classification was published by - **Linnaeus**
3. Natural system of classification was published by – **Benthem and Hooker.**
4. Name of the book that was published by Charles Darvin – **Origin of species.**
5. Phylogenetic system of classification was published by – **Engler and Prantl.**
6. Who coined the term Biosystematics – **Camp and Gily.**
7. The botanist who introduced binominal system is – **Gaspard Bauhin**
8. The twelfth meeting of ICBN was held at – **Leningrad (Russia)**
9. The fifth International botanical congress was held at – **Cambridge.**
10. The current system of International Code of Botanical Nomenclature was Adopted from – **1978.**
11. If naming the plant is from a source of error, It was regarded as – **Ambiguous name.**
12. In a binominal name if the generic name and the specific epithets are the same is called – Tautonym.
13. Total number of specimens maintained in Kew Royal Botanical Garden – **More than 60,00,000.**
14. In which book Benthem and Hooker'ssystem of classification was Published - **Genera plantarum.**
15. Plants having flowers and free petals are placed under the sub class - **Polypetalae.**
16. Plants having flowers with dome or conical thalamus are placed under the Sub class – **Thalamiflorae.**
17. Plants having flowers with single whorl of perianth are placed under the Sub class – **Monochalmydeae.**
18. Infraclass includes – **3 orders and 9 families**
19. Which is highly advanced family in monocot plants – **Orchidaceae.**
20. Malvaceae is placed in the series – **Thalamiflorae.**
21. Binomial of lady's finger is - **Abelmoschus esculentus.**
22. Give the name of the family in which mucilaginous substance and stellate hairs are common – **Malvaceae.**

23. Epicalyx is absent in – **Abutilon indicum**.
24. Binomial of Deccan hemi – **Hibiscus cannabinus**.
25. An example for tree in Solanaceae – **Solanum giganteum**.
26. 'Atropine' is obtained from – **Atropa belladonna**.
27. An example for cladode – **Euphorbia tirucalli**.
28. Cyathium Inflorescence is seen in – **Euphorbia**.
29. The phyllotaxy in musa is- **spiral**
30. Plant taxonomy is also known as – **Systematic Botany**.
31. Number of carpels in Althaea – **10**
32. In artificial system, Zingiberaceae and Anacardiaceae had been placed in one group called – **Monandria**.
33. Monadelphous stamens are common in – **Malvaceae**.
34. Rhipidium Inflorescence is seen in – **Solanum nigrum**.
35. Musaceae belongs to the series – **Epigynae**.
36. 'The bird of paradise flower' refers to – **Strelitzia reginae**.
37. Binomial of 'Travellers palm' – **Ravenala madagascariensis**
38. Abaca cloth is obtained from – **Musa textilis**.
39. Euphorbiaceae belongs to the series – **Unisexualis**.
40. Binomial of Holly hock – **Althaea rosea**.

Three mark questions

1. Define – Taxonomy.

Taxonomy is concerned with the laws governing the classification, Identification, description and naming the plants.

2. What are the aims of classification?

- a) To arrange the plants in an orderly sequence based upon their similarities.
- b) To establish phylogenetic relationships among the different groups of plants.

3. What are the defects of Artificial system of classification?

- a) Unrelated plants are brought together in a single group.
- b) Closely related plants are placed in widely separated groups.

4. Define 'Biosystematics'

Biosystematics may be defined as 'taxonomy of living population'

5. What is Binomial nomenclature?

In Binomial nomenclature every species is given a name of two words. For example- the binomial nomenclature of mango tree is *Mangifera indica*. Hence the first word *Mangifera* refers to the genus and the second word *Indica* to the species.

6. What is a type specimen?

When new names are given to any plant then the herbarium preparation of the same specimen with its original description is preserved in any recognized herbarium. This specimen is called as "Type specimen"

7. What is called author citation?- Give an example

The person who published the description of any plant for the first time or giving a new name to a plant is considered as author. The name of the plant should bear the author's abbreviated name at the end of the specific epithet. This is called author citation. The name Linnaeus was abbreviated to – L.

8. What is called Nomen ambiguum?

If naming the plant is from a source of error, it is regarded as ambiguous name or Nomen ambiguum.

9. Define Tautonym. Give an example

If the generic and specific epithets are the same, it is called tautonym. e.g. *Sassafras sassafras*.

10. Define Herbarium

Herbarium is a collection of pressed, dried plant specimens mounted on specified sheets, identified and arranged in the order of an approved and well known system of classification.

11. what are the three classes of phanerogams?

Dicotyledonae, Gymnospermae and Monocotyledonae.

12. Give the names of Gymnosperm families

Gnetaceae, Coniferae and Cycadaceae.

13. What is polypetalae?

Plants having flowers with free petals under polypetalae. The flowers are with distinct calyx and corolla. It is further divided into three series Thalamiflorae, Disciflorae. Calyciflorae.

14. Write short notes on Monochlamydeae

Plants having flowers with single whorl of perianth and placed under Monochlamydeae. The petals and sepals are not distinguished and they are called perianth. Monochlamydeae includes 8 series and 36 families.

15. Write the systematic position of Laurineae

Class : Dicotyledonae
 Subclass : Monochlamydeae
 Series : Daphnales
 Family : Laurineae.

16. Mention the systematic position of Malvaceae.

Class : Dicotyledonae
 Subclass : polypetalae
 Series : Thalamiflorae
 Order : Malvales
 Family : Malvaceae.

17. Name any three fibre plants in Malvaceae.

- a) Gossypium barbadense(Egyptian cotton)
- b) G.hirsutum (American cotton)
- c) G.herbaceum(cotton)

18. Mention the binomial of any three medicinal plants in Malvaceae.

Abutilon indicum, Malva sylvestris, Althaea rosea.

19. What is atropine?

Atropine is an alkaloid obtained from the roots of Atropa belladonna.It is used for relieving muscular pain.

20. Write any three medicinal plants in Solanaceae.

Atropa belladonna, Datura stramonium,Solanum trilobatum.

21. What is cladode? Give an example

In the members of Euphorbiaceae the stem is modified to perform photosynthesis is called Cladode. E.g. Euphorbia tirucalli.

22. Mention the different stypes of Inflorescence in Euphorbiaceae.

- Cyathium - Euphorbia.
Panicle - Ricinus communis.
Catkin - Acalypha indica.

23. What is pseudostem?

In Musa the long stiff and sheathy leaf bases which are rolled around one Another to form an aerial and erect pseudostem.

24. Write the difference between musa and ravenela

S.No.	Musa	Ravenela
1.	Perennial herb	Tree
2.	Inflorescence is branched spadix	Compound cyme
3.	Five stamens are fertile	Six stamens are fertile
4.	Fruit is berry	Dehience Fruit

25. Define polygamous flower?

Male, female and bisexual flowers present in same flower.
Example : Musa

FIVE MARK QUESTIONS.

1. Describe about Artificial system of classification.
2. Write any five salient features of ICBN.
3. Give a detailed account on economic importance of Malvaceae.
4. Write the importance of Herbarium.
5. Write the merits of the Benthem & Hookers system of classification.

TEN MARK QUESTIONS.

1. Describe Hibiscus rosa sinensis in Botanical terms.
2. Describe Benthem & Hooker's system of classification.
3. Describe Datura metal in botanical terms.
4. Describe Musa paradisiaca in technical terms.

