

SECTION – A

- 1) Artificial system of classification of plants was proposed by Swedish botanist – Carolus Linnaeus
- 2) Sexual system of classification - artificial classification
- 3) Binomial classification of organisms is introduced by - Gaspard Bauhin
- 4) Binomial classification of organism is properly followed by - Carolus Linnaeus
- 5) Genera Plantarum' – 3 volumes
- 6) In Bentham and Hooker's classification of plants, the present day 'orders' were referred to as 'cohorts'
- 7) Plants having flowers with free petals come under polypetalae.
- 8) Inferae includes 3 orders and 9 families.
- 9) Present day families were referred as – Division
- 10) Thalamiflorae - 6 orders and 34 families
- 11) Epigynous flowers – Inferae
- 12) The family included under the series Unisexuales – Euphorbiaceae
- 13) Thespesia populnea belongs to Malvaceae
- 14) Malvaceae is placed in the series – Thalamiflorae
- 15) Anthers are monothealous in – Malvaceae
- 16) In Abelmoschus esculentus, the fruit is – schizocarp
- 17) Binomial of lady's finger is Abelmoschus esculentus
- 18) Midrib and veins are found with yellowish spines - Solanum xanthocarpum
- 19) Solanaceae is placed under - Polemoniales
- 20) The carpels are obliquely placed in the members of – Solanaceae
- 21) Euphorbiaceae includes about – 300 genera
- 22) Ricinus communis is a – shrub
- 23) Plants have latex which is either milky or watery - Euphorbiaceae
- 24) An example of cladode is - Euphorbia tirucalli
- 25) In Hevea brasiliensis, the leaves are - trifoliately compound
- 26) "The bird of paradise flower" refers to - Strelitzia reginae
- 27) The phyllotaxy in Musa is – spiral
- 28) In inflorescence in Ravenala madagascariensis is - compound cyme
- 29) The number of fertile stamens in Ravenala madagascariensis is – 6
- 30) 5 stamens - are fertile in musa
- 31) Plants having flowers with single whorl of perianth are placed under monochlamydeae
- 32) Camp and Gily 1943, coined the term 'biosystematics'.
- 33) The current system of International Code of Botanical Nomenclature was adapted from 1978.
- 34) Plant taxonomy is otherwise known as systematic botany
- 35) Charles Darwin's concept of Origin of Species had given enough stimulus for the creation of phylogenetic system of classification
- 36) Adolf Engler (1844-1930) and Karl Prantl (1849-1893) of Germany published a phylogenetic system in their monograph on "Die Natürlichen Pflanzen Familien"
- 37) Orchidaceae are monocotyledons
- 38) Asteraceae are dicotyledons

- 39) In 1930, the fifth International Botanical Congress was held at Cambridge, England to frame rules and regulations for naming plants
- 40) The twelfth meeting was held at Leningrad, USSR in July 1975.
- 42) It is a natural system of classification and is based on important characters of the plants
- 43) Natural system of classification - George Bentham (1800-1884) and Sir Joseph Dalton Hooker (1817-1911).
- 44) Herbarium of Indian Botanical - Garden, Kolkata, India.
- 45) More than 12000 herbarium - Rapinat Herbarium, Trichy,
- 46) More than 1,90,000 herbarium - Botanical Survey of India Coimbatore
- 47) Herbarium of Royal Botanical Gardens, Kew, London, England - More than 60,00,000
- 48) Plants having flowers with dome or conical thalamus. Ovary is superior – Thalamiflorae
- 49) It includes flowers having prominent disc shaped thalamus below the Ovary – Disciflorae
- 50) Plants having flowers with cup shaped thalamus – Calyciflorae
- 51) Plants having flowers with petals, which are either partially or completely fused to one another, are placed under Gamopetalae.
- 52) Plants having flowers with single whorl of perianth are placed under Monochlamydeae.
- 53) The members of this class have naked ovules or seeds – Gymnospermae
- 54) Seeds of monocotyledonous plants contain only one cotyledon – Monocotyledonae
- 55) Bracteoles - absent in *Abutilon indicum*.
- 56) Malvaceae tree - *Thespesia populnea*
- 57) The members of this family have mucilagenous substance. Stellate hairs occur on their young parts.
- 58) *Hibiscus cannabinus* (Deccan hemp) - bast fibres
- 59) *Althaea rosea* are used for treating whooping cough
- 60) The plant which is called Nilathuthi - *Sida cordifolia*
- 61) Solanaceae trees - *S. giganteum*
- 62) Extra axillary scorpioid cyme called rhipidium (fan shaped cyme) - *S. nigrum*
- 63) Flowers of Solanaceae - Zygomorphic - *Schizanthus pinnatus*
- 64) Calyx is bell shaped and persistent - *S. melongena*
- 65) Corolla of Solanaceae - gamopetalous, funnel shaped, rotate, tubular, usually plicate (folded like a fan blade) showing twisted or valvate or imbricate aestivation.
- 66) Roots and leaves of *Withania somnifera* (Amukkara) are used to treat nervous disorder and are diuretic apart from useful tonic.
- 67) Leaves and flowers of *Datura stramonium* are the sources of drug 'stramonium' used to treat asthma and whooping cough
- 68) The stipules are modified into a pair of spines - *E.splendens*
- 69) The stipules are modified into glandular hairs - *Jatropha curcas*

