

# DU MSc Botany

Topic:- DU\_J18\_MSC\_BOT

**1) Which one of the following heterotrichous algae grows on rocks or bark?**

**[Question ID = 2168]**

1. *Stigeoclonium* [Option ID = 8669]
2. *Trentepohlia* [Option ID = 8672]
3. *Cephaleuros* [Option ID = 8671]
4. *Frittschiella* [Option ID = 8670]

**Correct Answer :-**

- *Trentepohlia* [Option ID = 8672]

**2) Which one of the following statements is NOT correct?**

**[Question ID = 2190]**

1. Roots are absent in *Psilotum*. [Option ID = 8759]
2. In *Equisetum*, spores are spirally wrapped with elaters. [Option ID = 8758]
3. In *Selaginella*, rhizophores arise from angle meristems located at shoot branch points and produce roots at their distal ends. [Option ID = 8757]
4. Telome theory describes the classification of ferns. [Option ID = 8760]

**Correct Answer :-**

- Telome theory describes the classification of ferns. [Option ID = 8760]

**3) Which one of the following *vir* genes acts as a transcriptional activator of other *vir* genes?**

**[Question ID = 2253]**

1. *vir* D1 [Option ID = 9009]
2. *vir* G [Option ID = 9010]
3. *vir* D2 [Option ID = 9011]
4. *vir* E [Option ID = 9012]

**Correct Answer :-**

- *vir* G [Option ID = 9010]

**4) Which one of the following features of *Anthoceros* indicates its algal ancestry?**

**[Question ID = 2185]**

1. Single chloroplast with a pyrenoid in each cell [Option ID = 8738]
2. Symbiotic association with Nostoc [Option ID = 8740]
3. Presence of slime pores [Option ID = 8739]
4. Presence of stomata in the capsule wall [Option ID = 8737]

**Correct Answer :-**

- Single chloroplast with a pyrenoid in each cell [Option ID = 8738]

**5) Which one of the following is NOT a list of millets?**

**[Question ID = 2202]**

1. *Eleusine coracana*, *Pennisetum glaucum*, *Sorghum bicolor* [Option ID = 8806]
2. *Eleusine coracana*, *Pennisetum glaucum*, *Panicum milliaceum* [Option ID = 8808]
3. *Panicum milliaceum*, *Eleusine coracana*, *Sorghum bicolor* [Option ID = 8807]
4. *Panicum milliaceum*, *Eleusine coracana*, *Fagopyrum esculentum* [Option ID = 8805]

**Correct Answer :-**

- *Panicum milliaceum*, *Eleusine coracana*, *Fagopyrum esculentum* [Option ID = 8805]

6) Which one of the following plants has anisocytic type of stomata?

[Question ID = 2196]

1. *Dianthus caryophyllus* [Option ID = 8784]
2. *Triticum aestivum* [Option ID = 8783]
3. *Arabidopsis thaliana* [Option ID = 8781]
4. *Allium cepa* [Option ID = 8782]

**Correct Answer :-**

- *Arabidopsis thaliana* [Option ID = 8781]

7) The culturing of plant cells in liquid agitated medium is called [Question ID = 2251]

1. hydroponics [Option ID = 9001]
2. aquaponics [Option ID = 9004]
3. micropropagation [Option ID = 9002]
4. suspension culture [Option ID = 9003]

**Correct Answer :-**

- suspension culture [Option ID = 9003]

8) A peroxisome-derived, dense core microbody with a unit membrane found near pore of hyphal septum in filamentous Ascomycota, is called [Question ID = 2181]

1. Woronin body [Option ID = 8723]
2. Spindle polar body [Option ID = 8721]
3. Chitosome [Option ID = 8724]
4. Spitzenkorper [Option ID = 8722]

**Correct Answer :-**

- Woronin body [Option ID = 8723]

9) Sympatric species are those that [Question ID = 2223]

1. flower at the same time of year. [Option ID = 8889]
2. have nearly identical life spans. [Option ID = 8892]
3. occupy the same ecological niche. [Option ID = 8890]
4. occupy the same geographic region. [Option ID = 8891]

**Correct Answer :-**

- occupy the same geographic region. [Option ID = 8891]

10) S-allele variants involved in conferring self-incompatibility interact in a haplotype manner because [Question ID = 2235]

1. S-allele products are expressed only after the completion of meiosis in germline cells. [Option ID = 8938]
2. only then the allelic variability could be generated. [Option ID = 8940]
3. it is an essential requirement for the success of gametophytic self-incompatibility (GSI) system. [Option ID = 8939]
4. S-locus with male and female determinants is inherited as one unit. [Option ID = 8937]

**Correct Answer :-**

- S-locus with male and female determinants is inherited as one unit. [Option ID = 8937]

11) An erect, leafless stem bearing an inflorescence or flower at its apex is called [Question ID = 2228]

1. scape [Option ID = 8911]
2. acaulescent [Option ID = 8910]
3. caulescent [Option ID = 8909]
4. cauliflorous [Option ID = 8912]

**Correct Answer :-**

- scape [Option ID = 8911]

12) Select the correct sequence of events leading to opening of stomata.

i. Decline in guard cell solutes

ii. Lowering of osmotic potential of guard cells

iii. Influx of potassium ions in guard cells

iv. Water is sucked in by osmosis

v. Efflux of Hydrogen ions from guard cells

[Question ID = 2237]

1. iii, v, ii, iv [Option ID = 8947]
2. v, ii, iii, iv [Option ID = 8948]
3. i, ii, iii, iv [Option ID = 8945]
4. ii, iii, iv, v [Option ID = 8946]

**Correct Answer :-**

- v, ii, iii, iv [Option ID = 8948]

13) Plants adapted to low light intensity generally have [Question ID = 2215]

1. extended root system. [Option ID = 8857]
2. CAM pathway of photosynthesis. [Option ID = 8860]
3. higher photosynthetic rate. [Option ID = 8858]
4. leaves modified to spines. [Option ID = 8859]

**Correct Answer :-**

- higher photosynthetic rate. [Option ID = 8858]