PLANT ANATOMY

ONE MARK QUESTIONS

1. **The tissue which is generally present in all organs of plant body is**
 a) collenchyma b) sclerenchyma c) parenchyma d) chlorenchyma
2. **Phellogen is a**
 a) permanent tissue b) apical meristem c) simple tissue d) lateral meristem
3. **Increase in length of plant is due to**
 a) Intercellular meristem b) lateral meristem c) phellogen d) apical meristem
4. **The root hairs are produced from**
 a) rhizodermis b) trichomes c) accessory cells d) trichoblasts
5. **The chief water conducting elements in gymnosperms and pteridophytes**
 a) Fibres b) Tracheids c) vessels d) sclerides.
6. **The xylem fibres are also called as**
 a) Pericycle fibres b) Vascular fibres c) Libriform fibres d) Bast fibres
7. **The living component of phloem tissue**
 a) sieve tube b) companion cell c) phloem parenchyma d) phloem fibre
8. **The substance which blocks the pore of mature sieve tube**
 a) Lignin b) Pectose c) Callose d) Glucose
9. **Lateral roots arise from**
 a) Epidermis b) Endodermis c) Pericycle d) Cortex
10. **Passage cells are found in endodermis of**
 a) dicot stem b) monocot stem c) dicot root d) dicot leaf
11. **Polyarch condition found in**
 a) dicot stem b) dicot leaf c) dicot root d) monocot root
12. **The innermost layer of cortex is**
 a) epidermis b) rhizodermis c) endodermis d) pricycle
13. **The caparian strips are made of**
 a) cutin b) lignin c) suberin d) cellulose&suberin
14. **Dorsiventral leaf is present in**
 a) grass b) maize c) paddy d) sunflower
15. **Vascular bundles are skull shaped in**
 a) dicot root b) monocot root c) dicot stem d) monocot stem

16. Bicollateral vascular bundles are present in

- a) Malvaceae b) Cucurbitaceae c) Rutaceae d) Musaceae

17. The main function of parenchyma

- a) To store food b) photosynthesis c) to give strength d) To float on water

18. Supporting tissue of plants

- a) Collenchyma fibres b) Sclerenchyma fibres c) stone cells d) companion cells

19. The tissue involved in photosynthesis

- a) chlorenchyma b) parenchyma c) collenchyma d) vascular tissue.

20. The cells that are associated with sieve tube elements

- a) supporting cells b) phloem fibre c) companion cells d) phloem parenchyma

21. The outermost layer of the stele in monocot root is

- a) Endodermis b) Pericycle c) Xylem d) Phloem.

22. Cell wall of parenchyma is made up of

- a) Cellulose b) Hemicellulose & pectin c) Lignin d) pectin

23. Protoxylem lacuna is present in the vascular bundles of

- a) dicot root b) dicot stem c) monocot root d) monocot stem

24. The change from meristematic tissue to permanent tissue is called

- a) differentiation b) self perpetuating c) photosynthesis d) cell division.

25. Vascular bundles in the leaf is

- a) collateral and open b) collateral and closed
c) bicollateral and open d) collateral and exarch.

26. Vascular bundles are wedge shaped in

- a) dicot root b) monocot root c) monocot stem d) dicot stem.

27. The hypodermis of dicot stem is made up of

- a) parenchyma b) collenchyma c) chloenchyma d) sclerenchyma.

28. Exarch xylem is seen in

- a) dicot root b) monocot stem c) dicot stem d) dicot leaf.

29. Macrosclereids are seen in the seed coat of

- a) Pyrus b) Pisum c) Cotton d) Croton

30. The cells that are capable of forming new cells during secondary growth in dicot stem is

- a) cambium b) xylem c) epidermal cells d) pericycle.

Answers :

1. (a) 2. (d) 3. (a) 4. (d) 5. (b) 6. (c) 7. (c) 8. (c) 9. (c)
 10. (c) 11. (d) 12. (c) 13. (c) 14. (d) 15. (d) 16. (b) 17. (a) 18. (b)
 19. (a) 20. (c) 21. (b) 22. (a) 23. (d) 24. (a) 25. (b) 26. (d) 27. (b)
 28. (a) 29. (b) 30. (a)

THREE MARK QUESTIONS.

1. What is storage parenchyma ?

The parenchyma cells that are stored with starch grains are called storage parenchyma e.g. stem tubers and root tubers.

2. What are brachy sclereids? Give an example

The isodiametric sclereids are called brachy sclereids or stone cells. e.g. pulp of pears.

3. What are the two types of complex tissue?

a) xylem b) phloem.

4. What are bast fibres?

The fibres of sclerenchyma associated with phloem are called phloem fibres or bast fibres. These are the strengthening and supporting cells.

5. Define polyarch xylem

When the number of protoxylem groups is many, the arrangement of xylem is called polyarch xylem e.g. monocot root.

6. What are passage cells?

The endodermal cells which are opposite to the protoxylem elements are thin walled and they are without casparian strips. These cells are called passage cells.

7. What is hypodermis?

A few layers of cells lying under the epidermis constitute the hypodermis. In dicot stem it is made up of collenchyma cells and is continuous.

8. What is protoxylem lacuna?

In a matured vascular bundle of monocot stem the lower protoxylem disintegrates and forms a cavity known as protoxylem lacuna.

9. What is tetrarch xylem?

When the number of protoxylem points is four the arrangement of xylem is called tetrarch. e.g. bean root.

10. What is eustele?

In dicot stem, vascular bundles are arranged in a ring around the pith. It is known as eustele. e.g. sunflower stem.

11. What is border parenchyma?

In dicot leaf the vascular bundles are surrounded by a compact layer of parenchymatous cells called bundle sheath or border parenchyma.

12. Define – Mesophyll

In dicot leaf the entire tissue between the upper and lower epidermis is called the mesophyll. It is differentiated into palisade parenchyma and spongy parenchyma.

13. Define Meristems

A meristematic tissue is a group of identical cells that are in a continuous state of division. Some cells produced by meristematic tissue stop dividing and become permanent tissues of the plant

14. What is complex tissue?

A tissue that consists of several kinds of cells which function together as a single unit is called complex tissue. It has two types a) xylem b) phloem

15. Differentiate palisade parenchyma from spongy parenchyma

S.No	Palisade parenchyma	Spongy parenchyma
1.	It is present below the upper epidermis	It lies below the palisade parenchyma
2.	The cells are vertically elongated Cylindrical cells	The cells are irregularly shaped.
3.	They contain more chloroplast	They contain lesser number of chloroplasts
4.	It contains more chloroplasts	It contains lesser number of chloroplasts.
5.	The cells are compactly arranged Without intercellular spaces.	The cells are loosely arranged with Numerous air spaces.

16. Difference between sieve elements and companion cells

S.No	Sieve elements	Companion cells
1.	They have thick primary wall	They have thin primary wall
2.	They have lining layer of Cytoplasm without a nucleus	They have cytoplasm with a prominent Nucleus.
3.	They are present in pteridophytes, gymnosperms and angiosperms	They are present only in angiosperms.
4.	They contain sieve plate.	They do not have sieve plate.

17. What is bundle cap?

The pericycle of sunflower stem consists of a few layers sclerenchyma cells that occur in patches outside the phloem in each vascular bundle. The patch of sclerenchyma cells is called bundle cap.

18. Give examples for lateral meristem

- a) Vascular cambium b) Cork cambium.

19. What is conjoint vascular bundle ?

If the xylem and phloem are arranged in the same radius, it is known as conjoint vascular bundle. It is observed in stem and leaves.

20. Define simple tissue

A tissue with the cells of similar structure and function is called simple tissue. It is of three types – parenchyma, collenchyma and sclerenchyma.

FIVE MARK QUESTIONS

1. Describe the meristems based on its position.
2. Describe simple tissues.
3. Draw the T.S. dicot leaf and label the parts
4. Draw the T.S. of dicot root and label the parts.
5. Write short notes on Tracheids.
6. Write the difference between T.S of dicot root and T.S. monocot root.
7. Draw the T.S. of Monocot root and label the parts.

TEN MARK QUESTIONS.

1. Describe the primary structure of T.S. of monocot stem
2. Write the difference between the T.S. of dicot stem and T.S. of monocot stem.
3. Describe T.S. of dicot leaf.
4. Describe vascular tissue system with diagrams.

