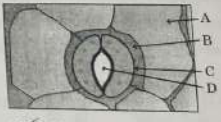
Botany : Section-A (Q. No. 101 to 135)

101 Lecithin, a small molecular weight organic compound found in living tissues, is an example of:
(1) Amino acids
(2) Phospholipids
(3) Glycerides
(4) Carbohydrates

102 How many molecules of ATP and NADPH are required for every molecule of CO_2 fixed in the Calvin cycle?
(1) 2 molecules of ATP and 3 molecules of NADPH
(2) 2 molecules of ATP and 2 molecules of NADPH
(3) 3 molecules of ATP and 3 molecules of NADPH
(4) 3 molecules of ATP and 2 molecules of NADPH

103 Hind II always cuts DNA molecules at a particular point called recognition sequence and it consists of:
(1) 8 bp (2) 6 bp
(3) 4 bp (4) 10 bp

104 In the given figure, which component has thin outer walls and highly thickened inner walls?



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

105 The cofactor of the enzyme carboxypeptidase is
(1) Zinc (2) Niacin
(3) Flavin (4) Haem

106 The capacity to generate a whole plant from any cell of the plant is called:
(1) Totipotency
(2) Micropropagation
(3) Differentiation
(4) Somatic hybridization

[Contd...

107 Match List I with List II

List I	List II
A. *Rhizopus*	I. Mushroom
B. *Ustilago*	II. Smut fungus
C. *Puccinia*	III. Bread mould
D. *Agaricus*	IV. Rust fungus

Choose the correct answer from the options given below:

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

108 Given below are two statements:

Statement I : Bt toxins are insect group specific and coded by a gene cry1Ac.

Statement II : Bt toxin exists as inactive protoxin in *B. thuringiensis*. However, after ingestion by the insect the inactive protoxin gets converted into active form due to acidic pH of the insect gut.

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

(1) Both Statement I and Statement II are true
(2) Both Statement I and Statement II are false
(3) Statement I is true but Statement II is false
(4) Statement I is false but Statement II is true

109 Which of the following is an example of actinomorphic flower?

(1) *Datura* (2) *Cassia*
(3) *Pisum* (4) *Sesbania*

110 The type of conservation in which the threatened species are taken out from their natural habitat and placed in special setting where they can be protected and given special care is called:

(1) *in-situ* conservation
(2) Biodiversity conservation
(3) Semi-conservative method
(4) Sustainable development

111 Identify the set of correct statements:

A. The flowers of *Vallisneria* are colourful and produce nectar.
B. The flowers of waterlily are not pollinated by water.
C. In most of water-pollinated species, the pollen grains are protected from wetting.
D. Pollen grains of some hydrophytes are long and ribbon like.
E. In some hydrophytes, the pollen grains are carried passively inside water.

Choose the correct answer from the options given below:

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

112 The lactose present in the growth medium of bacteria is transported to the cell by the action of:

(1) Beta-galactosidase
(2) Acetylase
(3) Permease
(4) Polymerase

113 Match List I with List II

List I	List II
A. *Clostridium butylicum*	I. Ethanol
B. *Saccharomyces cerevisiae*	II. Streptokinase
C. *Trichoderma polysporum*	III. Butyric acid
D. *Streptococcus* sp.	IV. Cyclosporin-A

Choose the correct answer from the options given below:

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

114 The equation of Verhulst-Pearl logistic growth is $\frac{dN}{dt} = rN\left[\frac{K-N}{K}\right]$.

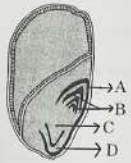
From this equation, K indicates:

(1) Intrinsic rate of natural increase
(2) Biotic potential
(3) Carrying capacity
(4) Population density

115 Auxin is used by gardeners to prepare weed-free lawns. But no damage is caused to grass as auxin

(1) promotes apical dominance.
(2) promotes abscission of mature leaves only.
(3) does not affect mature monocotyledonous plants.
(4) can help in cell division in grasses, to produce growth.

116 Identify the part of the seed from the given figure which is destined to form root when the seed germinates.



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

117 Given below are two statements:

Statement I : Parenchyma is living but collenchyma is dead tissue.

Statement II : Gymnosperms lack xylem vessels but presence of xylem vessels is the characteristic of angiosperms.

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

(1) Both Statement I and Statement II are true
(2) Both Statement I and Statement II are false
(3) Statement I is true but Statement II is false
(4) Statement I is false but Statement II is true

118 These are regarded as major causes of biodiversity loss:

A. Over exploitation
B. Co-extinction
C. Mutation
D. Habitat loss and fragmentation
E. Migration

Choose the correct option:

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

119 Which one of the following is not a criterion for classification of fungi?

(1) Morphology of mycelium
(2) Mode of nutrition
(3) Mode of spore formation
(4) Fruiting body

120 Identify the type of flowers based on the position of calyx, corolla and androecium with respect to the ovary from the given figures (a) and (b)

(1) (a) Epigynous; (b) Hypogynous
(2) (a) Hypogynous; (b) Epigynous
(3) (a) Perigynous; (b) Epigynous
(4) (a) Perigynous; (b) Perigynous

121 List of endangered species was released by-

(1) GEAC (2) WWF
(3) FOAM (4) IUCN

122 What is the fate of a piece of DNA carrying only gene of interest which is transferred into an alien organism?

A. The piece of DNA would be able to multiply itself independently in the progeny cells of the organism.
B. It may get integrated into the genome of the recipient.
C. It may multiply and be inherited along with the host DNA.
D. The alien piece of DNA is not an integral part of chromosome.
E. It shows ability to replicate.