14) Ovules in *Pinus* and *Rosa*

[Question ID = 2222]

1. were inherited from a recent common ancestor. [Option ID = 8885]
2. have the same function but were not inherited from a common ancestor. [Option ID = 8886]
3. are the result of evolutionary reversals. [Option ID = 8888]
4. are result of independent origins from different ancestors. [Option ID = 8887]

**Correct Answer :-**

- were inherited from a recent common ancestor. [Option ID = 8885]

15) Identify the microorganism capable of inducing hairy root cultures for the synthesis of secondary metabolites:

[Question ID = 2252]

1. *Agrobacterium rhizogenes* [Option ID = 9008]
2. *Agrobacterium tumefaciens* [Option ID = 9006]
3. *Escherichia coli* [Option ID = 9005]
4. *Bacillus thuringiensis* [Option ID = 9007]

**Correct Answer :-**

- *Agrobacterium rhizogenes* [Option ID = 9008]

16) "Kewda oil" is obtained from which one of the following plant species?

[Question ID = 2203]

1. *Lavandula angustifolia* [Option ID = 8811]
2. *Nardostachys jatamansi* [Option ID = 8810]
3. *Rosmarinus officinalis* [Option ID = 8812]
4. *Pandanus odoratissimus* [Option ID = 8809]

**Correct Answer :-**

- *Pandanus odoratissimus* [Option ID = 8809]

17) The cyclic forms of sugars are formed by cyclization of [Question ID = 2175]

1. aldehydes and alcohols on same molecule to form intramolecular hemiacetal. [Option ID = 8699]
2. aldehyde and alcohol on different molecules to form hemiacetal. [Option ID = 8697]
3. ketones and aldehydes on same molecule to form intramolecular hemiketals. [Option ID = 8698]
4. ketones and aldehydes on same molecule to form hemiketal. [Option ID = 8700]

**Correct Answer :-**

- aldehydes and alcohols on same molecule to form intramolecular hemiacetal. [Option ID = 8699]

**18) Schizogenous glands are [Question ID = 2198]**

1. internal secretory structures that are formed by dissolution of middle lamella of adjacent cells. [Option ID = 8789]
2. internal secretory structures that are formed by lysis of few cells. [Option ID = 8790]
3. external secretory structures that secrete salt in xerophytic plants. [Option ID = 8792]
4. external secretory structures that secrete mucilaginous compounds in case of insectivorous plants. [Option ID = 8791]

**Correct Answer :-**

- internal secretory structures that are formed by dissolution of middle lamella of adjacent cells. [Option ID = 8789]

**19) Hormogonia are [Question ID = 2167]**

1. multicellular fragments of filaments which serve in vegetative reproduction of some blue-green algae. [Option ID = 8665]
2. multicellular fragments of filaments which serve in vegetative reproduction of some green algae. [Option ID = 8666]
3. a chain of spherical cells with thickened walls which serve in vegetative reproduction of some blue-green algae. [Option ID = 8667]
4. a chain of spherical cells with thickened walls which serve in vegetative reproduction of some green algae. [Option ID = 8668]

**Correct Answer :-**

- multicellular fragments of filaments which serve in vegetative reproduction of some blue-green algae. [Option ID = 8665]

**20) In gametophytic self-incompatibility (GSI) system [Question ID = 2234]**

1. outcome of the interaction is determined by the genotype of pollen producing parent. [Option ID = 8933]
2. pollen grains are three-celled. [Option ID = 8935]
3. S-locus products are synthesized after completion of meiosis. [Option ID = 8934]
4. growth of the pollen tube is arrested in the stigmatic zone. [Option ID = 8936]

**Correct Answer :-**

- S-locus products are synthesized after completion of meiosis. [Option ID = 8934]

**21) In a cloning experiment using *E. coli*, a DNA fragment was inserted in an *EcoRI* restriction site of a plasmid vector that contained the  $kan^R$  and  $spec^R$  genes for resistance to the antibiotics kanamycin and spectinomycin, respectively. It was observed that all the positive clones (containing the DNA fragment of interest) grew on medium with kanamycin but not on media containing spectinomycin. Colonies, which grew on media with both antibiotics, did not contain the fragment of interest.**

**Based on the above information, which of the following statement(s) could, independently or in combination, explain these observations?**

- i. The  $spec^R$  gene contains a nonsense mutation.
- ii. The *EcoRI* site was located within the  $spec^R$  gene.
- iii. The cloned fragment of interest produces a protein, which binds and inactivates the protein produced by the  $spec^R$  gene.
- iv. The cloned DNA fragment was lethal to the cell.

**[Question ID = 2254]**

1. ii only [Option ID = 9016]
2. i and iv only [Option ID = 9015]
3. i only [Option ID = 9013]
4. ii and iii only [Option ID = 9014]

**Correct Answer :-**

- ii and iii only [Option ID = 9014]

**22) *Triticum dicoccum* is commonly known as**

**[Question ID = 2200]**

1. Einkorn wheat [Option ID = 8797]
2. Durum wheat [Option ID = 8798]
3. Club wheat [Option ID = 8800]
4. Emmer wheat [Option ID = 8799]

**Correct Answer :-**

- Emmer wheat [Option ID = 8799]

**23) Four multiprotein complexes (I-IV) couple electron transport to proton pumping across the mitochondrial inner membrane. To which of these complexes do electrons from succinate flow? [Question ID = 2172]**

1. Complex II [Option ID = 8686]

2. Complex III [Option ID = 8687]
3. Complex I [Option ID = 8685]
4. Complex IV [Option ID = 8688]

**Correct Answer :-**

- Complex II [Option ID = 8686]

**24) In the classical example of a dihybrid cross with a F2 phenotypic ratio of 9:7, which of the following statements is FALSE for the two genes involved? [Question ID = 2210]**

1. The genes assort independently. [Option ID = 8840]
2. The genes are linked. [Option ID = 8839]
3. The genes exhibit epistasis. [Option ID = 8837]
4. Alleles of each gene exhibit segregation. [Option ID = 8838]

**Correct Answer :-**

- The genes are linked. [Option ID = 8839]