CELL BIOLOGY AND GENETICS.**ONE MARK QUESTIONS**

1. **The term chromosome was introduced by**
a) Bridges b) Waldeyer c) Balbiani d) W. Johannsen
2. **Double minutes chromosomes are found in**
a) body cells b) cancer cells c) reproductive cells d) blood cells
3. **Restriction cells are synthesized by**
a) bacteria only b) yeast and bacteria only c) eukaryotic cells d) virus.
4. **B – chromosomes present in**
a) human being b) pea c) drosophila d) maize.
5. **The term 'gene' was introduced by**
a) Bridges b) W. Johannsen c) Waldeyer d) Balbiani
6. **$2n-2$ represented by**
a) monosomy b) trisomy c) nullisomy d) tetrasomy
7. **The width of DNA is**
a) 18 Å b) 20 Å c) 34 Å d) 35 Å
8. **Polytene chromosomes was observed by**
a) Flemming b) C.G. Balbiani c) Bridges d) Waldeyer.
9. **“V” Shaped chromosomes are**
a) sub-metacentric b) telocentric c) metacentric d) acrocentric
10. **The most stable form of RNA is**
a) t – RNA b) m- RNA c) r- RNA d) antisense RNA
11. **Double helix DNA model was proposed by**
a) Watson and Crick b) O.T. Avery et al c) Griffith d) Stinberg.
12. **Mutation was observed by**
a) Hugo de Vries b) Flemming c) Morgan d) Bateson

- 13. The okazaki fragments was linked by the enzyme**
 a) Helicase b) Ligase c) DNA polymerase d) Transferase.
- 14. The 17 th chromosome of chimpanzee is**
 a) acrocentric b) telocentric c) sub-metacentric d) metacentric
- 15. m-RNA is about _____ of the RNA content of the cell.**
 a) 10 – 20 % b) 5 – 10 % c) 3-5% d) 20-30%
- 16. The unit of recombination in gene is _____**
 a) recon b) muton c) cistron d) Adenine nucleotide
- 17. Lamp brush chromosomes was first observed by**
 a) Flemming b) Waldeyer c) Fridges d) Balbiani
- 18. Clover leaf model of RNA is**
 a) m-RNA b) t-RNA c) r-RNA d) antisense RNA.
- 19. The coupling test cross ratio is**
 a) 1:7:7:1 b) 7:1:1:7. c) 1:1:1:1. d) 9:3:3:1.
- 20. In RNA thymine is replaced by**
 a) pyrimidine b) adenine c) uracil d) cytosine.

Answers :

1. (b) 2. (b) 3. (a) 4. (d) 5. (b) 6. (c) 7. (b) 8. (b) 9. (c)
 10. (c) 11. (a) 12. (a) 13. (b) 14. (d) 15. (c) 16. (a) 17. (a) 18. (b)
 19. (b) 20. (c)

THREE MARK QUESTIONS.

1. Define gene?

Gene may be defined as a nucleotide sequence that is responsible for the production of specific protein. It carries genetic information from one generation to the next generation.

2. What is mutation?

Sudden change in the genetical setup of an organism is called mutation. It was observed by Hugo de Vries.

3. What is biochemical mutation? Give an example

Mutation which affects the biochemical reactions is called biochemical mutation. e.g. In Neurospora the biochemical mutants fail to synthesize certain amino acids.

4. What is codon?

Three nucleotides of DNA are transcribed to form codon. Codon is the message for protein synthesis. These codons are translated into amino acids during protein synthesis.

5. Name the three types of RNA

a) m-RNA b) t-RNA c) r-RNA.

6. What are Okazaki fragments?

During the replication of DNA, in one strand newer strand of DNA is synthesized in small fragments. These fragments are called Okazaki fragments. These fragments are linked by the enzyme ligase.

7. What is Euploidy?

Euploidy is the variation in the chromosome number that occurs due to increase or decrease of full set of chromosome. It is of three types.

a) monploidy b) diploidy c) polyploidy.

8. What is hyperploidy?

Addition of one or two chromosomes to the diploid set is called hyperploidy. It has two types. a) trisomy b) tetrasomy.

9. What is a chromosomal aberration?

Any visible abnormality that occurs in the structure of chromosome or chromosome number from the diploid set is called chromosomal aberration.

10. What are B-chromosomes?

B-chromosomes are also called supernumerary or accessory chromosomes. They are additional chromosomes found in some individuals in a population e.g. maize.

FIVE MARK QUESTIONS

1. Describe the structure of chromosome
2. Describe special types of chromosomes
3. Write short notes on mutagenic agents
4. Write the importance of ploidy.
5. Write the difference between DNA and RNA.

BIOTCHNOLOGY

ONE MARK QUESTIONS

1. **Restriction enzymes are synthesized by**
 a) bacteria only b) yeast and bacteria only c) eukaryotic cells d) algae
2. **Each restriction enzyme cleaves a molecule only at**
 a) the ends of genes b) methyl group
 c) nucleotide sequence d) the time of DNA replication.
3. **Genetically modified DNA fragments are termed as**
 a) donor DNA b) recipient DNA c) modified DNA d) recombinant DNA.
4. **Basta is a**
 a) herbicide b) weed c) amino acid d) protein
5. **The extra chromosomal circular DNA found in the cytoplasm of E.coli is called**
 a) plastids b) plasmids c) SAT chromosome d) nuclear organism
6. **M.S.Swaminathan Research Institute is located at**
 a) New Delhi b) Mumbai c) Lucknow d) Chennai
7. **The two protoplasts are fused with a fusogen called**
 a) polyethylene glycol b) polyvinyl chloride
 c) polyethane glycol d) phosphoric ethane
8. **Which of the following organism is an SCP?**
 a) Streptomyces b) Rhizobium c) Galium d) Spirulina.
9. **The inherent potential of any living plant cell to develop into entire organism is called**
 a) differentiation b) organogenesis c) morphogenesis d) totipotency.
10. **The number of transgenic plants available today are approximately.**
 a) 6 b) 2 c) 15 d) 50

11. A toxic protein called delta endotoxin is insecticidal and it is produced by
a) E. coli b) Streptomyces griseus c) Bacillus thuringiensis d) Agrobacterium
12. The development of shoot from the callus is called
a) caulogenesis b) rhizogenesis c) embryogenesis d) dedifferentiation
13. It is a transgenic dicot plant
a) Solanum tuberosum b) Avena sativa c) Zea mays d) Oryza sativa.
14. Unorganised mass of undifferentiated tissue is called
a) inoculum b) explant c) callus d) embryoid.
15. Somatic hybrids are produced through
a) asexual fusion b) protoplasmic fusion c) vegetative propagation d) grafting
16. The protein content of SCP is
a) 62-70% b) 70-72% c) 60-72% d) more than 80%
17. Manduca sexta is a
a) pest of tobacco b) pest of orange c) pest of Oryza d) pest of maize.
18. The following one is not used in process of SCP
a) bacteria b) virus c) yeast d) algae

Answers :

1. (a) 2. (c) 3. (d) 4. (a) 5. (b) 6. (d) 7. (a) 8. (d) 9. (d)
10. (d) 11. () 12. (a) 13. (a) 14. (a) 15. (b) 16. (c) 17. (a) 18. (b)

THREE MARK QUESTIONS

1. Define bio technology

The technique of applying genetic principles in living organisms to synthesize desirable products is called biotechnology.

2. Define splicing

Using the enzyme DNA ligase, the DNA fragments of donor and vector are joined together. This process is called splicing.

3. Define –Genetic engineering

The process of manipulating DNA to form new genes, or inserting altered genes in different organisms is called genetic engineering.

4. What is plasmid?

In E.coli there is extra chromosomal body is present . It is known as plasmid It acts as a vector in genetic engineering.

5. Name any three transgenic dicot plants.

a) Nicotiana tobacum b) Glycine max c) Helianthus annuus d) Beta vulgaris.

6. Define callus

The callus is an unorganized mass of undifferentiated tissue. Auxin and Gibberlin induce the explant to form callus.

7. Define totipotency

The inherent potential of any living plant cell to develop into entire organism is called totipotency.

8. Mention any three plant tissue culture mediums

a) Murashige and Skoog medium (MS medium) b) Gamborg medium (B5 medium) c) White medium (W medium)

9. What is hardening ?

Exposing the plantlets to the natural environment in a stepwise manner is known as hardening. The hardened plants are gradually transferred to the soil.

10. Define SCP

The isolated protein or the total cell material is called the SCP.

11. What is somatic hybridization?

A hybrid produced by fusion of somatic cells of two varieties or species is called somatic hybrid. The process of producing somatic hybrids is known as somatic hybridization.