- 70) The leaves around the cyathium become beautifully coloured in *E. pulcherrima*
- 71) The characteristic inflorescence of *Euphorbia* is cyathium
- 72) In, *Acalypha indica* (Kuppaimeni), the inflorescence is simple raceme, it is catkin.
- 73) Fruit is regma in *Ricinus communis*, dehiscing into three cocci.
- 74) *Jatropha* oil obtained from the seeds of *Jatropha curcas* (Kattamanakku) is used to extract bio-diesel.
- 75) The leaves and roots of *Jatropha gossypifolia* are used in the treatment of leprosy and snakebite.
- 76) The entire shoot system of *Phyllanthus amarus* (Keezhanelli) is used to treat jaundice
- 77) Muscaceae - Series: Epigynae
- 78) The fleshy fruits of *Phyllanthus emblica* (Gooseberry) are rich in vitamin C.
- 79) An elongated fleshy berry without capsule - *Ravenala*.
- 80) The fibres obtained from sheathy leaf bases of *Musa textiles* (Manila hemp) are woven into Abaca cloth and used for cordage
- 81) The sap obtained from the sheathy leaf bases of *Musa paradisiacal* is considered to be an antidote for cobra bite
- 82) Traveller's palm – *Ravenala madagascariensis*
- 83) *Pongmia glabra* is a tree
- 84) *Oskinomin aspera* – water plant
- 85) Botanical name of ground nut plant - *Arachis hypogea*
- 86) Fruits of Fabaceae – Legume
- 88) Terminal leaflets modified into tendrils in *Pisum sativum*
- 90) Bacteria present in root nodule of leguminous plants – *Rhizobium leguminosorum*
- 91) In *Aeschynomene aspera*, the stamens are fused to form two bundles each containing five stamens (5) + (5).
- 92) In *Crotalaria verrucosa* the stamens are monadelphous and dimorphic
- 93) Rubiaceae family - Series: Inferae
- 94) Leaves are simple, opposite decussate - *Ixora coccinea*
- 95) Inflorescence is corymbose cyme - *Ixora coccinea*
- 96) *Rubia* is a small shrub which belongs to - Rubiaceae
- 97) When the stipules of each leaf are fused at the angle between petiole and stem, they are called intrapetiolar stipules - *Gardenia*
- 98) Leaves are simple, opposite decussate, oblong, stipulate with interpetiolar stipules and uncostate reticulate Venation - *Ixora coccinea*
- 100) Petals 4 or 5, gamopetalous, hypocrateriform or salver shaped i.e. a long narrow tube consisting of limbs – placed at right angles to the tube (eg. *Ixora coccinea*), showing valvate or twisted or imbricate aestivation.
- 101) Quinine, antimalarial drug which controls malarial fever is derived from *Cinchona calisaya* and *C. officinalis*.
- 102) *Vernonia arboria* – tree

- 103) The head is reduced to single flower in - Echinops
- 104) Homogamous head inflorescence is found in - Helianthus
- 105) Asteraceae is the largest family of flowering plants
- 106) In Asteraceae the persistent pappus acts like a parachute and helps in the dispersal of fruit.
- 107) All the florets are ligulate as in *Launaea pinnatifida*.
- 109) Medicinal plant of Asteraceae used to treat Jaundice – *Eclipta prostrata*
- 110) Seeds of the plant is powdered and mixed with coffee powder – *Cichorium intybus*
- 111) Family *Arecaceae* - Series: *Calycinae*
- 112) *Arecaceae* includes about 217 genera
- 113) *Borassus flabellifer* – commonly called palm
- 114) In *Corypha umbraculifera*, the spadix measures about – 10 m
- 115) The oil obtained from fleshy mesocarp of *Elaeis guineensis* is called palm oil
- 116) In *Cocos nucifera* inflorescence is, large, lateral arising from the axils of leaves, compound spadix,
enclosed by large woody bract called spathe
- 117) Fruit of *Arecaceae* - a drupe with fibrous mesocarp.
- 118) *Nipa fruticans* has no aerial stem and leaves arise directly from the underground rhizome.
- 119) Unbranched tree with arborescent stem and a crown of large leaves - Coconut
- 120) The apparent, unbranched, erect and areal pseudostem is formed by the long, stiff and sheathy leaf bases
which are rolled around one another to form an aerial pseudostem.

