

Botany : Section-A (Q. No. 101 to 135)

- 101** Cellulose does not form blue colour with Iodine because
- (1) It breaks down when iodine reacts with it.
 - (2) It is a disaccharide.
 - (3) It is a helical molecule.
 - (4) It does not contain complex helices and hence cannot hold iodine molecules.
- 102** In angiosperm, the haploid, diploid and triploid structures of a fertilized embryo sac sequentially are :
- (1) Synergids, antipodals and Polar nuclei
 - (2) Synergids, Primary endosperm nucleus and zygote
 - (3) Antipodals, synergids, and primary endosperm nucleus
 - (4) Synergids, Zygote and Primary endosperm nucleus
- 103** Identify the pair of heterosporous pteridophytes among the following :
- (1) *Equisetum* and *Salvinia*
 - (2) *Lycopodium* and *Selaginella*
 - (3) *Selaginella* and *Salvinia*
 - (4) *Psilotum* and *Salvinia*
- 104** Identify the **correct** statements :
- A. Detrivores perform fragmentation.
 - B. The humus is further degraded by some microbes during mineralization.
 - C. Water soluble inorganic nutrients go down into the soil and get precipitated by a process called leaching.
 - D. The detritus food chain begins with living organisms.
 - E. Earthworms break down detritus into smaller particles by a process called catabolism.
- Choose the **correct** answer from the options given below :
- (1) D, E, A only (2) A, B, C only
 - (3) B, C, D only (4) C, D, E only
- 105** Axile placentation is observed in
- (1) China rose, Petunia and Lemon
 - (2) Mustard, Cucumber and Primrose
 - (3) China rose, Beans and Lupin
 - (4) Tomato, Dianthus and Pea
- 106** Which micronutrient is required for splitting of water molecule during photosynthesis?
- (1) copper (2) manganese
 - (3) molybdenum (4) magnesium
- 107** In the equation
- $$\boxed{GPP - R = NPP}$$
- GPP is Gross Primary Productivity
NPP is Net Primary Productivity
R here is _____.
- (1) Reproductive allocation
 - (2) Photosynthetically active radiation
 - (3) Respiratory quotient
 - (4) Respiratory loss
- 108** Spraying of which of the following phytohormone on juvenile conifers helps in hastening the maturity period, that leads to early seed production?
- (1) Absciscic Acid
 - (2) Indole-3-butyric Acid
 - (3) Gibberellic Acid
 - (4) Zeatin
- 109** In tissue culture experiments, leaf mesophyll cells are put in a culture medium to form callus. This phenomenon may be called as :
- (1) Senescence
 - (2) Differentiation
 - (3) Dedifferentiation
 - (4) Development
- 110** The phenomenon of pleiotropism refers to
- (1) more than two genes affecting a single character.
 - (2) presence of several alleles of a single gene controlling a single crossover.
 - (3) presence of two alleles, each of the two genes controlling a single trait.
 - (4) a single gene affecting multiple phenotypic expression.