12. Name the organisms used for the SCP production.

Algae : *Chlorella*, *Spirulina* and *Chlamydomonas*

Fungi : *Sacharomyces cereviseae*, *Volvariella* and *Agaricus campestris*

Bacteria : *Pseudomonas* and *Alkaligenes*.

13. What are the uses of SCP

- a) It is rich source of protein(60 – 72%) vitamin, amino acids, minerals and crude fibres.
- b) It is a popular health food. Now a days Spirulina tablets enriched with vitamins are prescribed for most people.
- c) It provides valuable protein rich supplement in human diet.
- d) It lowers blood sugar level of diabetics due to the presence of gammalinolenic acid.
- e) It prevents the accumulation of cholesterol in human body.

FIVE MARK QUESTIONS

1. How the DNA is cut?
2. Write short notes on SCP
3. What are the basic concepts of plant tissue culture ?

TEN MARK QUESTIONS

1. Write an essay on DNA recombination technology.
2. What are the basic concepts of plant tissue culture?.
3. What are the uses of plant tissue culture?
4. Write an essay on protoplasmic fusion ?

PLANT PHYSIOLOGY

ONE MARK QUESTIONS WITH ANSWERS

1. Photosynthesis is takes place in **chloroplasts**
2. The essential component for the formation of chloroplast is **Mg**
3. The pigment which is highly efficient in absorbing solar energy is **chlorophyll**
4. The photosynthetic pigment are located in **thylakoid**
5. The light generated energy is **ATP**
6. The reducing power produced in light reaction **NADPH₂**
7. The dark reaction of photosynthesis were described by **MELVIN CALVIN**
8. In C₃ pathway the acceptor molecule of Co₂is **RuBP**
9. In C₃ plants both light reaction and dark reaction occur in **MESOPHYLL CELLS**

11. Which of the following wave length of light is most effective for photosynthesis
400nm to 700nm
12. Example for C₄ plant is **sugarcane**
13. An example for total parasite is **Cuscuta**
14. An example for insectivorous plant is **Drosera**
15. Vanda plant is a **Epiphyte**
16. The amount of energy released by the oxidation of one molecule of glucose yield
2900KJ
17. The number of high energy terminal bonds present in **ATP is TWO**
18. Glycolysis occurs in **Cytoplasm**
19. The common respiratory substrate is **Carbohydrates**
20. Complete oxidation of one molecule of glucose yields **38 ATP**
21. First discovered plant hormones is Auxin
22. Apical dominance is due to **Auxin**
23. The chemical used in the field to eradicate weeds is **2,4-D**
24. Photoperiodic response in flowering was first observed in **Maryland mammoth**
25. The term vernalisation was first introduced by **T.D.Lysenko**

THREE MARK QUESTIONS

1. What is photolysis of water?

The splitting up of water molecule into protons, electrons and oxygen in the presence of sunlight is called photolysis of water

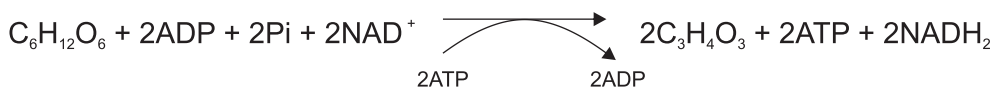
2. Define light reaction.

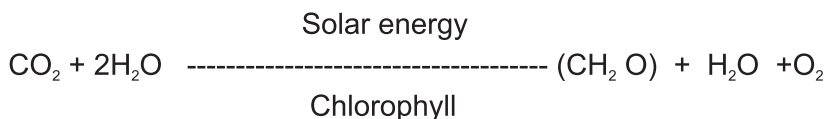
The reaction of photosynthesis involving photosynthetic pigments, solar energy and water that produce ATP and NADPH₂ are called light reactions

3. Define dark reaction.

The photosynthetic reactions in which CO₂ is reduced to carbohydrates making use of ATP and NADPH₂ generated by light reactions are collectively called dark reactions.

4. Write the overall reaction of glycolysis.



4. Write the overall equation of photosynthesis.**5. Define photorespiration?**

Respiration that occurs in photosynthetic tissues in the presence of light and results in increased rate of CO₂ evolution is called photorespiration

6. Write differences between photorespiration and dark respiration.

	Photorespiration	Dark respiration
1.	It takes place only in photosynthetic cells in the presence of light.	It takes place in all living cells in the mitochondria.
2.	It is light dependent	It takes place in the presence and in the absence of light
3.	It is the function of chloroplast, peroxisomes and mitochondria.	It is the function of mitochondria alone

7. What is glycolysis?

The process by which the glucose is split into two molecules of pyruvic acid is called glycolysis or EMP pathway.

8. Explain anaerobic respiration?

The respiration which takes place in the absence of free oxygen molecules is called anaerobic respiration.

9. Define respiratory quotient?

The ratio between the volume of carbondioxide given out and oxygen consumed during respiration

10. What is fermentation?

The anaerobic breakdown of glucose to carbondixiode and ethanol is a form of respiration feferred to fermentation.

11. What is Richmond Lang effect?

Application of cytokinin delays the process of ageing in plants. This is also known as Richmond Lang effect.

12. Define Bolting?

Application of gibberellin sudden elongation of stem followed by flowering is called bolting

13. What is apical dominance?

Suppression of growth in lateral bud by apical bud due to auxin produced by apical bud is termed as apical dominance.

14. Define photoperiodism?

The response of a plant to the relative lengths of light and dark periods is known as photoperiodism.

15. Define vernalization?

Many species especially biennials and perennials are induced to flower at low temperature range of 1 C to 10 C. This is known as vernalization.

16. Write advantages of vernalization?

- 1.Crops can be produced earlier by vernalization
- 2.They can be cultivated in places where they naturally do not grow
- 3.Vernalization helps to accelerate the plant breeding.

Five mark questions

1. What are differences between C3 and C4 pathway?
2. Explain the test tube and funnel experiment to demonstrate that oxygen is evolved during photosynthesis?
3. Write short notes on Ganong's light screen experiment?
4. Explain Ganong's respiroscope experiment.
5. Write the significance of pentose phosphate pathway?
6. Bring out the physiological effects of auxin.
7. Write the physiological effects of gibberellin.
8. Write the physiological effects of cytokinin.

Ten mark questions

1. Write an account on dark reactions of photosynthesis. (Explanation or flowchart)
2. Write an account on glycolysis? (Explanation or flowchart)
3. Describe the sequences of reactions of K_{re}b's cycle. (Explanation or flowchart)

BIOLOGY IN HUMAN WELFARE**ONE MARK QUESTIONS**

1. **An Example for green manure is**
a) Acetobactor b) Rhizdoium c) pseudomonas d) sesbania
2. **Pyriculariaoryzae causes**
a) Blast disease of rice b) Tikka disease of groundnut
c) Citrus canker d) Tungro disease of rice
3. **Which one of the following is an antimalarial drug?**
a) Ephedrine b) Digoxin c) quinine d) Morphine
4. **Which pathogen causes the blast disease of rice ?**
a) Cercosporapersonata b) Pyriculariaoryzal c) Xanthomonascitri d) Tungro virus
5. **Which is the secondary host plant of pyriculariaoryzae?**
a) Oryza sativa b) Digitariamarginata c) Arachis hypogea d) citrus plant
6. **Which pathogen causes tikka disease of groundnut?**
a) Cereosporapersonota b) pyriculariaoryzae c) Xanthomonascitri d) Tungro virus
7. **Acalyphine is extracted from**
a) Acalyphaindica b) Aeglemarmelos c) Cissusquadrangularis d) Mimosa pudica
8. **Binomial of 'Vilvum' is**
a) Acalyphaindica b) Aeglemarmelos c) Cissusquadrangularis d) Mimosa pudica
9. **Plant digitalis yield a drug**
a) Quinine b) Digoxin c) Ephedrine d) Morphine
10. ----- is used to treat heart diseases
a) Ephedrine b) Digoxin c) Quinine d) Morphine
11. **Hadjor' bone joiner is a trade name of**
a) Aeglemarmelos b) solanumnigrum c) Acalyphaindica d) Ephedra
12. **The binomial of Touch me not plant is**
a) Solanumnigrum b) Mimosa pudica c) Aeglemarmelos d) Acalyphaindica
13. **Which pathogen causes Tikka disease of groundnut?**
a) Cereosporapersonota b) pyriculariaoryzae c) Xanthomonascitri d) Tungro virus