3 MARKS QUESTIONS

- 1) What are the aims of biosystematics
- 2) What are the defects of artificial system of classification of plants?
- 3) Define biosystematics.
- 4) What are the aims of biosystematics.
- 5) What is Binomial nomenclature?
- 6) What is a type specimen?
- 7) What is called author citation?
- 8) What is called nomen ambiguum?
- 9) Define tautonym.
- 10) Define Herbarium
- 11) What is polypetalae?
- 12) What are the three classes of flowering plants.
- 13) Write the families of gymnospermae
- 14) Write short notes on monochlamydeae
- 15) Bring out the demerits of Bentham and Hooker's classification of plants.
- 16) Briefly mention the systematic position of Laurineae.
- 17) Mention the systematic position of Malvaceae
- 18) Write a note on androecium of *Hibiscus rosa-sinensis*.
- 19) Draw the floral diagram and write the floral formula of *Hibiscus rosa-sinensis*
- 20) Name any three fibre plants of Malvaceae

- 21) Mention the binomial of any three medicinal plants of Malvaceae.
- 22) Give the systematic position of Solanaceae
- 23) Write the different types of inflorescence found in Solanaceae.
- 24) What is atropine?
- 25) Name the alkaloids found in tobacco
- 26) Write the systematic position of Euphorbiaceae
- 27) What is cladode? Give an example
- 28) What are different types of inflorescence seen in Euphorbiaceae?
- 29) Mention the binomial of any three medicinal plants of Euphorbiaceae
- 30) Write the systematic position of Musaceae
- 31) Draw the floral diagram and write the floral formula of *Datura metel*.
- 32) Draw the floral diagram of bisexual flower of *Musa paradisiaca* and write floral formula.
- 33) What is monocarpic perennial ? Give an example
- 34) What is pseudostem? How is it formed in *Musa paradisiaca*?
- 35) What is polygamous ?

BOTANY (LONG VERSION)

- 36) Write the systematic position of Fabaceae
- 37) What is pulvinus?
- 38) What is vexillum?
- 39) What is butterfly shaped corolla?
- 40) Write about the inflorescence of *Crotalaria verrucosa*
- 41) Draw the floral diagram of *Clitoria ternatea*.
- 42) Write the systematic position of Rubiaceae
- 43) What is epipetalous stamen?
- 44) Name the dye producing plants of Rubiaceae
- 45) Write the classification of Asteraceae.
- 46) What is Cypsela?
- 47) What is pappus?
- 48) What is syngenesious stamen?
- 49) What is santonin?
- 50) What is pyrethrum?
- 51) Write the systematic position of Arecaceae.
- 52) What is spathe?
- 53) What is a 'toddy' ?
- 54) Draw the diagram of Androecium of *Cocos nucifera*.
- 55) Draw the diagram of Androecium of *Cocos nucifera*.

5 MARK QUESTIONS

- 1) Bring out the significance of herbarium
- 2) Bring out the merits of Bentham and Hooker's classification of plants.
- 3) Write any five salient features of ICBN
- 4) Give a detailed account on economic importance of Malvaceae

- 5) Give a detailed account on economic importance of Solanaceae
- 6) Write a detailed account on the economic importance of Euphorbiaceae
- 7) State the differences between Musa and Ravenala

BOTANY (LONG VERSION)

- 8) Write about the corolla of Fabaceae
- 9) Briefly explain different types of androecium of members of Fabaceae.
- 10) Add a note on economic importance of Fabaceae
- 11) Give a brief account on economic importance of Rubiaceae
- 12) Give an account on head inflorescence
- 13) Write the differences between ray and disc florest
- 14) Give a brief account on the economic importance of Asteraceae
- 15) Write a brief account on the economic importance of Arecaceae

BIO-BOTANY 10 MARK QUESTIONS

- 1) What are the types of classification of plants? Add note on each type.
- 2) Write about the natural system of classification of plants.
- 3) Describe the Bentham and Hooker classification system of classification.
- 4). Describe the parts of Hibiscus rosa-sinensis plant.
- 5). Describe Datura metal in botanical terms.
- 6) Describe the male and female flower of Ricinus communis.
- 7). Describe Musa paradisiaca in technical terms.

Botany (long version)

1. Describe Ixora coccinea in technical terms.
2. Describe cocos nucifera in technical terms.

One word question and answers

1. The change from meristematic tissue to permanent tissue is called differentiation.
2. The type of tissue presents in the petioles of banana and canna is – Stellate parenchyma.
3. The tissue generally present in all organs of plant is – Parenchyma.
4. The lamellar Collenchyma is seen in the hypodermis of – Helianthus.
5. The root hairs are produced from Trichoblasts
6. The osteosclereids are seen in a seed coat of Pisum.
7. Bicolateral vascular bundles are seen in the members of Cucurbitaceae.
8. The casparian strips are found in the endodermis of a. dicot stem.
9. The passage cells are found in endodermis of dicot leaf.
10. The polyarch condition is found in monocot root.
11. The innermost layer of the cortex is called endodermis.
12. The vascular bundle with protoxylem facing centre of the stem is?
13. When the xylem and the phloem lie in the same radius, the vascular bundle is called?
14. The vascular bundles are skull shaped in?
15. The protoxylem lacuna is present in the vascular bundles of?