**25) Photoperiodism was discovered by [Question ID = 2238]**

1. Dutrochet and Overbeek [Option ID = 8949]
2. Bose and Blackman [Option ID = 8950]
3. Went and Paal [Option ID = 8952]
4. Garner and Allard [Option ID = 8951]

**Correct Answer :-**

- Garner and Allard [Option ID = 8951]

**26) The bacterial DNA replication initiator protein is: [Question ID = 2258]**

1. OriC [Option ID = 9029]
2. DnaB [Option ID = 9030]
3. dnaG [Option ID = 9032]
4. dnaA [Option ID = 9031]

**Correct Answer :-**

- dnaA [Option ID = 9031]

**27) In Gymnosperms, the female gametophyte develops from the [Question ID = 2188]**

1. Nucellus cells [Option ID = 8751]
2. Haploid megaspore mother cell [Option ID = 8752]
3. Haploid megaspore [Option ID = 8749]
4. Diploid megaspore [Option ID = 8750]

**Correct Answer :-**

- Haploid megaspore [Option ID = 8749]

**28) Hyaline cells of leaves and retort cells facilitate high water holding capacity of the gametophore in**

**[Question ID = 2187]**

1. *Sphagnum* [Option ID = 8748]
2. *Funaria* [Option ID = 8747]
3. *Pellia* [Option ID = 8745]
4. *Porella* [Option ID = 8746]

**Correct Answer :-**

- *Sphagnum* [Option ID = 8748]

**29) Autotetraploids are often marked by the presence of [Question ID = 2207]**

1. univalents at Meiosis 1. [Option ID = 8827]
2. multivalents at Meiosis 1. [Option ID = 8826]
3. bridge at Meiosis 1. [Option ID = 8828]
4. bivalents at Meiosis 1. [Option ID = 8825]

**Correct Answer :-**

- multivalents at Meiosis 1. [Option ID = 8826]

**30) Phytochrome protein is a [Question ID = 2241]**

1. monomer [Option ID = 8961]
2. homodimer [Option ID = 8962]
3. heterodimer [Option ID = 8964]
4. tetramer [Option ID = 8963]

**Correct Answer :-**

- homodimer [Option ID = 8962]

**31) In bacteria, the membrane invaginations that initiate DNA replication are [Question ID = 2165]**

1. Nucleosomes [Option ID = 8659]
2. Mesosomes [Option ID = 8660]
3. Magnetosomes [Option ID = 8658]
4. Carboxysomes [Option ID = 8657]

**Correct Answer :-**

- Mesosomes [Option ID = 8660]

**32) In higher plants, Isopentenyl pyrophosphate (IPP) is formed via two different biosynthetic pathways occurring in [Question ID = 2242]**

1. mitochondria and chloroplast [Option ID = 8965]
2. ribosomes and chloroplast [Option ID = 8968]
3. cytoplasm and chloroplast [Option ID = 8966]
4. cytoplasm and mitochondria [Option ID = 8967]

**Correct Answer :-**

- cytoplasm and chloroplast [Option ID = 8966]

**33) Nuclear endosperm formation is characterized by [Question ID = 2231]**

1. Nuclear divisions accompanied by cell wall formation [Option ID = 8922]
2. Primary endosperm nucleus dividing to form a larger micropylar chamber and a smaller chalazal chamber [Option ID = 8924]
3. Autonomous development of endosperm without fertilization [Option ID = 8923]
4. Free nuclear divisions not accompanied by cell wall formation [Option ID = 8921]

**Correct Answer :-**

- Free nuclear divisions not accompanied by cell wall formation [Option ID = 8921]

**34) A specimen of a named taxon collected, usually later, from the original type locality is called: [Question ID = 2227]**

1. Isotype [Option ID = 8907]
2. Syntype [Option ID = 8908]
3. Neotype [Option ID = 8905]
4. Topotype [Option ID = 8906]

**Correct Answer :-**

- Topotype [Option ID = 8906]

**35) In case of *Paramecium aurelia*, allele K and kappa particles are interrelated. Which of the following is a wrong example of this interrelation?**

**[Question ID = 2208]**

1. In absence of K, kappa particle can multiply. [Option ID = 8831]
2. In absence of K, kappa particle cannot multiply. [Option ID = 8829]
3. In absence of pre-existing kappa particle, K cannot produce kappa particles. [Option ID = 8830]
4. In absence of kappa particle, presence of K results in a sensitive strain. [Option ID = 8832]

**Correct Answer :-**

- In absence of K, kappa particle can multiply. [Option ID = 8831]

**36) The enzyme responsible for the reduction of nitrogen into ammonia during biological nitrogen fixation is [Question ID = 2249]**

1. Nitrogenase [Option ID = 8996]
2. Nitrate reductase [Option ID = 8994]
3. Dinitrogenase [Option ID = 8993]

4. Hydrogenase [Option ID = 8995]

**Correct Answer :-**

- Nitrogenase [Option ID = 8996]

**37) Digitalin, a drug, is obtained from [Question ID = 2201]**

1. Common Foxglove [Option ID = 8801]
2. Sarpagandha [Option ID = 8803]
3. Dhatura [Option ID = 8804]
4. Belladonna [Option ID = 8802]

**Correct Answer :-**

- Common Foxglove [Option ID = 8801]

**38) In bryophytes, meiosis occurs in the [Question ID = 2186]**

1. sporogenous tissue to produce spores [Option ID = 8744]
2. gametangia to produce sperm and egg [Option ID = 8743]
3. gametophyte to produce gametangia [Option ID = 8741]
4. spores to produce protonema [Option ID = 8742]

**Correct Answer :-**

- sporogenous tissue to produce spores [Option ID = 8744]

**39) Wall ingrowths that impart sieve-like appearance to pits of vessels are termed as [Question ID = 2193]**

1. Crateriform pits. [Option ID = 8771]
2. Tyloses. [Option ID = 8772]
3. Vessel parenchyma pits. [Option ID = 8770]
4. Vestured pits. [Option ID = 8769]