14. E.coli and vibrio cholera is the small intestine produce- **Endotoxin**
15. Duration of patent in india - **5 years**
16. The strongest pain killer obtained from papaversomniferum is- **Morphine**
17. Cinchona pfficinalis yield a drug called **Quinine**
18. Bio-fertilizer remains active in the soil upto **3-4 years**
19. An aquatic fern which contains endophytic cyanobacteria is – **Azolla**
20. Polyploid can be induced using **colchicine**
21. Syphilis is treated by **bacitracin**
22. The binomial of teak is **tectonagrandis**
23. Solanin and saponin are extracted from **solanumnigrum**
24. The binomial of groundnut is **Arachis hypogea**
25. Substitute for coffee seeds is **cola nitida**
26. Catkin inflorescence is seen in **Acalyphaindica**
27. The drug used to release mental and physical stress **Ginseng**
28. Acalyphaindica belongs to **Euphorbiaceal** family
29. The antibiotic aureomycin is obtained from **Streptomyces aureofaciens**
30. The antibiotic chloromycetin is obtained from **Streptomyces venezuelae**
31. The plant that produces a protein 100 times sweeter than sugar is **pentadiplandrabrazeana**
32. Leaves of **ileseparaguriensis** are a substitute for tea

THREE MARKS

1. Define bio-fertilizer ?

All nutrient inputs of biological origin for plant growth. Biological origin refers to microbes producing nitrogen compounds ex; cyanobacteria

2. What is bio insecticide ?

Biological agents that are used for control of insects, weeds and pathogens produced from living organisms are called biopesticides. The microorganisms such as viruses, bacteria, fungi. Etcare known to kill insects pasts. The suitable preparation of such microorganism for control of insects are called as microbial insecticides or bio insecticides these are non harardous non phytotoxic and are selective in their action

3. Mention two aspects of plant breeding?

1. Creation of useful variation in the cultivable crops.
2. Selection of better crops.

4. What is plant introduction ?

Introduction of plants from nearby regions or even other countries for improvement of the crop is known as plant introduction

Ex; phaseolusmungo variety was introduced in india from china

5. Give two examples for green manuring?

- a) *Crotalaria juncea*
- b) *Sesbania rostrata*

6. What are edible interferons?

Interferons are substances made of proteins and are antiviral in nature. The transgenic tobacco and maize plants were produced which secrete human interferons. These are referred to as edible interferons

7. What is bio-piracy?

The clandestine exploitation and utilization of bioresources from a country by several organisations and multinational companies without proper authorization is known as bio-piracy

8. What is heterosis ? or hybrid vigour?

The superiority of the F₁ hybrid in performance over its parents is called heterosis or hybrid vigour. Vigour refers to increase in growth, yield, resistance to diseases, pests and drought.

9. Define soil reclamation ?

The process of converting untenable, fallow land to cultivatable soil is termed as soil reclamation. Ex; blue green algae play a vital role in this conversion.

10. Write short note about biopesticides?

Biological agents that are used for control of insects, weeds and pathogens produced from living organisms are called biopesticides. Micro-organisms such as viruses, bacteria, fungi, protozoa and mites may be used as biopesticides

11. Define bio medicine?

Medicinal plants have curative properties due to the presence of certain chemical substances like alkaloids, glycosides, corticosteroids, essential oils etc.. These medicinal plants have valuable compounds obtained from the medicinal plants are called biomedicines.

12. What is humulin?

Humulin is human insulin produced by genetic engineering method. Through genetic manipulation and introduction of human gene for insulin production, the bacterium *E. coli* is articulated to produce human insulin called 'Humulin'

13. What is rice bran oil?

Rice bran oil is a cooking oil extracted from the rice bran. Bio-diesel is also obtained from rice bran oil.

14. Write the medical uses of solanum nigrum?

1. Active medicinal compounds like solanin and saponin are extracted from this plant *solanum nigrum*
2. It is effective in the treatment of liver disorders like cirrhosis of liver
3. It also cures fever, dysentery and promotes urination.

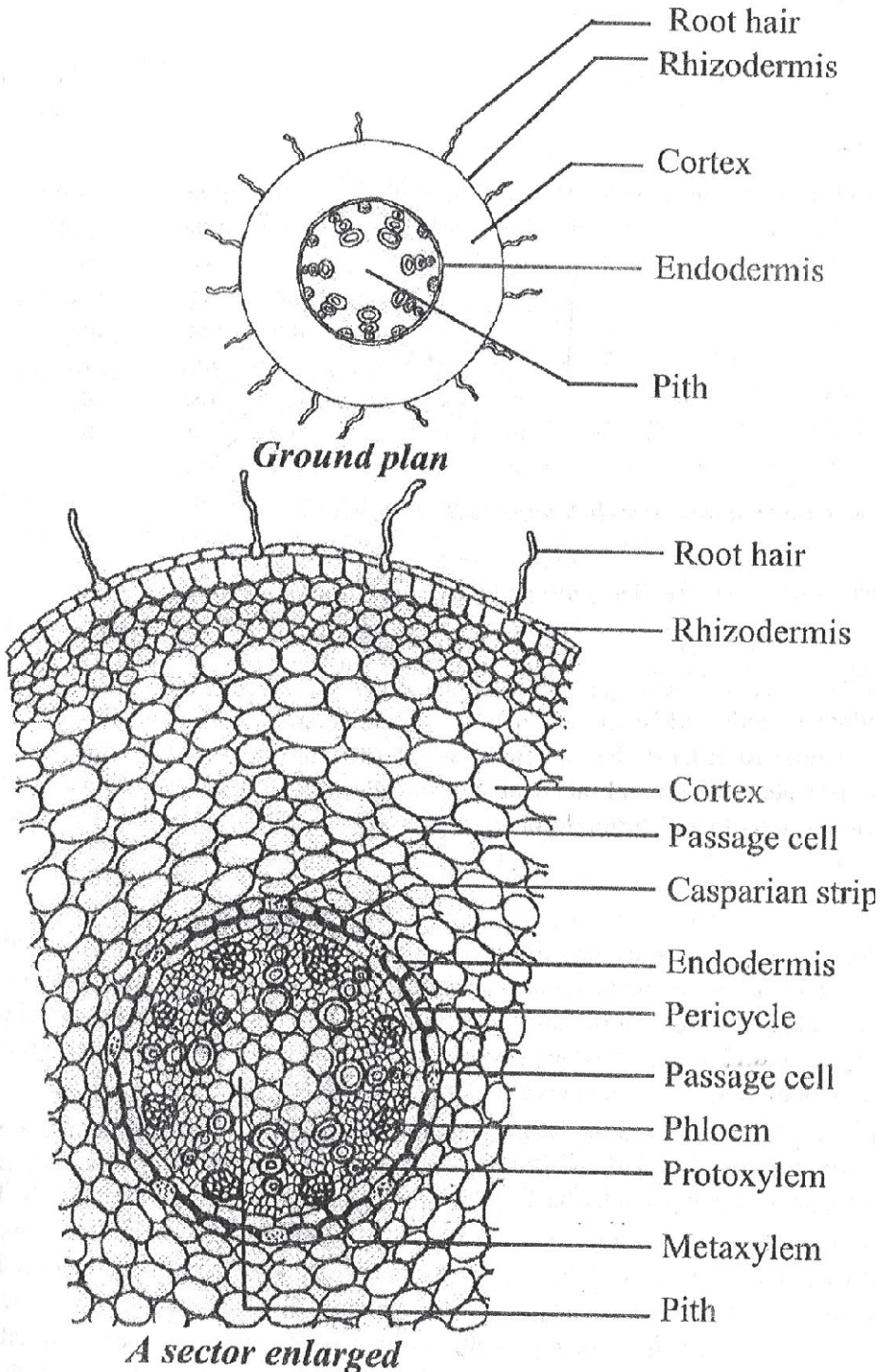
15. What is the medicinal value of *Cissus quadrangularis*?