16. Isobilateral leaf is present in?
17. The vascular bundle in the leaf is?
18. The change from meristematic to permanent tissue is called differentiation.
19. The fibres of sclerenchyma associated with xylem are known as xylem fibres.
20. The parenchyma cells associated with the xylem are known as xylem parenchyma.
21. Vascular cambium and cork cambium are examples for the lateral meristem.
22. The tissue generally present in the organs of plant is?
23. The parenchyma cells that are stored with starch grains are called with starch grains are called storage parenchyma.
24. In Green parts of the plants the parenchymatous cells have chloroplasts. These cells are called chlorophyllous parenchyma.
25. The lamellar collenchyma is seen in the hypodermis of nicotiana.
26. The lamellar collenchyma is seen in the hypodermis of Ipomea.
27. sclerenchyma is a dead tissue.
28. The osteosclereids are seen in
29. The isodiametric sclereids are called brachy-sclereids.
30. Elongated rod shaped sclereids are called macrosclereids.
31. The rod shaped sclereids with dilated ends are called osteosclereids .
32. The fibres that are found in the seed coat of some seeds are called surface fibres eg. cotton.
33. Tracheids are chief water conducting elements in gymnosperms
34. A single pore is formed at the perforation plate it is called simple perforation plate eg. Mangifera.
35. If the perforation plate has many pores then it is called multiple perforation plate e.g. Liriodendron.
36. xylem are the chief water conduction elements in angiosperms.
37. Gnetum are the chief water conduction elements in Gymnosperms.
38. Xylem fibres are also called libriform fibres.
39. The parenchyma cells associated with the xylem are known as xylem parenchyma.
40. Sieve tubes occur in angiosperms
41. The companion cells are absent in gymnosperms and pteridophytes.
42. The parenchyma cells associated with the phloem are called phloem parenchyma.
43. Phloem fibres are the only dead tissue.
44. Phloem fibres are absent in the primary phloem.
45. Phloem is composed of four kinds of cells sieve elements companion parenchyma and phloem fibres
46. Sclereids are dead cells The cell wall is very thick due to lignification.
47. A mature plant has three kinds of tissue systems - the dermal, the fundamental and the vascular system
48. Trichomes may be branched or unbranched.
49. In dicot stem the vascular bundle consists of cambial tissue in between xylem and phloem such vascular bundle is called open vascular bundle.
50. In monocot stem cambium is absent in the vascular bundle, hence it is known as closed vascular bundle.

51. In roots xylem and phloem are arranged in an alternate manner on different radii. It is called radial arrangement.
52. In stems and leaves xylem and phloem are arranged at the same radius and form vascular bundle together. Such vascular bundle is called conjoint vascular bundle.
53. If xylem and phloem in a vascular bundle are arranged along the same radius with phloem towards the outside such vascular bundle is called vascular bundle.
54. Endothelial cells are called Caspian strips.
55. The endodermal cells which are opposite to the protoxylem elements are thin walled without casparian strips. These cells are called passage cells.
56. All the tissues inside the endodermis comprise the stele. This includes pericycle.
57. The number of protoxylem groups is many this arrangement of xylem is called polyarch..
58. The tissue which is present between the xylem and phloem is called conjunctive tissue.
59. All the tissues present inside endodermis comprise the stele.
60. In the stem of sunflower a few layers of sclerenchyma cells occur in patches outside the phloem in each vascular bundle.
61. The ground tissue system that lies between the epidermal layers of leaf is known as mesophyll tissue.
62. The leaf tissue is differentiated into palisade parenchyma on the adaxial (upper) side and spongy parenchyma on the abaxial (lower) side.
63. Palisade parenchyma cells contain more chloroplasts than the spongy parenchyma cells. The function
64. Parenchyma, Collenchyma and Sclerenchyma are the main ground tissues.
65. The mesophyll tissue, especially spongy parenchyma cells enclose a lot of air spaces.
66. A dicotyledonous leaf is generally dorsiventral. It has upper and lower epidermis.
67. The internal structure of the monocot root shows the following tissue systems from the periphery to the centre, rhizodermis, cortex and stele.
68. Pericycle is the outermost layer of the stele
69. of palisade parenchyma is photosynthesis.
70. The mesophyll tissue especially spongy parenchyma cells enclose a lot of air spaces. The presence of air spaces is a special feature of spongy cells. They facilitate the gaseous exchange between the internal photosynthetic tissue.
71. The mesophyll tissue, especially spongy parenchyma cells enclose a lot of air spaces.
72. Internal structure of dicotyledonous leaves reveals epidermis mesophyll and vascular tissues in sunflower leaf.
73. It is composed of single layer of barrel shaped parenchymatous cells in maize plant.
74. Lateral roots originate from the pericycle.
69. Hypodermis of dicot stem is collenchyma
70. Hypodermis of monocot stem is Chlorenchyma in-between the Sclerenchyma

Botany Additional questions

1. The epidermis of monocot leaf with large and thin cell wall is termed as – filiform

2. The function of filiform cell is to lobe the leaf depends on the environment.
3. The epidermis which contains silica ----- is said silica cells.
4. Lens shaped holes present in cork tissue is said to be bast fibre
6. Dendrochronology is a branch of science, which deals with the age of annular trees.
7. The age of Secoya tendron is about 3500 years.
8. The pale colored bark is said to be alburnum.
9. The dark colored bark is said to be deodron
10. The vascular bundle consists of cambial tissue in between xylem and phloem
11. The outer layer of the cell in the structure of cambial tissue is termed as Secondary Phloem
12. The periderm is protective tissue that supplants the epidermis in the roots and stems that undergo secondary growth.
13. Periderm is formed by combination of Cork, cork cambium.