**Correct Answer :-**

- Vestured pits. [Option ID = 8769]

**40) Gonimocarp is [Question ID = 2169]**

1. a collective name given to a bunch of filaments of haploid cells that produce carpospores. [Option ID = 8676]
2. a collective name for a structure formed by a group of gonimoblasts. [Option ID = 8675]
3. a bunch of filaments of diploid cells that produce carpospores. [Option ID = 8673]
4. a mass of diploid cells that produce carpospores. [Option ID = 8674]

**Correct Answer :-**

- a collective name for a structure formed by a group of gonimoblasts. [Option ID = 8675]

**41) In *Gnetum*,**

**[Question ID = 2189]**

1. archegonia remain in a group surrounded by a common jacket. [Option ID = 8754]
2. nuclei of some nucellar cells function as eggs. [Option ID = 8753]
3. there are no distinct archegonia and some free nuclei of female gametophyte function as eggs. [Option ID = 8756]
4. there are two distinct archegonia at the micropylar end of the female gametophyte. [Option ID = 8755]

**Correct Answer :-**

- there are no distinct archegonia and some free nuclei of female gametophyte function as eggs. [Option ID = 8756]

**42) In *Polygonum* type of embryo sac, which of the following is attached to the wall of the embryo sac, only at the micropylar end.**

**[Question ID = 2229]**

1. Central cell [Option ID = 8913]
2. Antipodal cells [Option ID = 8916]
3. Egg cell [Option ID = 8915]
4. Egg apparatus [Option ID = 8914]

**Correct Answer :-**

- Egg apparatus [Option ID = 8914]

**43) Near isogenic lines (NILs) are normally used for [Question ID = 2212]**

1. studying a single gene or locus controlling a particular trait. [Option ID = 8848]
2. studying QTLs located at various loci controlling a trait [Option ID = 8846]
3. studying QTLs coming from two parents [Option ID = 8847]
4. studying genes located at various loci controlling various traits [Option ID = 8845]

**Correct Answer :-**

- studying a single gene or locus controlling a particular trait. [Option ID = 8848]

**44) Plant cryptoviruses tend to escape detection because [Question ID = 2178]**

1. they are not transmitted by seed or pollen grains [Option ID = 8710]
2. they cause very mild or no visible symptoms [Option ID = 8709]
3. they occur as high copy number plasmid DNAs that can integrate into the host genome [Option ID = 8712]
4. their genome organization is not characteristic of plant viruses [Option ID = 8711]

**Correct Answer :-**

- they cause very mild or no visible symptoms [Option ID = 8709]

**45) Identify the correct target enzyme of Glyphosate during the development of herbicide tolerant plants: [Question ID = 2250]**

1. 3-enolphosphateshikimate-5-pyruvate synthase [Option ID = 9000]
2. 3-enolpyruvylshikimate-5-phosphate synthase [Option ID = 8998]
3. 5-enolphosphateshikimate-3-pyruvate synthase [Option ID = 8999]
4. 5-enolpyruvylshikimate-3-phosphate synthase [Option ID = 8997]

**Correct Answer :-**

- 5-enolpyruvylshikimate-3-phosphate synthase [Option ID = 8997]

**46) In competitive inhibition, an inhibitor [Question ID = 2243]**

1. binds covalently to the enzyme. [Option ID = 8971]
2. binds at several sites on an enzyme. [Option ID = 8972]
3. binds reversibly at the active site. [Option ID = 8969]
4. binds only to the enzyme-substrate complex. [Option ID = 8970]

**Correct Answer :-**

- binds reversibly at the active site. [Option ID = 8969]

**47) Dikaryotic hyphae are found in**

**1. Chytridiomycota**

**2. Zygomycota**

**3. Basidiomycota**

**4. Ascomycota [Question ID = 2180]**

1. 2 and 4 only [Option ID = 8718]
2. 1, 2 and 3 only [Option ID = 8717]
3. 1, 2 and 4 only [Option ID = 8720]
4. 3 and 4 only [Option ID = 8719]

**Correct Answer :-**

- 3 and 4 only [Option ID = 8719]

**48) The inhibitory effect of red light on flowering during critical dark period on short day plants can be overcome by [Question ID = 2240]**

1. infra-red light [Option ID = 8959]
2. far-red light [Option ID = 8957]
3. blue light [Option ID = 8958]
4. UV light [Option ID = 8960]

**Correct Answer :-**

- far-red light [Option ID = 8957]

**49) The relative proportion of sand, silt and clay in a soil refers to its [Question ID = 2214]**



1. texture [Option ID = 8854]
2. structure [Option ID = 8853]
3. profile [Option ID = 8855]
4. horizon [Option ID = 8856]

**Correct Answer :-**

- texture [Option ID = 8854]

**50) Gaia hypothesis states that [Question ID = 2218]**

1. Distribution of species is governed by certain limiting factors. [Option ID = 8871]
2. Species with less gestation period need more parental care. [Option ID = 8872]
3. Microorganisms create a conducive self-regulating control system for other species to exist. [Option ID = 8869]
4. No two organisms having the same ecological niche can coexist together indefinitely. [Option ID = 8870]

**Correct Answer :-**

- Microorganisms create a conducive self-regulating control system for other species to exist. [Option ID = 8869]

**51) During meiosis 1, formation of a ring involving four chromosomes is often an indication of [Question ID = 2209]**

1. paracentric inversion [Option ID = 8835]
2. deletion [Option ID = 8834]
3. tetraploidy [Option ID = 8833]
4. reciprocal translocation [Option ID = 8836]

**Correct Answer :-**

- reciprocal translocation [Option ID = 8836]

**52) Binary fission in bacteria involves all of the following except [Question ID = 2166]**

1. DNA duplication [Option ID = 8661]
2. Spindle formation [Option ID = 8662]
3. Cell elongation [Option ID = 8663]
4. cytokinesis [Option ID = 8664]

**Correct Answer :-**

- Spindle formation [Option ID = 8662]