1. The paste from the powdered stem and root is used in bone fractures.
2. Whole plant is useful to treat asthma and stomach troubles.
3. Stem is useful in the treatment of piles and its juice is used to treat bleeding of nose

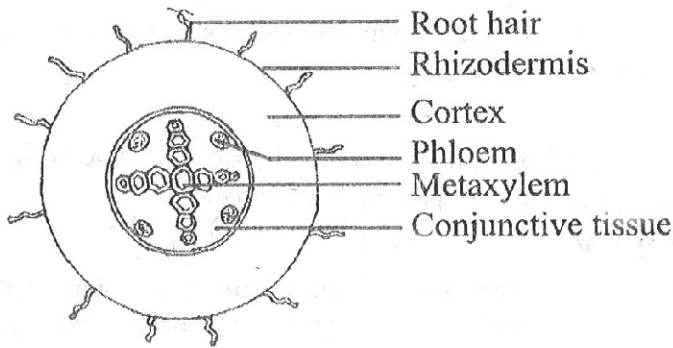
5 MARK QUESTIONS

1. Give an account of mycorrhiza?
2. Write the aims of plant breeding?
3. Mention five major aspects of plant breeding?
4. Write detailed account on bio fertilizers?
5. Write short notes on microbes in medicine?
6. Bring out the economic importance of cotton?
7. Write the economic importance of groundnut?
8. Write the economic importance of teak?
9. Bring out the economic importance of rice ?