3 Mark Questions

1. What is meant by Meristematic tissue?
2. What is differentiation?
3. What is meant by a simple tissue and its types?
4. What is an aerenchyma?
5. What is meant by Storage parenchyma
6. What is a stellate parenchyma?
7. What is a chlorenchyma?
8. What are the types of cholenchyma?
9. Draw and label the parts of angular collenchyma
10. Draw and label the parts of Lacunate collenchyma
11. Draw and label the parts of Lamellar collenchyma
12. Differentiate between sclereids and fibres.
13. State the types of sclerids
14. Draw and label the parts of Brachy sclereids.
15. What is meant by callose?
16. What is meant by Trichoplast?
17. What are the Functions of epidermal tissue system?
18. Define closed vascular bundle.
19. Define open vascular bundle.
20. What is meant by radial arrangement?
21. Define collateral vascular bundle.
22. Define Bicollateral vascular bundle.
23. What is meant by amphivasal concentric vascular bundles and its types.
24. Draw and label the parts of Bicollateral
25. Draw and label the parts of open and closed vascular bundle.
26. Draw and label the parts of radial arrangement of vascular bundle.
27. Define exarch.
28. Define endarch
29. What are surface fibres?
30. What is meant by rhizodermis,
31. What is meant by Casparian strips?

32. What is meant by Passage cell?
33. What is meant by polyarch xylem?
34. What is meant by tetraarch xylem?
35. What is meant Hypodermis?
36. What is meant by eustele?
37. What is meant by bundle cap?
38. What is meant by Protoxylem lacuna?
39. What is meant by dorsiventral leaf?
40. What is meant by isobilateral leaf?
41. What is meant by Mesophyll tissue?
42. Differentiate between Palisade and Spongy Parenchyma.
43. What is a bundle sheath or border parenchyma in a leaf?

Additional Questions

1. What is meant by filiform cells?
2. What is meant by Silica cells?
3. What is meant by periderm?
4. Which tissues are collectively known as periderm?
7. What is meant by dendrochronology?
8. What is meant by diloses?

5 mark questions.

1. Explain different types of meristems based on their positions.
2. Explain different types of parenchyma tissue.
3. Tabulate the difference between monocot and dicot root.
4. Write short notes on xylem vessels.
5. Write short notes on tracheids.
6. Write short notes on sieve tubes.
7. Draw and label the parts of a T.S. of a dicot stem.
8. Draw and label the parts of a T.S. of a monocot stem.
9. Draw and label the parts of a T.S. of a dicot root.
10. Draw and label the parts of a T.S. of a monocot root.

Additional questions:

1. Write short notes on annular ring?
2. What short notes on diloses?

10 mark Questions

1. Distinguish the anatomy of dicot roots from monocot stem.
2. Explain the primary structure of dicotyledonous root with neat diagram.
3. Explain vascular bundles
4. Explain the secondary structure of dicot stem with neat diagram.
5. Explain the internal structure of dicot plant leaf with neat diagram.

Cell biology and Genetics

1. Who coined the term Chromosome- Waldeyer
2. Who confirmed the chromosomes contains the gene- Bridges

3. Which chromosome had multiple centrosome- Polycentric
4. What is the job of two phase reduction- Create nucleus
5. Stability of chromosome is due to- telomere
6. What are the chemicals present in Chromosome- Ca^{+2} and Mg^{+2}
7. What is the structure of metacentric chromosome?
8. Chromatids are joined at- Centromere
9. Supernumerary is called as B- Chromosome.
10. Unstable chromosome is called as Double minutes.
11. Cancer cells which are resistance to antibiotic.
12. Who discovered the polytene chromosome
13. Chromosome which is present in the salivary gland of *Drosophila*
14. Chromosome which are responsible for life of maize
15. Who discovered the Lampbrush chromosome
16. Who used the word "Gene"
17. Which is the unit of hereditary
18. Who differentiated the relationship between genes and enzymes
19. In which of the animal Lampbrush chromosome is present?
20. Number of chromosome present in rice
21. Number of chromosome present in Chimpanzee
22. Linkage and crossing over ratio is
23. Who conducted dihybrid test in pea nut plants
24. Observed ration for dihybrid test cross is
25. Joining point of chromatids during crossing over
26. The point in which the gene is located in the chromosome
27. Unit of genetic map
28. Who termed these sudden changes as sports
29. Who first used the term mutation
30. Which plant Hugo De Veris observed the mutation
31. The fungi in which the biochemical mutation occurred
32. Lethal mutation observed in which plant
33. The plant which is grown due to gene mutation
34. Example for deletion mutation
35. Factors which cause mutation
36. Unit of gene expression
37. Unit of gene mutation
38. Unit of gene recombination
39. Mutation which is responsible for evolution
40. Interchange of chromosomal segment
41. 17th chromosome of human
42. 17th chromosome of chimpanzee
43. The first cereals produced by human
44. Nullisomy, Monosomy, Trisomy, Tetrasomy
45. Number of chromosomes present in gametes of *Drosophila*
46. Who discovered the transformation of bacteria
47. Who discovered the double helix structure of DNA
48. Diameter of DNA molecule