**53) Passage cells are thin walled cells [Question ID = 2239]**

1. in testa of seeds to enable emergence of growing embryonic axis during seed germination. [Option ID = 8956]
2. in epidermis of roots and help in apoplast pathway. [Option ID = 8955]
3. in endodermis of roots facilitating rapid transport of water from cortex to pericycle. [Option ID = 8954]
4. in phloem elements and serve as entry for nutrients to be transported to other plant parts. [Option ID = 8953]

**Correct Answer :-**

- in endodermis of roots facilitating rapid transport of water from cortex to pericycle. [Option ID = 8954]

**54) The number of centrioles in a centrosome is: [Question ID = 2173]**

1. Six [Option ID = 8692]
2. One [Option ID = 8689]
3. Four [Option ID = 8691]
4. Two [Option ID = 8690]

**Correct Answer :-**

- Two [Option ID = 8690]

**55) The reaction center of anoxygenic purple photosynthetic bacteria [Question ID = 2247]**

1. was the second reaction center whose structure was resolved. [Option ID = 8988]
2. is similar to Photosystem I. [Option ID = 8986]
3. is similar to Photosystem II. [Option ID = 8985]
4. provided information about non-oxygenic photosynthesis. [Option ID = 8987]

**Correct Answer :-**

- is similar to Photosystem II. [Option ID = 8985]

**56) Nitrifying bacteria, sulfur-oxidizing bacteria and Methanogens are examples of [Question ID = 2164]**

1. Photolithotrophs [Option ID = 8654]
2. Chemolithotrophs [Option ID = 8653]
3. Phototrophs [Option ID = 8655]
4. Photo-organotrophs [Option ID = 8656]

**Correct Answer :-**

- Chemolithotrophs [Option ID = 8653]

**57) The correct order of various stages in the life cycle of a Myxomycetes is [Question ID = 2182]**

1. Myxamoeba, mycrocyt, swarmer, plasmodium, fructifications, zygote, sporangium, spores [Option ID = 8726]
2. Myxamoeba, mycrocyt, swarmer, zygote, plasmodium, fructifications, sporangium, spores [Option ID = 8725]
3. Myxamoeba, swarmer, plasmodium, fructifications, zygote, mycrocyt, sporangium, spores [Option ID = 8727]
4. Myxamoeba, swarmer, sporangium, spores, plasmodium, fructifications, zygote, mycrocyt [Option ID = 8728]

**Correct Answer :-**

- Myxamoeba, mycrocyt, swarmer, zygote, plasmodium, fructifications, sporangium, spores [Option ID = 8725]

**58) Which statement is INCORRECT about DNA barcoding? [Question ID = 2225]**

1. Barcoding uses a short DNA sequence for species identification. [Option ID = 8897]
2. Barcodes have proved useful in biosecurity. [Option ID = 8898]
3. DNA barcoding is commonly used for inferring phylogeny of land plants. [Option ID = 8900]
4. Morphologically indistinguishable taxa can be diagnosed without the need for live material. [Option ID = 8899]

**Correct Answer :-**

- DNA barcoding is commonly used for inferring phylogeny of land plants. [Option ID = 8900]

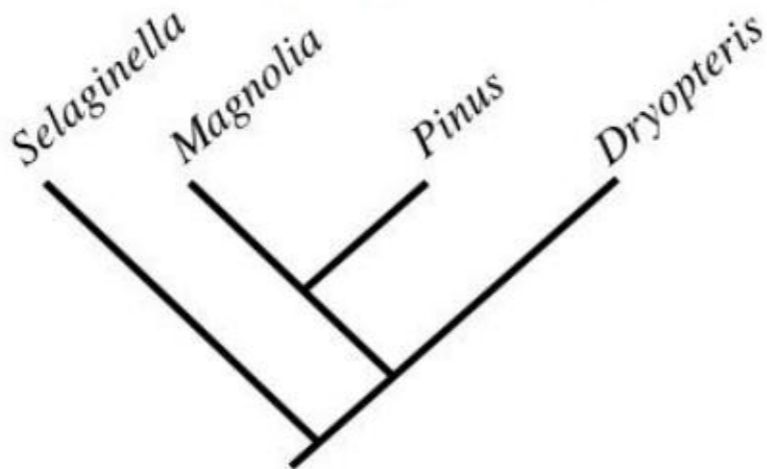
**59) Lint and fuzz are characteristic features of which one of the following fibres? [Question ID = 2204]**

1. Cotton [Option ID = 8815]
2. Flax [Option ID = 8816]
3. Jute [Option ID = 8813]
4. Coir [Option ID = 8814]

**Correct Answer :-**

- Cotton [Option ID = 8815]

**60) Based on the figure given below, mark the correct statement.**



**[Question ID = 2224]**

1. *Selaginella* is more closely related to *Magnolia* than to *Dryopteris*. [Option ID = 8894]
2. *Selaginella*, *Pinus* and *Dryopteris* form a polyphyletic group. [Option ID = 8895]
3. *Magnolia* and *Pinus* form a paraphyletic group. [Option ID = 8893]
4. *Magnolia* and *Pinus* form a monophyletic group. [Option ID = 8896]

**Correct Answer :-**

- *Magnolia* and *Pinus* form a monophyletic group. [Option ID = 8896]

**61) Methylation of 4th lysine on H3 Histone (H3K4), and that of 9th lysine on H3 (H3K9) is responsible for: [Question ID = 2262]**

1. Transcription activation, and chromatin condensation, respectively [Option ID = 9047]
2. Chromatin condensation, and Transcription activation, respectively [Option ID = 9048]
3. Chromatin condensation [Option ID = 9046]
4. telomeric silencing, and Nucleosome assembly, respectively [Option ID = 9045]

**Correct Answer :-**

- Transcription activation, and chromatin condensation, respectively [Option ID = 9047]

**62) Coir of commerce is [Question ID = 2206]**

1. A fibre derived from coconut epicarp. [Option ID = 8824]
2. a fibre made from coconut stems. [Option ID = 8822]
3. a fibre derived from coconut mesocarp [Option ID = 8823]
4. a fibre derived from coconut endosperm. [Option ID = 8821]

**Correct Answer :-**

- a fibre derived from coconut mesocarp [Option ID = 8823]