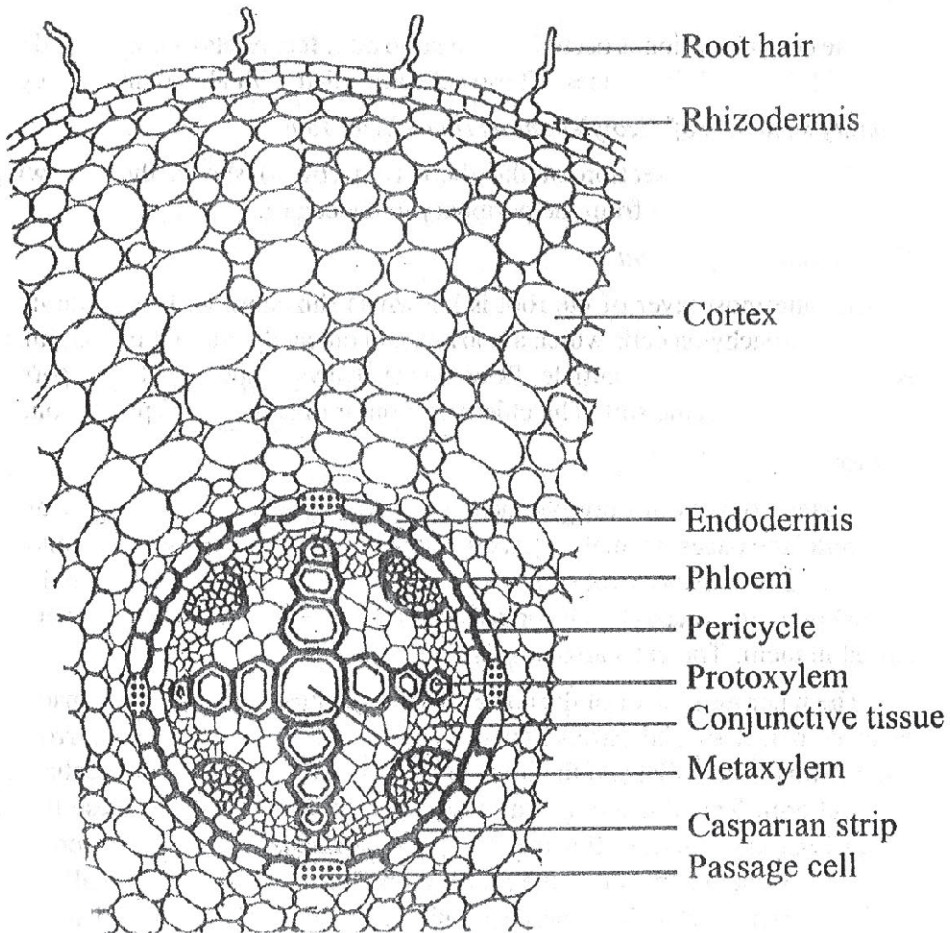
T.S. of Monocot root



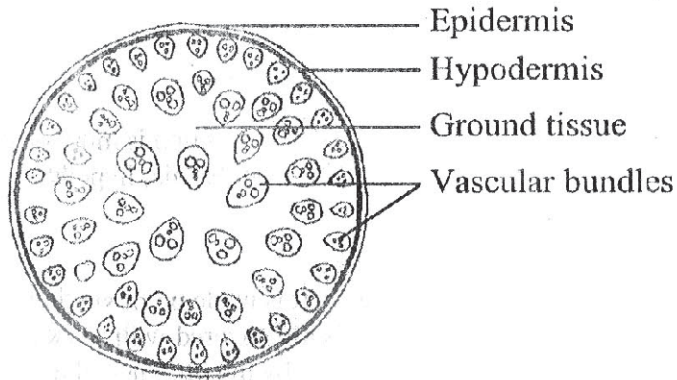
T.S. of Dicot root



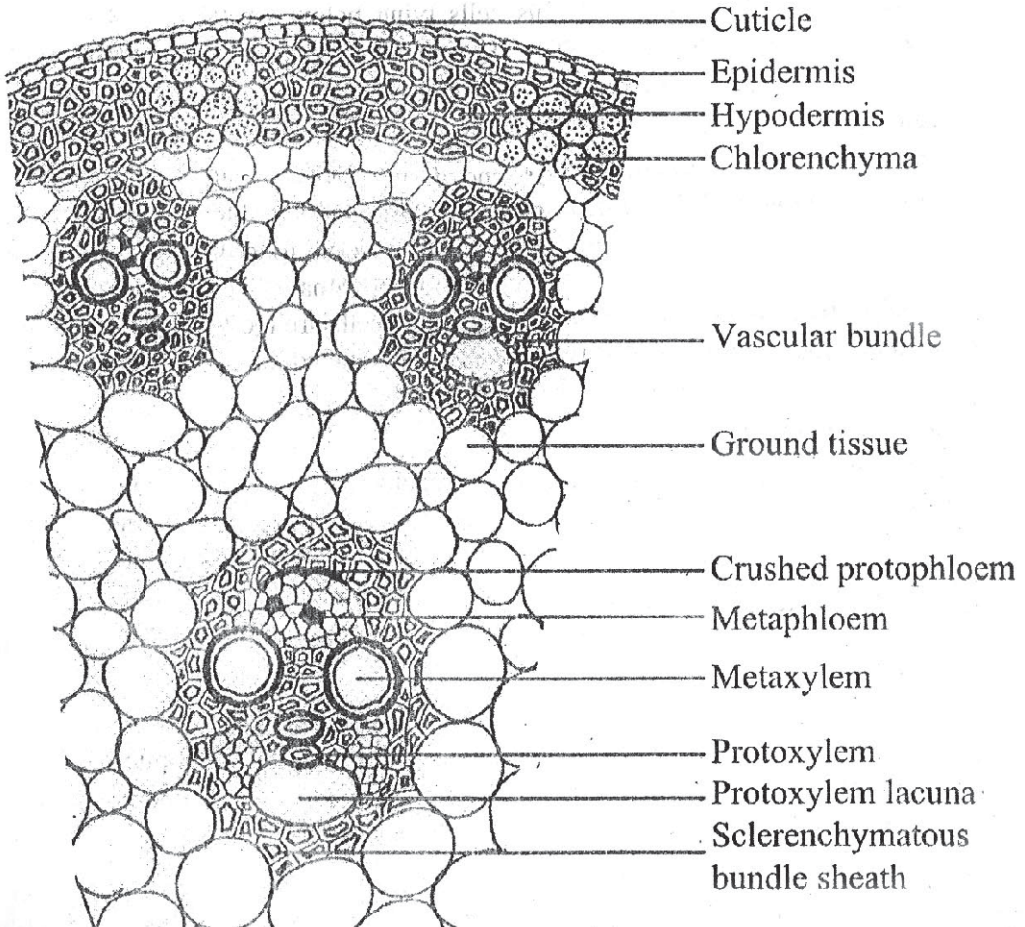
Ground plan



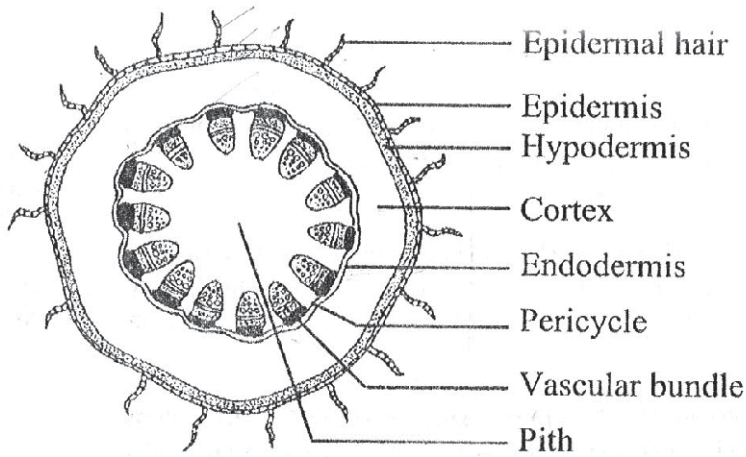
T.S. of Monocot stem



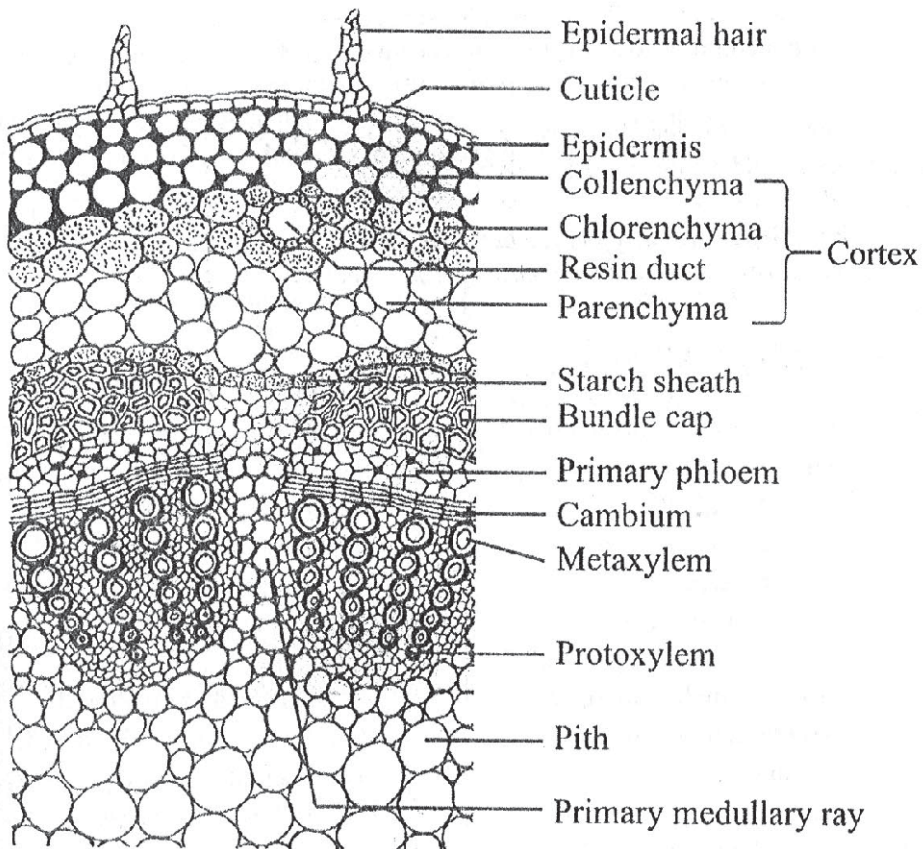