- 111** Which of the following stages of meiosis involves division of centromere?
 (1) Telophase (2) Metaphase I
 (3) Metaphase II (4) Anaphase II
- 112** Unequivocal proof that DNA is the genetic material was first proposed by
 (1) Wilkins and Franklin
 (2) Frederick Griffith
 (3) Alfred Hershey and Martha Chase
 (4) Avery, Macleoid and McCarthy
- 113** Given below are two statements : One is labelled as **Assertion A** and the other is labelled as **Reason R** :
Assertion A : Late wood has fewer xylary elements with narrow vessels.
Reason R : Cambium is less active in winters.
 In the light of the above statements, choose the **correct** answer from the options given below :
 (1) **A** is false but **R** is true.
 (2) Both **A** and **R** are true and **R** is the correct explanation of **A**.
 (3) Both **A** and **R** are true but **R** is NOT the correct explanation of **A**.
 (4) **A** is true but **R** is false.
- 114** Given below are two statements : One is labelled as **Assertion A** and the other is labelled as **Reason R** :
Assertion A : The first stage of gametophyte in the life cycle of moss is protonema stage.
Reason R : Protonema develops directly from spores produced in capsule.
 In the light of the above statements, choose the **most appropriate** answer from the options given below :
 (1) **A** is not correct but **R** is correct.
 (2) Both **A** and **R** are correct and **R** is the correct explanation of **A**.
 (3) Both **A** and **R** are correct but **R** is NOT the correct explanation of **A**.
 (4) **A** is correct but **R** is not correct.
- 115** The reaction centre in PS II has an absorption maxima at
 (1) 780 nm (2) 680 nm
 (3) 700 nm (4) 660 nm
- 116** The historic Convention on Biological Diversity, 'The Earth Summit' was held in Rio de Janeiro in the year :
 (1) 2002 (2) 1985
 (3) 1992 (4) 1986
- 117** What is the role of RNA polymerase III in the process of transcription in Eukaryotes?
 (1) Transcription of only snRNAs
 (2) Transcription of rRNAs (28S, 18S and 5.8S)
 (3) Transcription of tRNA, 5 srRNA and snRNA
 (4) Transcription of precursor of mRNA
- 118** The process of appearance of recombination nodules occurs at which sub stage of prophase I in meiosis?
 (1) Diakinesis (2) Zygotene
 (3) Pachytene (4) Diplotene
- 119** Movement and accumulation of ions across a membrane against their concentration gradient can be explained by
 (1) Active Transport
 (2) Osmosis
 (3) Facilitated Diffusion
 (4) Passive Transport
- 120** Upon exposure to UV radiation, DNA stained with ethidium bromide will show
 (1) Bright orange colour
 (2) Bright red colour
 (3) Bright blue colour
 (4) Bright yellow colour

- 121** Family Fabaceae differs from Solanaceae and Liliaceae. With respect to the stamens, pick out the characteristics specific to family Fabaceae but not found in Solanaceae or Liliaceae.
- (1) Epiphyllous and Ditheous anthers
 - (2) Diadelphous and Ditheous anthers
 - (3) Polyadelphous and epipetalous stamens
 - (4) Monoadelphous and Monotheous anthers
- 122** Given below are two statements :
Statement I : Endarch and exarch are the terms often used for describing the position of secondary xylem in the plant body.
Statement II : Exarch condition is the most common feature of the root system.
 In the light of the above statements, choose the **correct** answer from the options given below :
- (1) **Statement I** is incorrect but **Statement II** is true.
 - (2) Both **Statement I** and **Statement II** are true.
 - (3) Both **Statement I** and **Statement II** are false.
 - (4) **Statement I** is correct but **Statement II** is false.
- 123** Expressed Sequence Tags (ESTs) refers to
- (1) Certain important expressed genes.
 - (2) All genes that are expressed as RNA.
 - (3) All genes that are expressed as proteins.
 - (4) All genes whether expressed or unexpressed.
- 124** Which hormone promotes internode/petiole elongation in deep water rice?
- (1) 2, 4-D (2) GA₃
 - (3) Kinetin (4) Ethylene
- 125** What is the function of tassels in the corn cob?
- (1) To protect seeds
 - (2) To attract insects
 - (3) To trap pollen grains
 - (4) To disperse pollen grains
- 126** Given below are two statements :
Statement I : The forces generated by transpiration can lift a xylem-sized column of water over 130 meters height.
Statement II : Transpiration cools leaf surfaces sometimes 10 to 15 degrees, by evaporative cooling.
 In the light of the above statements, choose the **most appropriate** answer from the options given below :
- (1) **Statement I** is incorrect but **Statement II** is correct.
 - (2) Both **Statement I** and **Statement II** are correct.
 - (3) Both **Statement I** and **Statement II** are incorrect.
 - (4) **Statement I** is correct but **Statement II** is incorrect.
- 127** During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out
- (1) Polysaccharides (2) RNA
 - (3) DNA (4) Histones
- 128** Frequency of recombination between gene pairs on same chromosome as a measure of the distance between genes to map their position on chromosome, was used for the first time by
- (1) Henking
 - (2) Thomas Hunt Morgan
 - (3) Sutton and Boveri
 - (4) Alfred Sturtevant
- 129** Among 'The Evil Quartet', which one is considered the most important cause driving extinction of species?
- (1) Co-extinctions
 - (2) Habitat loss and fragmentation
 - (3) Over exploitation for economic gain
 - (4) Alien species invasions