**63) In Angiosperm Phylogeny Group (APG) classification, which one of the following is the basal family in angiosperms? [Question ID = 2226]**

1. Nymphaeaceae [Option ID = 8902]
2. Ranunculaceae [Option ID = 8903]
3. Amborellaceae [Option ID = 8901]
4. Brassicaceae [Option ID = 8904]

**Correct Answer :-**

- Amborellaceae [Option ID = 8901]

**64) The major component of the edible part of cereal grains is [Question ID = 2205]**

1. Endosperm [Option ID = 8820]
2. Cotyledon [Option ID = 8817]
3. Perisperm [Option ID = 8819]
4. Seed coat [Option ID = 8818]

**Correct Answer :-**

- Endosperm [Option ID = 8820]

**65) Which of the following is NOT involved in photorespiration? [Question ID = 2246]**

1. Mitochondria [Option ID = 8984]
2. Rubisco [Option ID = 8981]
3. Peroxisome [Option ID = 8982]
4. PEP carboxylase [Option ID = 8983]

**Correct Answer :-**

- PEP carboxylase [Option ID = 8983]

**66) Which of the following represents Fischer projection of an amino acid? [Question ID = 2170]**

1. Wedges depicting bonds that are assumed to project out of the plane of the page away from the viewer [Option ID = 8680]
2. Wedges depicting bonds that are assumed to project out of the plane of the page towards the viewer [Option ID = 8679]
3. Vertical lines depicting bonds that are assumed to project out of the page towards the viewer [Option ID = 8678]
4. Horizontal lines depicting bonds that are assumed to project out of the page towards the viewer [Option ID = 8677]

**Correct Answer :-**

- Horizontal lines depicting bonds that are assumed to project out of the page towards the viewer [Option ID = 8677]

**67) Which of the following arrangements of four nuclei in a coenomegaspore is not observed before mitosis? [Question ID = 2230]**

1. 1+1+1+1 arrangement [Option ID = 8918]
2. 1+3 arrangement [Option ID = 8919]
3. 2+2 arrangement [Option ID = 8917]
4. 2+1+1 arrangement [Option ID = 8920]

**Correct Answer :-**

- 2+1+1 arrangement [Option ID = 8920]

**68) Which of the following macroscopic disease symptoms is NOT typical of virus infections in plants? [Question ID = 2184]**

1. Stunting due to reduction in internode lengths [Option ID = 8733]
2. Mosaics, ring spots and vein clearing of leaves [Option ID = 8734]
3. Epinasty and development of leaf enations [Option ID = 8735]

4. Pustules, streaks and blotches on leaves [Option ID = 8736]

**Correct Answer :-**

- Pustules, streaks and blotches on leaves [Option ID = 8736]

**69) Which of the following is NOT a function of virus-induced cytoplasmic "inclusion bodies"?** [Question ID = 2179]

1. Triggering innate immunity in host cell [Option ID = 8716]
2. Regulation of virus replication so as to not destroy the host cell [Option ID = 8713]
3. Sequestration of viral proteases and replicases [Option ID = 8715]
4. Aggregation of deleterious viral gene products [Option ID = 8714]

**Correct Answer :-**

- Triggering innate immunity in host cell [Option ID = 8716]

**70) Which of the following statements is FALSE for cis-trans complementation test?** [Question ID = 2211]

1. The test cannot be used for alleles exhibiting intragenic complementation. [Option ID = 8844]
2. Two mutations that complement each other belong to different genes. [Option ID = 8843]
3. Mutations dominant to the wild type cannot be used for the test. [Option ID = 8841]
4. Mutations recessive to the wild type cannot be used for the test. [Option ID = 8842]

**Correct Answer :-**

- Mutations recessive to the wild type cannot be used for the test. [Option ID = 8842]

**71) Which of the following biogeochemical element is NOT a nutrient?** [Question ID = 2217]

1. Nitrogen [Option ID = 8865]
2. Phosphorus [Option ID = 8867]
3. Sulphur [Option ID = 8866]
4. Carbon [Option ID = 8868]

**Correct Answer :-**

- Carbon [Option ID = 8868]

**72) Which one of the following is NOT associated with anomalous secondary growth in stems?** [Question ID = 2199]

1. Intraxylary secondary phloem. [Option ID = 8793]
2. Medullary rays. [Option ID = 8794]
3. Accessory cambia. [Option ID = 8795]
4. Rhytidome. [Option ID = 8796]

**Correct Answer :-**

- Rhytidome. [Option ID = 8796]

**73) Which one of the following is a correct representation of cloning vectors in descending order (from L to R) of insert size that may be cloned in the vector?** [Question ID = 2256]

1. L : BAC – YAC – Phagemid – Cosmid : R [Option ID = 9023]
2. L : Plasmid – Cosmid – MAC – YAC : R [Option ID = 9021]
3. L : YAC – BAC – Cosmid – Phage : R [Option ID = 9024]
4. L : MAC – YAC – Plasmid – Cosmid : R [Option ID = 9022]

**Correct Answer :-**

- L : YAC – BAC – Cosmid – Phage : R [Option ID = 9024]

**74) Which one of the following is a characteristic of Ecosystem Cybernetics?** [Question ID = 2219]

1. Higher resilience only [Option ID = 8876]
2. Higher resistance only [Option ID = 8873]
3. Neutral feedback mechanism [Option ID = 8875]
4. Negative feedback mechanism [Option ID = 8874]

**Correct Answer :-**

- Negative feedback mechanism [Option ID = 8874]

**75) Which one of the following is an inhibitor of alternative oxidase?** [Question ID = 2244]

1. Tungstate [Option ID = 8975]
2. Salicyl hydroxamic acid [Option ID = 8976]

3. Cyanide [Option ID = 8974]
4. Rotenone [Option ID = 8973]

**Correct Answer :-**

- Salicyl hydroxamic acid [Option ID = 8976]