49. Distance between two nucleotide of DNA
50. Replication time for bacterial DNA
51. DNA Model proposed by Watson and Crick
52. Which enzyme relax the super coiling of DNA during replication ‘
53. Which enzyme ligate the Okazaki fragments
54. The process of conversion of DNA to RNA
55. RNA responsible for transfer
56. Clover leaf model of tRNA is proposed by
57. How many RNA is present in bacteria
58. Stable RNA is
59. Genome size of Arabidopsis thaliana
60. The hereditary is transferred by mRNA to
61. Example for autotetraploidy
62. Acid present in tetraploidy cabbage and tomato
63. Tetraploidy mice contain
64. Percentage of tRNA in total cellular RNA
65. Percentage of RNA in cell
66. Percentage of mRNA in cell
67. Codon consist of hoe many nucleotides
68. What is the total number of genetic code
69. Name the stop codon
70. UUU- _____ , UCC-
71. Name of start codon
72. Transformation of genetic information from mRNA to tRNA is called
73. RNA contain Uracil instead of _____

CELL BIOLOGY AND GENETICS
3 Mark Questions

1. Proteins present in chromosomes
2. What are the chromosomes
3. Why One gene – one enzyme hypothesis is called One gene – one polypeptide
4. What is crossing over
5. What are the importance of crossing over
6. What is genetic map
7. Classify the chromosomes based on centromere
8. What is mutation
9. Draw the structure of Chromosome and mention the parts
10. Draw the structure of Lampbrush Chromosome and mention the parts
11. Draw the structure of Polytene Chromosome and mention the parts
12. What are the applications of genetic map
13. Draw the structure of Chromosome and mention the parts
14. Draw the structure of tRNA and mention the parts
15. What is biochemical mutation. Give example
16. What is Lethal mutation
17. What is Okazaki fragments

18. Give three factors which cause mutation

5 Mark Questions

1. Explain the structure of chromosome with diagrammatic representation
2. Explain the structure of polytene chromosome with diagram
3. Explain the structure of Lampbrush chromosome with diagram
4. Explain the gene and point mutation
5. Write the importance of mutation
6. Write the importance of ploidy
7. Structure of DNA
8. Explain the structure of tRNA
9. Explain Griffith experiment in mice
10. Differentiate DNA and RNA
11. What is crossing over and write their importance
12. Draw all the diagram in the lesson

10 Mark Questions

1. Explain the structure of DNA with neat diagram

BIOTECHNOLOGY One mark questions

1. Restriction Endonuclease are produced by
2. The point at which the Endonuclease cleaves the DNA
3. In genetic engineering, vector used in to clone gene in bacteria
4. Enzyme which cut the DNA
5. What are molecular scissors
6. Joining of Restricted fragments
7. Agrobacterium tuberculosis is
8. Material used for identifying low the blood pressure
9. Agent used for joining the two protoplast
10. Substance which are resistance to virus
11. Delta endotoxin is produced by
12. Methods of foreign gene transfer
13. Till now what is the number of transgenic plants
14. Oil degrading transgenic organism
15. Pseudomonas putida is genetically modified organism
16. What is super bug
17. Potential for regenerating the whole plant
18. _____ induces the cell division
19. Products obtained from tissue culture
20. Undifferentiated mass of cells is called
21. By this process somatic hybridization is achieved
22. Human consume tablets are produced from

23. Baba atomic research centre is located in
24. M S. Swaminadhan research foundation is located in
25. What is the sterilization temperature for autoclave
26. Pomato plants are produced by the hybridization of
27. Cloning vehicle is
28. Which induces the secretion of WBC
29. _____ gene suppress the action of pasta herbicide
30. Organism which are used in biopesticide
31. Maandaka sesta pest infect
32. Polygalactourenase enzyme is inactivated by
33. Biodegradable plastics are obtained from
34. Who first successfully grown plants through tissue culture
35. Who laid the basement for Tissue culture technology
36. Formation of callus from mature tissue is
37. What is the pH of medium
38. Induction of shoot from callus
39. Induction of root from callus
40. Medicinal and aromatic plants research centre located in
41. Percentage of nucleic acid present in algae
42. Percentage of nucleic acid present in yeast
43. Algae which is used as single cell protein
44. Fungi which is used as single cell protein
45. Bacteria which is used as single cell protein
46. Virus free meristem tissues are produced by

3 Marks Questions

1. What is molecular grafting
2. Who bacteria are productive from viral infection
3. Enzyme used in recombinant DNA
4. Name any 3 algae used as SCP
5. Products which are produced by recombinant DNA technology
6. Name any 2 dicot plant produced by pollination
7. Name 3 monocots plants having foreign genes
8. What are restriction endonuclease
9. What is SCP
10. What is inoculation
11. Bioaggumentation
12. What is the importance of Agrarobacterium tumifaciens
13. What is sterilization
14. Name any 3 chemicals which are used in sterilization
15. What is hardening
16. What is callus
17. What is gene gun
18. What is fusion agent
19. Role of E.Coli in Biotechnology

20. What are clones
21. Name any 3 medias for plant tissue culture
22. Why SCP is not familiar for human consumption
23. Application of protoplast fusion
24. What are super bugs