- 130** How many ATP and NADPH₂ are required for the synthesis of one molecule of Glucose during Calvin cycle?
 (1) 18 ATP and 16 NADPH₂
 (2) 12 ATP and 12 NADPH₂
 (3) 18 ATP and 12 NADPH₂
 (4) 12 ATP and 16 NADPH₂
- 131** Large, colourful, fragrant flowers with nectar are seen in :
 (1) wind pollinated plants
 (2) insect pollinated plants
 (3) bird pollinated plants
 (4) bat pollinated plants
- 132** Among eukaryotes, replication of DNA takes place in -
 (1) G₂ phase (2) M phase
 (3) S phase (4) G₁ phase
- 133** The thickness of ozone in a column of air in the atmosphere is measured in terms of :
 (1) Kilobase (2) Dobson units
 (3) Decibels (4) Decameter
- 134** Given below are two statements : One is labelled as **Assertion A** and the other is labelled as **Reason R** :
Assertion A : ATP is used at two steps in glycolysis.
Reason R : First ATP is used in converting glucose into glucose-6-phosphate and second ATP is used in conversion of fructose-6-phosphate into fructose-1-6-diphosphate.
 In the light of the above statements, choose the **correct** answer from the options given below :
 (1) **A** is false but **R** is true.
 (2) Both **A** and **R** are true and **R** is the correct explanation of **A**.
 (3) Both **A** and **R** are true but **R** is NOT the correct explanation of **A**.
 (4) **A** is true but **R** is false.
- 135** In gene gun method used to introduce alien DNA into host cells, microparticles of _____ metal are used.
 (1) Silver
 (2) Copper
 (3) Zinc
 (4) Tungsten or gold
- 136** Melonate inhibits the growth of pathogenic bacteria by inhibiting the activity of
 (1) Dinitrogenase
 (2) Succinic dehydrogenase
 (3) Amylase
 (4) Lipase
- 137** Identify the **correct** statements :
 A. Lenticels are the lens-shaped openings permitting the exchange of gases.
 B. Bark formed early in the season is called hard bark.
 C. Bark is a technical term that refers to all tissues exterior to vascular cambium.
 D. Bark refers to periderm and secondary phloem.
 E. Phellogen is single-layered in thickness.
 Choose the correct answer from the options given below :
 (1) B and C only
 (2) B, C and E only
 (3) A and D only
 (4) A, B and D only
- 138** Match **List I** with **List II** :
- | List I | List II |
|---------------|---|
| A. Iron | I. Synthesis of auxin |
| B. Zinc | II. Component of nitrate reductase |
| C. Boron | III. Activator of catalase |
| D. Molybdenum | IV. Cell elongation and differentiation |
- Choose the correct answer from the options given below :
 (1) A-II, B-IV, C-I, D-III
 (2) A-III, B-II, C-I, D-IV
 (3) A-II, B-III, C-IV, D-I
 (4) A-III, B-I, C-IV, D-II

139 Which one of the following statements is **NOT** correct?

- (1) The amount of some toxic substances of industrial waste water increases in the organisms at successive trophic levels.
- (2) The micro-organisms involved in biodegradation of organic matter in a sewage polluted water body consume a lot of oxygen causing the death of aquatic organisms.
- (3) Algal blooms caused by excess of organic matter in water improve water quality and promote fisheries.
- (4) Water hyacinth grows abundantly in eutrophic water bodies and leads to an imbalance in the ecosystem dynamics of the water body.

140 Which of the following combinations is required for chemiosmosis?

- (1) proton pump, electron gradient, NADP synthase
- (2) membrane, proton pump, proton gradient, ATP synthase
- (3) membrane, proton pump, proton gradient, NADP synthase
- (4) proton pump, electron gradient, ATP synthase

141 Which of the following statements are correct about Klinefelter's Syndrome?

- A. This disorder was first described by Langdon Down (1866).
- B. Such an individual has overall masculine development. However, the feminine development is also expressed.
- C. The affected individual is short statured.
- D. Physical, psychomotor and mental development is retarded.
- E. Such individuals are sterile.