Ground plan



T.S. of Dicot stem

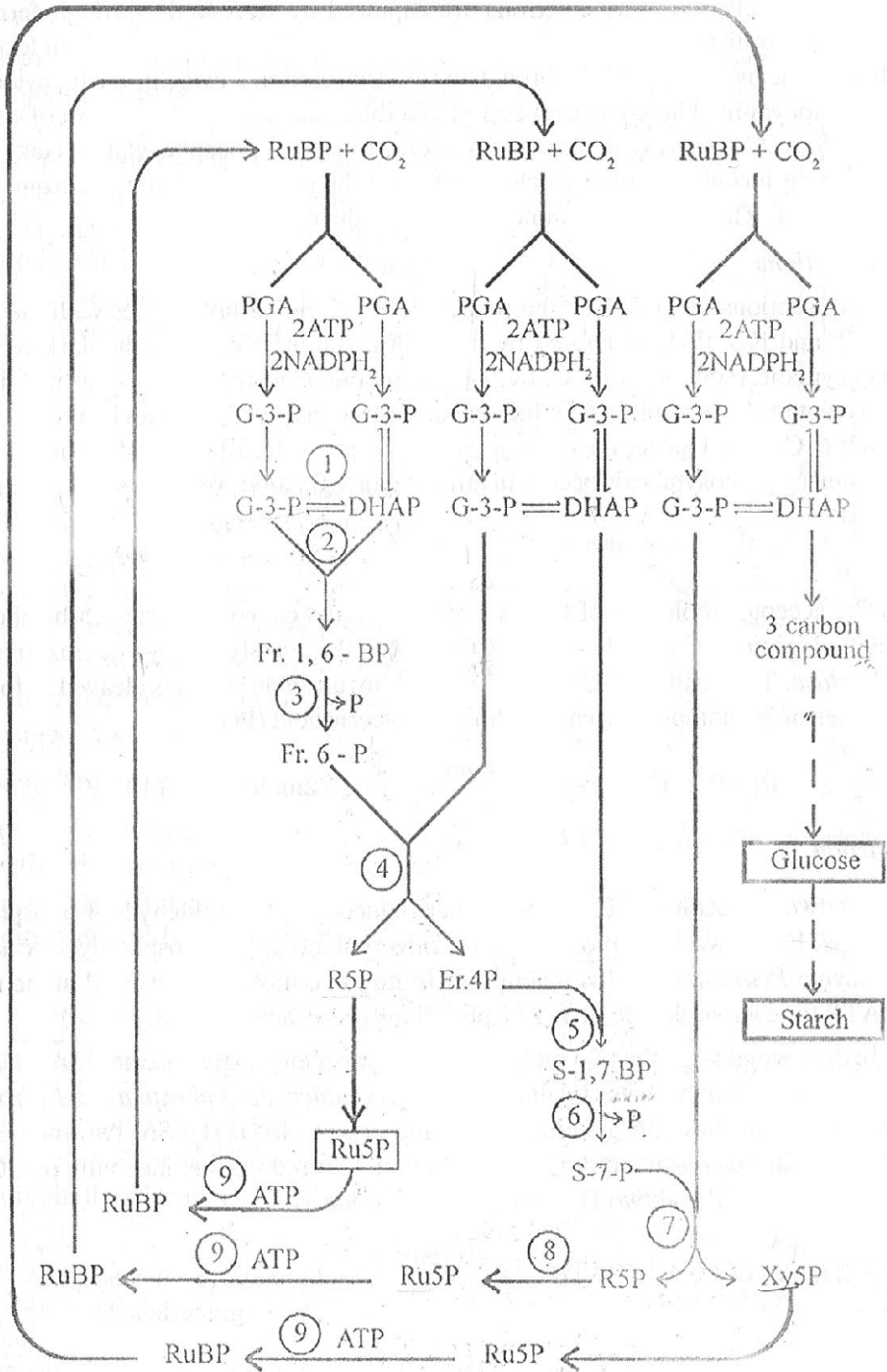


Ground plan

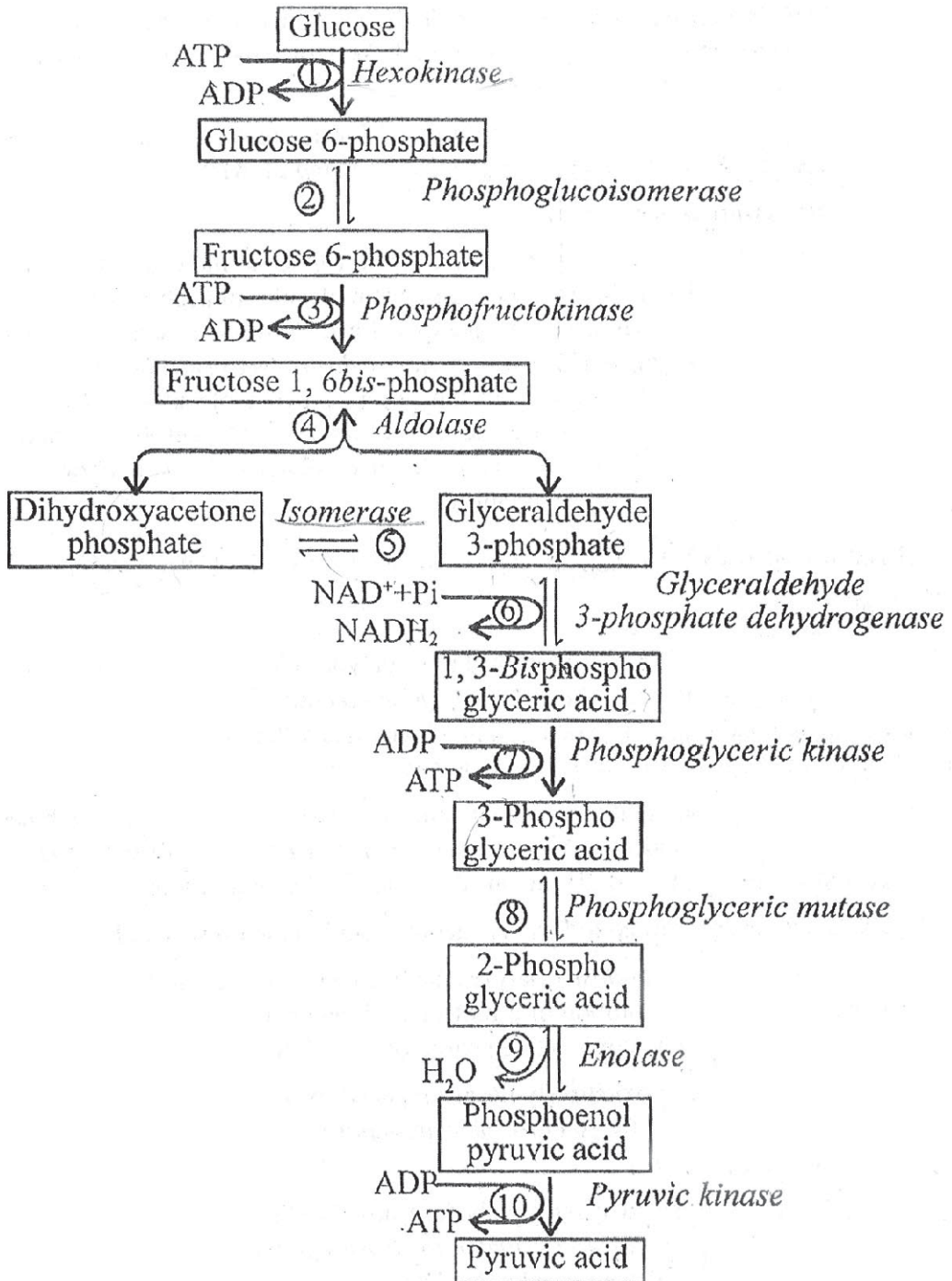


A sector enlarged

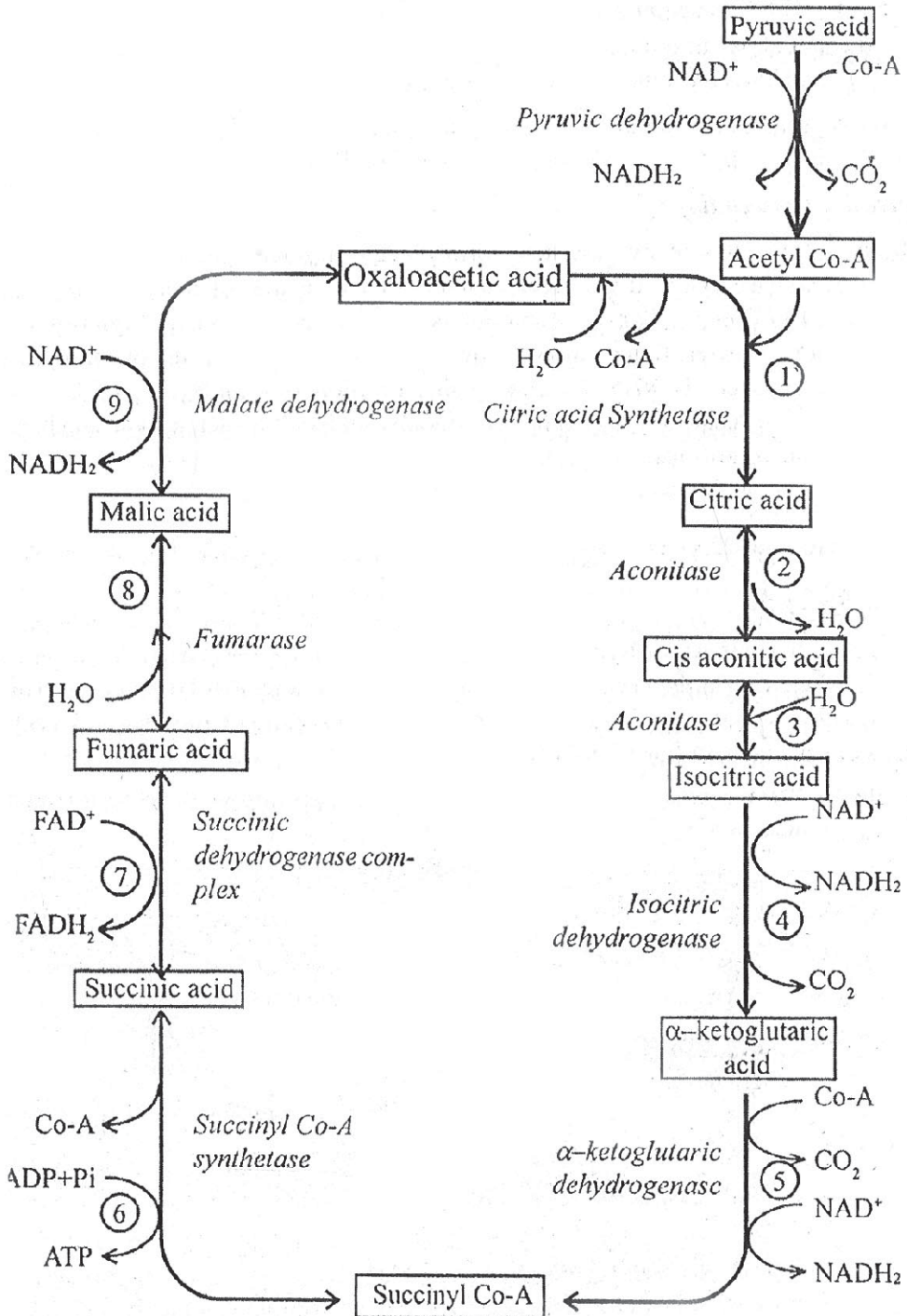
Dark Reaction or Calvin cycle



Glycolysis



Kerbs cycle



T.S. of Dicot leaf