**76) Which one of the following is an achiral amino acid? [Question ID = 2171]**

1. Leucine [Option ID = 8683]
2. Glycine [Option ID = 8682]
3. Alanine [Option ID = 8681]
4. Valine [Option ID = 8684]

**Correct Answer :-**

- Glycine [Option ID = 8682]

**77) Which one of the following statements is NOT correct? [Question ID = 2255]**

1. A circular DNA molecule with two sites for a restriction enzyme, 'A' would produce two circular fragments on digestion with 'A'. [Option ID = 9019]
2. Histochemical detection of GUS is lethal to the cells whereas GFP assay do not affect the cell viability. [Option ID = 9020]
3. Compatible cohesive ends of DNA fragments can be re-ligated. [Option ID = 9017]
4. PCR using Taq polymerase generates amplified fragments with 'A' nucleotide(s) overhangs at their 3' ends. [Option ID = 9018]

**Correct Answer :-**

- A circular DNA molecule with two sites for a restriction enzyme, 'A' would produce two circular fragments on digestion with 'A'. [Option ID = 9019]

**78) Which one of the following statements is NOT true? [Question ID = 2245]**

1. Triacylglycerols are the major lipids stored in seeds. [Option ID = 8979]
2. Complete oxidation of 1 gm lipid would produce more energy than oxidation of 1 gm of carbohydrate. [Option ID = 8980]
3. Lipids are a more reduced form of carbon than carbohydrates. [Option ID = 8977]
4. Waxes are not lipids. [Option ID = 8978]

**Correct Answer :-**

- Waxes are not lipids. [Option ID = 8978]

**79) Which one of the following statements is NOT true? [Question ID = 2248]**

1. Starch synthesis is related to Calvin Cycle. [Option ID = 8991]
2. Starch is a soluble carbohydrate reserve. [Option ID = 8992]
3. Starch is synthesized from triose phosphate. [Option ID = 8990]
4. Starch is synthesized in the chloroplast. [Option ID = 8989]

**Correct Answer :-**

- Starch is a soluble carbohydrate reserve. [Option ID = 8992]

**80) Which one of the following statements about dendrograms is correct? [Question ID = 2221]**

1. A cladogram reflects overall similarities among OTUs. [Option ID = 8884]
2. A cladogram represents evolutionary relationships among OTUs. [Option ID = 8883]
3. A phylogram is the same as a phenogram. [Option ID = 8881]
4. A phenogram represents evolutionary relationships among OTUs. [Option ID = 8882]

**Correct Answer :-**

- A cladogram represents evolutionary relationships among OTUs. [Option ID = 8883]

**81) Which one of the following statements about phellogen is correct? [Question ID = 2197]**

1. Following a periclinal division in a parenchyma cell, the larger of the two daughter cells becomes a phellogen while the smaller differentiates into a phellogen cell. [Option ID = 8786]
2. Phellogen initials arise through dedifferentiation of parenchyma cells. [Option ID = 8785]
3. Phellogen produces smaller quantities of phellogen cells than phellogen cells. [Option ID = 8787]
4. Phellogen is formed to the interior of phellogen. [Option ID = 8788]

**Correct Answer :-**

- Phellogen initials arise through dedifferentiation of parenchyma cells. [Option ID = 8785]

**82) Which one of the following features is NOT found in leaves having Kranz anatomy? [Question ID = 2195]**

1. Dimorphic chloroplasts. [Option ID = 8777]

2. Bundle sheath cells arranged in a wreath-like manner. [Option ID = 8779]
3. Bundle sheath cells lacking chloroplasts. [Option ID = 8780]
4. Vascular bundles surrounded by two layers of cells. [Option ID = 8778]

**Correct Answer :-**

- Bundle sheath cells lacking chloroplasts. [Option ID = 8780]

**83) Competitive inhibitors and uncompetitive inhibitors**

**[Question ID = 2174]**

1. increase and decrease apparent value of  $K_M$ , respectively [Option ID = 8696]
2. decrease and increase apparent value of  $K_M$ , respectively [Option ID = 8694]
3. both increase apparent value of  $K_M$  [Option ID = 8695]
4. both decrease apparent value of  $K_M$  [Option ID = 8693]

**Correct Answer :-**

- increase and decrease apparent value of  $K_M$ , respectively [Option ID = 8696]

**84) Root system in geophytes is of [Question ID = 2194]**

1. adventitious type. [Option ID = 8776]
2. cluster type. [Option ID = 8773]
3. plagiogeotrophic type. [Option ID = 8774]
4. contractile type. [Option ID = 8775]

**Correct Answer :-**

- contractile type. [Option ID = 8775]

**85) Mechanical transmission of plant viruses in indicator plants was first demonstrated for**

**[Question ID = 2177]**

1. *Tomato spotted wilt virus* [Option ID = 8705]
2. *Tobacco rattle virus* [Option ID = 8708]
3. *Tobacco mosaic virus* [Option ID = 8707]
4. *Tomato leaf curl virus* [Option ID = 8706]

**Correct Answer :-**

- *Tobacco mosaic virus* [Option ID = 8707]

**86) Chalazosperm in *Cyanastrum* refers to**

**[Question ID = 2232]**

1. chalazal chamber formed in the helobial endosperm [Option ID = 8927]
2. its endosperm [Option ID = 8925]
3. the region connecting embryo and endosperm [Option ID = 8928]
4. nucellar cells in the chalazal region [Option ID = 8926]

**Correct Answer :-**

- nucellar cells in the chalazal region [Option ID = 8926]

**87) Polymerase switch involves replacement of [Question ID = 2261]**

1. DNA polymerase  $\epsilon$  by DNA polymerase  $\delta$  and DNA polymerase  $\alpha$  on leading and lagging strands, respectively [Option ID = 9042]
2. DNA polymerase  $\gamma$  by DNA polymerase  $\zeta$  and DNA polymerase  $\epsilon$  on leading and lagging strands, respectively [Option ID = 9043]
3. DNA polymerase  $\alpha$  by DNA polymerase  $\epsilon$  and DNA polymerase  $\delta$  on leading and lagging strands, respectively [Option ID = 9041]
4. DNA polymerase  $\alpha$  by DNA polymerase  $\delta$  and DNA polymerase  $\epsilon$  on leading and lagging strands, respectively [Option ID = 9044]