5 Marks Questions

1. Basics of plant tissue culture
2. Explain the gene transfer techniques
3. What are the benefits of genetically modified microorganism for environment
4. What are all the application of SCP
5. How to restrict and digest the DNA
6. How to separate protoplast using enzymes
7. Explain the herbicide resistance plant
8. What are all the role of transgenic plants in food industries

10 Marks Questions

1. Write an essay on transgenic plants
2. Explain recombinant DNA technology
3. Explain the plant tissue culture
4. Explain the protoplast fusion
5. Application of plant tissue culture
6. Write an essay on SCP

PLANT PHYSIOLOGY

One Mark Questions

1. General energy giving foods
2. Reducing power of ATP
3. First stage of respiration
4. Enzyme which convert Glucose into glucose 6 phosphate is
5. Breakdown of Fructose 1,6-bis phosphate into 2 molecules of three carbon compound
6. Reaction involved in conversion of cistic acid to isocitric acid by the addition of water
7. How many ATPs are produced from complete oxidation of glucose
8. Enzyme which convert pyruvic acid under anaerobic condition
9. Alpha-keto glutaric acid
10. Reparative quotient of oxidized glucose
11. Oxidation of FADH gives _____ ATP molecules
12. Oxidation of NADH gives _____ ATP molecules
13. ATP production through ETC is
14. What is mean by EMP pathway

15. How many calories of energy produced by oxidation of one glucose molecule
16. Example for 5 carbon molecules
17. Glycolysis takes place in
18. Discovery of Tikans
19. Energy coin of cell
20. Power house of the cell
21. End product of glycolysis
22. Amphipholic is
23. Anaerobic respiration takes place in
24. Reparative quotient of carbohydrate
25. Reparative quotient of lipids
26. Reparative quotient of anaerobic respiration
27. Pentose phosphate pathway takes place in
28. Bacteria which convert glucose into lactic acid is
29. What is the net ATP production in glycolysis
30. Which enzyme convert pyruvic acid into acetyl - CoA
31. What is mean by TCA cycle
32. Glycolysis phosphorylation
33. Kerb cycle takes place in

1. Photosynthesis takes place in
2. Product of ETC
3. C4 plant
4. C3 plant
5. What is the important compound of greening
6. Compound directly involved in photosynthesis
7. Which pigment observe the sunlight
8. Primary pigment
9. Bacteria that oxidize ammonium nitrate
10. _____ produces water and sulfur by the oxidation of H₂S
11. Total Parasitic plant
12. Partial parasitic plant
13. Saprophytic angiosperm
14. Epiphytic plant
15. Spongy tissue present in epiphytic plant
16. Insectivorous plant
17. Most effective photosynthesis takes place in _____ wavelength
18. Photosynthesis takes place in which part of the chlorophyll
19. Number of granas in chlorophyll
20. Dark reaction takes place in
21. Pigments present in chlorophyll
22. Gas released by photosynthesis
23. Dark reaction also called as
24. Other name for C4 pathway
25. Other name for photorespiration
26. Dark reaction of photosynthesis is discovered by

27. Dark reaction and light reaction of C₃ plants takes place in
28. Optimum temperature for C₃ pathway
29. Photosynthesis takes place in which concentration of CO₂
30. Which molecule accept CO₂ in C₃ pathway
31. Which molecule accept CO₂ in C₃ and C₄ pathway of mesophyll cells
32. Which molecule accept CO₂ in C₄ pathway of Bundle sheath
33. Reduced energy produced by light reaction
34. Which is not a supplementary pigment
35. Accessory pigments
36. Photosynthetic pigment are present in
37. In C₂ pathway, the place where glycine is converted to serine
38. Z pathway is
39. The first identified plant hormone
40. Artificial auxin
41. Natural auxin
42. Meristem growth is due to
43. In rice, pacanea disease caused by
44. How the growth condition is represented in sigmoid graph
45. Leaves hole covers are induced by
46. Gaseous hormone
47. Agent for fruit ripening
48. Growth suppressor of a plant
49. Hormone which regulate the positive geotropism of plant root

ADDITIONAL QUESTIONS IN BOTANY

1. The term enzyme first used by
2. Enzyme hypothesis and key hypothesis is given by
3. Enzymes which shows maximum activity in alkaline medium

3 Mark Questions

1. What is photosynthesis
2. Write the photosynthetic reaction
3. What is photosynthetic pigment
4. Differentiate the primary and accessory pigments
5. What is light reaction
6. What is hydration
7. Cyclic phosphorylation
8. What are the two types chlorophyll
9. Draw the structure of ATP
10. Differentiate light and dark reaction
11. What is light phosphorylation
12. Define reparative quotient
13. Define sigmoid graph
14. Give a respiration equation

15. What is shoot induction
16. Define folding
17. Rich modeling effect
18. Define enzymes
19. What are growth limiters
20. What is freezing
21. What is dehydration
22. Is it possible to reduce the crop life period explain
23. Define glycolysis
24. What is Kerb cycle
25. Define respiration
26. Reparative quotient of anaerobic respiration
27. What is core enzyme
28. What are co-enzymes
29. What is the power house of the cell
30. What is isozymes
31. What is inhibitors