Choose the correct answer from the options given below:

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

123 Which one of the following can be explained on the basis of Mendel's Law of Dominance?

A. Out of one pair of factors one is dominant and the other is recessive.
B. Alleles do not show any expression and both the characters appear as such in F_2 generation.
C. Factors occur in pairs in normal diploid plants.
D. The discrete unit controlling a particular character is called factor.
E. The expression of only one of the parental characters is found in a monohybrid cross.

Choose the correct answer from the options given below:

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

124 Inhibition of Succinic dehydrogenase enzyme by malonate is a classical example of:

(1) Cofactor inhibition
(2) Feedback inhibition
(3) Competitive inhibition
(4) Enzyme activation

125 Formation of interfascicular cambium from fully developed parenchyma cells is an example for

(1) Differentiation
(2) Redifferentiation
(3) Dedifferentiation
(4) Maturation

126 Spindle fibers attach to kinetochores of chromosomes during

(1) Prophase (2) Metaphase
(3) Anaphase (4) Telophase

127 Tropical regions show greatest level of species richness because

A. Tropical latitudes have remained relatively undisturbed for millions of years, hence more time was available for species diversification.
B. Tropical environments are more seasonal.
C. More solar energy is available in tropics.
D. Constant environments promote niche specialization.
E. Tropical environments are constant and predictable.

Choose the correct answer from the options given below:

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

128 Given below are two statements:

Statement I : Chromosomes become gradually visible under light microscope during leptotene stage.

Statement II : The begining of diplotene stage is recognized by dissolution of synaptonemal complex.

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

(1) Both Statement I and Statement II are true
(2) Both Statement I and Statement II are false
(3) Statement I is true but Statement II is false
(4) Statement I is false but Statement II is true

[Contd...

129 Match List I with List II

List I	List II
A. Nucleolus	I. Site of formation of glycolipid
B. Centriole	II. Organization like the cartwheel
C. Leucoplasts	III. Site for active ribosomal RNA synthesis
D. Golgi apparatus	IV. For storing nutrients

Choose the correct answer from the options given below:

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

130 Bulliform cells are responsible for

(1) Inward curling of leaves in monocots.
(2) Protecting the plant from salt stress.
(3) Increased photosynthesis in monocots.
(4) Providing large spaces for storage of sugars.

131 A pink flowered Snapdragon plant was crossed with a red flowered Snapdragon plant. What type of phenotype/s is/are expected in the progeny?

(1) Only red flowered plants
(2) Red flowered as well as pink flowered plants
(3) Only pink flowered plants
(4) Red, Pink as well as white flowered plants

132 A transcription unit in DNA is defined primarily by the three regions in DNA and these are with respect to upstream and down stream end;

(1) Repressor, Operator gene, Structural gene
(2) Structural gene, Transposons, Operator gene
(3) Inducer, Repressor, Structural gene
(4) Promotor, Structural gene, Terminator

133 In a plant, black seed color (BB/Bb) is dominant over white seed color (bb). In order to find out the genotype of the black seed plant, with which of the following genotype will you cross it?

(1) BB (2) bb
(3) Bb (4) BB/Bb

134 Which of the following are required for the dark reaction of photosynthesis?

A. Light
B. Chlorophyll
C. CO_2
D. ATP
E. NADPH

Choose the correct answer from the options given below:

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

135 Match List I with List II

List I	List II
A. Two or more alternative forms of a gene	I. Back cross
B. Cross of F_1 progeny with homozygous recessive parent	II. Ploidy
C. Cross of F_1 progeny with any of the parents	III. Allele
D. Number of chromosome sets in plant	IV. Test cross

Choose the correct answer from the options given below:

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

[Contd...

Botany : Section-B (Q. No. 136 to 150)

136 The DNA present in chloroplast is:
(1) Linear, double stranded
(2) Circular, double stranded
(3) Linear, single stranded
(4) Circular, single stranded

137 Match List I with List II

List I	List II
A. Robert May	I. Species-Area relationship
B. Alexander von Humboldt	II. Long term ecosystem experiment using out door plots
C. Paul Ehrlich	III. Global species diversity at about 7 million
D. David Tilman	IV. Rivet popper hypothesis

Choose the correct answer from the options given below:
(1) A-II, B-III, C-I, D-IV
(2) A-III, B-I, C-IV, D-II
(3) A-I, B-III, C-II, D-IV
(4) A-III, B-IV, C-II, D-I