**Correct Answer :-**

- DNA polymerase  $\alpha$  by DNA polymerase  $\epsilon$  and DNA polymerase  $\delta$  on leading and lagging strands, respectively [Option ID = 9041]

**88) Cylindrical or bar-like structures extending across the lumen of a tracheid from one tangential wall to another are known as [Question ID = 2192]**

1. Verrucae. [Option ID = 8766]
2. Strand tracheids. [Option ID = 8768]

3. Trabeculae. [Option ID = 8767]
4. Ray tracheids. [Option ID = 8765]

**Correct Answer :-**

- Trabeculae. [Option ID = 8767]

**89) An *Escherichia coli* loss-of-function mutant, *ftsZ*, cannot perform the function of**

**[Question ID = 2259]**

1. Sugar uptake [Option ID = 9036]
2. Septum formation [Option ID = 9035]
3. Endocytosis [Option ID = 9033]
4. Exocytosis [Option ID = 9034]

**Correct Answer :-**

- Septum formation [Option ID = 9035]

**90) A trace element essential for plant growth and radioactive isotope used in cancer therapy is [Question ID = 2236]**

1. Iron [Option ID = 8942]
2. Calcium [Option ID = 8941]
3. Cobalt [Option ID = 8943]
4. Sodium [Option ID = 8944]

**Correct Answer :-**

- Cobalt [Option ID = 8943]

**91) The perennating buds of which one of the following is located on the ground surface and is protected by soil or litter? [Question ID = 2220]**

1. Cryptophytes [Option ID = 8880]
2. Therophytes [Option ID = 8879]
3. Chamaephytes [Option ID = 8877]
4. Hemicryptophytes [Option ID = 8878]

**Correct Answer :-**

- Hemicryptophytes [Option ID = 8878]

**92) The fruiting bodies in *Agaricus* and *Morchella* are**

**[Question ID = 2183]**

1. Basidiocarps and Ascocarps, respectively [Option ID = 8730]
2. Basidiocarps [Option ID = 8731]
3. Ascocarps and Basidiocarps, respectively [Option ID = 8732]
4. Ascocarps [Option ID = 8729]

**Correct Answer :-**

- Basidiocarps and Ascocarps, respectively [Option ID = 8730]

**93) The 5' – 3' nucleotide sequence of one of the strands of a double stranded DNA molecule is given below: 5' – CGATGACGATGACGATGACGTTTACAGATGACGATATGACGATGAC – 3' .**

**In the absence of Tm effects, which of the following sets of primers could, theoretically, be used to amplify the target sequence by PCR?**

**[Question ID = 2257]**

1. 5' – GCTACTG – 3' and 5' – CGATGAC – 3' [Option ID = 9027]
2. 5' – GCTACTG – 3' and 5' – GTCATCG – 3' [Option ID = 9028]
3. 5' – CGATGAC – 3' and 5' – CAGTAGC – 3' [Option ID = 9025]
4. 5' – GTCATCG – 3' and 5' – CGATGAC – 3' [Option ID = 9026]

**Correct Answer :-**

- 5' – GTCATCG – 3' and 5' – CGATGAC – 3' [Option ID = 9026]

**94) The formation of a restitution nucleus is a characteristic feature of**

**[Question ID = 2213]**

1. Aposporous type of embryo sac development [Option ID = 8849]
2. *Taraxacum* type of diplospory [Option ID = 8850]
3. *Antennaria* type of diplospory [Option ID = 8851]
4. Adventive embryony [Option ID = 8852]

**Correct Answer :-**

- *Taraxacum* type of diplospory [Option ID = 8850]

**95) The helicase function in eukaryotes and *Escherichia coli* are performed by**

**[Question ID = 2260]**

1. by MCM in both [Option ID = 9037]
2. MCM and DnaB, respectively [Option ID = 9040]
3. SSB, and DnaB, respectively [Option ID = 9039]
4. DnaC, and DnaB, respectively [Option ID = 9038]

**Correct Answer :-**

- MCM and DnaB, respectively [Option ID = 9040]

**96) The genetic material of Tobacco Mosaic Virus is a**

**[Question ID = 2163]**

1. dsDNA [Option ID = 8649]
2. ssRNA [Option ID = 8650]
3. ssDNA [Option ID = 8652]
4. dsRNA [Option ID = 8651]

**Correct Answer :-**

- ssRNA [Option ID = 8650]

**97) The bundles of microtubules and associated proteins responsible for structure and movement of flagella is known as**

**[Question ID = 2176]**

1. Mastigoneme [Option ID = 8701]
2. Axoneme [Option ID = 8702]
3. Epieme [Option ID = 8704]
4. Exineme [Option ID = 8703]

**Correct Answer :-**

- Axoneme [Option ID = 8702]

**98) A type of stele in which groups of xylem surrounded by phloem are arranged around central pith, with closely spaced leaf gaps, is called [Question ID = 2191]**

1. Protostele [Option ID = 8761]
2. Dictyostele [Option ID = 8763]
3. Plectostele [Option ID = 8764]
4. Eustele [Option ID = 8762]

**Correct Answer :-**

- Dictyostele [Option ID = 8763]

**99) Permafrost is present in which one of the following terrestrial biomes? [Question ID = 2216]**

1. Tropical rain forest [Option ID = 8863]
2. Chapparals [Option ID = 8864]
3. Tundra [Option ID = 8861]
4. Temperate rain forest [Option ID = 8862]

**Correct Answer :-**

- Tundra [Option ID = 8861]

**100) One of the following plant species exhibits all possible types of configurations of microspore tetrads during microsporogenesis.**



**[Question ID = 2233]**

1. *Aeschynomene indica*. [Option ID = 8929]
2. *Amorphophallus titanum*. [Option ID = 8930]
3. *Amborella trichopoda*. [Option ID = 8931]
4. *Aristolochia elegans*. [Option ID = 8932]

**Correct Answer :-**

- *Aristolochia elegans*. [Option ID = 8932]