Choose the **correct** answer from the options given below :

- (1) A and E only
- (2) A and B only
- (3) C and D only
- (4) B and E only

142 Match **List I** with **List II** :

List I (Interaction)	List II (Species A and B)
A. Mutualism	I. + (A), O(B)
B. Commensalism	II. - (A), O(B)
C. Amensalism	III. + (A), - (B)
D. Parasitism	IV. + (A), + (B)

Choose the **correct** answer from the options given below :

- (1) A-III, B-I, C-IV, D-II
- (2) A-IV, B-II, C-I, D-III
- (3) A-IV, B-I, C-II, D-III
- (4) A-IV, B-III, C-I, D-II

143 Match **List I** with **List II** :

List I	List II
A. Cohesion	I. More attraction in liquid phase
B. Adhesion	II. Mutual attraction among water molecules
C. Surface tension	III. Water loss in liquid phase
D. Guttation	IV. Attraction towards polar surfaces

Choose the **correct** answer from the options given below :

- (1) A-II, B-I, C-IV, D-III
- (2) A-II, B-IV, C-I, D-III
- (3) A-IV, B-III, C-II, D-I
- (4) A-III, B-I, C-IV, D-II

144 Match **List I** with **List II** :

List I	List II
A. M Phase	I. Proteins are synthesized
B. G ₂ Phase	II. Inactive phase
C. Quiescent stage	III. Interval between mitosis and initiation of DNA replication
D. G ₁ Phase	IV. Equational division

Choose the correct answer from the options given below :

- (1) A-II, B-IV, C-I, D-III
- (2) A-III, B-II, C-IV, D-I
- (3) A-IV, B-II, C-I, D-III
- (4) A-IV, B-I, C-II, D-III

145 Given below are two statements : One is labelled as **Assertion A** and the other is labelled as **Reason R** :

Assertion A : In gymnosperms the pollen grains are released from the microsporangium and carried by air currents.

Reason R : Air currents carry the pollen grains to the mouth of the archegonia where the male gametes are discharged and pollen tube is not formed.

In the light of the above statements, choose the **correct** answer from the options given below :

- (1) **A** is false but **R** is true.
- (2) Both **A** and **R** are true and **R** is the correct explanation of **A**.
- (3) Both **A** and **R** are true but **R** is NOT the correct explanation of **A**.
- (4) **A** is true but **R** is false.

146 Main steps in the formation of Recombinant DNA are given below. Arrange these steps in a correct sequence.

- A. Insertion of recombinant DNA into the host cell.
- B. Cutting of DNA at specific location by restriction enzyme.
- C. Isolation of desired DNA fragment.
- D. Amplification of gene of interest using PCR.

Choose the correct answer from the options given below :

- (1) B, D, A, C (2) B, C, D, A
- (3) C, A, B, D (4) C, B, D, A

147 Given below are two statements : One is labelled as **Assertion A** and the other is labelled as **Reason R** :

Assertion A : A flower is defined as modified shoot wherein the shoot apical meristem changes to floral meristem.

Reason R : Internode of the shoot gets condensed to produce different floral appendages laterally at successive nodes instead of leaves.

In the light of the above statements, choose the **correct** answer from the options given below :

- (1) **A** is false but **R** is true.
- (2) Both **A** and **R** are true and **R** is the correct explanation of **A**.
- (3) Both **A** and **R** are true but **R** is NOT the correct explanation of **A**.
- (4) **A** is true but **R** is false.

148 Match **List I** with **List II** :

List I	List II
A. Oxidative decarboxylation	I. Citrate synthase
B. Glycolysis	II. Pyruvate dehydrogenase
C. Oxidative phosphorylation	III. Electron transport system
D. Tricarboxylic acid cycle	IV. EMP pathway

Choose the correct answer from the options given below :

- (1) A-II, B-IV, C-III, D-I
- (2) A-III, B-IV, C-II, D-I
- (3) A-II, B-IV, C-I, D-III
- (4) A-III, B-I, C-II, D-IV

149 Given below are two statements :

Statement I : Gause's 'Competitive Exclusion Principle' states that two closely related species competing for the same resources cannot co-exist indefinitely and competitively inferior one will be eliminated eventually.

Statement II : In general, carnivores are more adversely affected by competition than herbivores.

In the light of the above statements, choose the **correct** answer from the options given below :

- (1) **Statement I** is incorrect but **Statement II** is true.
- (2) Both **Statement I** and **Statement II** are true.
- (3) Both **Statement I** and **Statement II** are false.
- (4) **Statement I** is correct but **Statement II** is false.

150 How many different proteins does the ribosome consist of?

- (1) 20 (2) 80
- (3) 60 (4) 40