138 Match List I with List II

List I	List II
A. Rose	I. Twisted aestivation
B. Pea	II. Perigynous flower
C. Cotton	III. Drupe
D. Mango	IV. Marginal placentation

Choose the correct answer from the options given below:
(1) A-II, B-IV, C-I, D-III
(2) A-I, B-II, C-III, D-IV
(3) A-IV, B-III, C-II, D-I
(4) A-II, B-III, C-IV, D-I

139 Which of the following statement is correct regarding the process of replication in *E.coli*?
(1) The DNA dependent DNA polymerase catalyses polymerization in one direction that is 3'→5'.
(2) The DNA dependent RNA polymerase catalyses polymerization in one direction that is 5'→3'.
(3) The DNA dependent DNA polymerase catalyses polymerization in 5'→3' as well as 3'→5' direction.
(4) The DNA dependent DNA polymerase catalyses polymerization in 5'→3' direction

140 Identify the correct description about the given figure:

(1) Wind pollinated plant inflorescence showing flowers with well exposed stamens.
(2) Water pollinated flowers showing stamens with mucilaginous covering.
(3) Cleistogamous flowers showing autogamy.
(4) Compact inflorescence showing complete autogamy.

141 Match List I with List II

List I	List II
A. Citric acid cycle	I. Cytoplasm
B. Glycolysis	II. Mitochondrial matrix
C. Electron transport system	III. Intermembrane space of mitochondria
D. Proton gradient	IV. Inner mitochondrial membrane

Choose the correct answer from the options given below:
(1) A-I, B-II, C-III, D-IV
(2) A-II, B-I, C-IV, D-III
(3) A-III, B-IV, C-I, D-II
(4) A-IV, B-III, C-II, D-I

142 Read the following statements and choose the set of correct statements:
In the members of Phaeophyceae,
A. Asexual reproduction occurs usually by biflagellate zoospores.
B. Sexual reproduction is by oogamous method only.
C. Stored food is in the form of carbohydrates which is either mannitol or laminarin.
D. The major pigments found are chlorophyll a, c and carotenoids and xanthophyll.
E. Vegetative cells have a cellulosic wall, usually covered on the outside by gelatinous coating of algin.
Choose the correct answer from the options given below:
(1) A, B, C and D only
(2) B, C, D and E only
(3) A, C, D and E only
(4) A, B, C and E only

143 In an ecosystem if the Net Primary Productivity (NPP) of first trophic level is $100x\ (kcal\ m^{-2})\ yr^{-1}$, what would be the GPP (Gross Primary Productivity) of the third trophic level of the same ecosystem?
(1) $\frac{x}{10}\ (kcal\ m^{-2})\ yr^{-1}$
(2) $x\ (kcal\ m^{-2})\ yr^{-1}$
(3) $10x\ (kcal\ m^{-2})\ yr^{-1}$
(4) $\frac{100x}{3x}\ (kcal\ m^{-2})\ yr^{-1}$

144 Match List I with List II

List I	List II
A. GLUT-4	I. Hormone
B. Insulin	II. Enzyme
C. Trypsin	III. Intercellular ground substance
D. Collagen	IV. Enables glucose transport into cells

Choose the correct answer from the options given below:
(1) A-IV, B-I, C-II, D-III
(2) A-I, B-II, C-III, D-IV
(3) A-II, B-III, C-IV, D-I
(4) A-III, B-IV, C-I, D-II

145 Identify the step in tricarboxylic acid cycle, which does not involve oxidation of substrate.
(1) Malic acid → Oxaloacetic acid
(2) Succinic acid → Malic acid
(3) Succinyl-CoA → Succinic acid
(4) Isocitrate → α-ketoglutaric acid

146 Given below are two statements:
Statement I : In C_3 plants, some O_2 binds to RuBisCO, hence CO_2 fixation is decreased.
Statement II : In C_4 plants, mesophyll cells show very little photorespiration while bundle sheath cells do not show photorespiration.
In the light of the above statements, choose the *correct* answer from the options given below:
(1) Both Statement I and Statement II are true
(2) Both Statement I and Statement II are false
(3) Statement I is true but Statement II is false
(4) Statement I is false but Statement II is true

147 Match List I with List II

List I (Types of Stamens)	List II (Example)
A. Monoadelphous	I. Citrus
B. Diadelphous	II. Pea
C. Polyadelphous	III. Lily
D. Epiphyllous	IV. China-rose

Choose the correct answer from the options given below:

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

148 Match List I with List II

List I	List II
A. Frederick Griffith	I. Genetic code
B. Francois Jacob & Jacque Monod	II. Semi-conservative mode of DNA replication
C. Har Gobind Khorana	III. Transformation
D. Meselson & Stahl	IV. *Lac* operon

Choose the correct answer from the options given below:

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

149 Which of the following are fused in somatic hybridization involving two varieties of plants?

(1) Callus
(2) Somatic embryos
(3) Protoplasts
(4) Pollens

150 Spraying sugarcane crop with which of the following plant growth regulators, increases the length of stem, thus, increasing the yield?

(1) Auxin
(2) Gibberellin
(3) Cytokinin
(4) Abscisic acid