5 Mark Questions

1. Write the importance of photosynthesis
2. Explain the structure of chlorophyll
3. Difference between C3 and C4 pathways
4. Differentiate cyclic and non cyclic phosphorylation
5. Write the importance of pentose phosphate pathway
6. Effect of Auxins
7. Effects of Gibberelline ‘
8. Properties of enzymes
9. Explain the function of enzymes
10. Explain the various stages of glycolysis
11. Explain Kerb cycle
12. Explain Calvin cycle
13. Explain C4 pathway
14. Explain C2 pathway
15. Explain the various methods of nutrition’s

BIOLOGY IN HUMAN WELFARE

One Mark Questions

1. Crop improvement is improvement of plant genetic characters
2. Streptomycin is an antibiotic which kills cancer in lime plants
3. The clandestine exploitation and utilization of Bioresource from a country by several organization and multinational companies without proper authorization is known as biopiracy
4. Binomial name of jivam plant
5. Calcium is used to induce potency

6. Hadjor – bone joiner is a trade name of *Cissus quadrangularis*
7. Glycin max is used as a Biofertilizer
8. Vicora plant is used to treat cancer
9. *Vibrio cholerae* produces endotoxin
10. Pest resistance automata 2 rice are produced by induced mutation
11. Antimalarial drug which control malarial fever is derived from *chinchona calisaya*
12. *Acalypha indica* belongs to Euphorbiaceae
13. Binomial name of teak plant is *Tectona grandis*
14. Medicine used to treat heart disease is Digoxin
15. Virus free meristem plants are produced by tissue culture
16. Plant which synthesis the West African brazzein is *Pentadiplandra brazzeana*
17. Instead of tea *Ilex paragurinsis* leaves are used
18. The binomial name of touch – me not plant is *Mimosa pudica*
19. Morphine, the strongest pain killer obtained from opium poppy – *Papaver somniferum*
20. Leaf insect spreads the Tungro virus
21. Genes are considered as computer software
22. Biofertilizer used in Indian rice cultivation is *Azolla pinnata*
23. The fungus *Pyricularia oryzae* virus, the secondary host is *Digitaria marginata*
24. The patent period for UAE is 17 years and In India 5 years
25. Employing genetic engineering techniques, Potrykus of Switzerland and Peter Beyer of Germany transferred genes that make carotene in daffodils into *Oryza sativa*
26. Herbal drug Emetine from *Cephalis* by using micropropagation technique
27. Leaves of *Ilex paraguriensis*, which can be a substitute for tea and powdered seeds of *Cola nitida* instead of coffee
28. Mental and physical stress relaxing drug is obtained from the plant ginseng – *Panax ginseng*
29. Starch content in potatoes could be increased by 20 to 40 per cent by using a bacterial ADP glucose pyrophosphorylase gene (ADP GPPase)
30. The process of converting untenable, fallow land to cultivable soil is termed as soil reclamation. Blue green algae play a vital role in this conversion
31. Bacitracin is an antibiotic obtained from *Bacillus licheniformis* and it is used to treat syphilis
32. Blast Disease incited by a fungus, *Pyricularia oryzae*
33. Tikka Disease incited by a fungus *Cercospora personata*
34. Nitrogen fixing genes are nif genes
35. Oncomouse is the first patented animal
36. Petroleum degrading *Pseudomonas* bacteria is discovered by
37. In U.S.A the Government had granted a patent to cover the entire 'basmati' rice plant
38. Brazzein, it is several 100 times as sweet as sugar
39. Tomatoes with elevated sucrose and reduced starch could also be produced using sucrose phosphate synthase gene
40. Aminoacids are produced in cereals by introduction of foreign gene
41. Cereal plants which used as a green manure fix nitrogen
42. *Azolla* is an aquatic fern, which contains an endophytic cyanobacterium *Anabaena azollae* in its leaves

43. Certain angiosperms like *Monotropa* lack chlorophyll and have mycorrhizal roots. This plant absorbs nourishments from the humus through their mycorrhizal roots

3 Mark Questions

1. What is pure line selection
2. What is clonal selection
3. Define Introduction
4. What is heterosis
5. What is herbal drugs
6. What are biofertilizers
7. What are biopesticides
8. What are edible interferons
9. What is humulin
10. What id biowar
11. What are the two important concepts of biopatents
12. What is borteaux mixture
13. What is Bhopal tragedy
14. Define vam fungi
15. What is recurrent parent
16. What is soil reclamation
17. Medicinal substance present in vilva plant
18. Medicinal uses of *Acalypha indica*
19. Medicinal uses of *Cissus quadrangularis*
20. The released dangerous microorganism in biological warfare

5 Mark Questions

1. Write a note on plant
2. Write an essay on Tikka disease of groundnut
3. Write the aims of plant breeding
4. Write about biopatent
5. Explain the role of microorganism in medicine
6. Explain the economic importance of cotton
7. Explain the economic importance of rice
8. Write an essay on economic importance of plant

10 Mark Questions

1. Write essay sustained and eco-friendly agriculture
2. Write an essay on Biofertilizer
3. What are the aims of plant breeding
4. Name any four breeding techniques used for crop improvement