

# DU MSc Botany

Topic:- DU\_J19\_MSC\_BOT

**1) Which of the following statements on filiform apparatus is not correct?**

**[Question ID = 2404]**

1. It determines the polarity of the egg apparatus. [Option ID = 9616]
2. It is a highly convoluted extension of the micropylar portion of the synergid wall. [Option ID = 9613]
3. It increases the surface area of the plasma membrane of synergids. [Option ID = 9614]
4. It controls pollen tube growth. [Option ID = 9615]

**Correct Answer :-**

- It determines the polarity of the egg apparatus. [Option ID = 9616]

**2) Which of the following statements is not correct about aquaporins?**

**[Question ID = 2413]**

1. Phosphorylation and calcium concentration regulates aquaporin activity. [Option ID = 9650]
2. Aquaporins cannot transport uncharged molecules like  $\text{NH}_3$ . [Option ID = 9652]
3. Aquaporins are found in both plant and animal cell membranes. [Option ID = 9649]
4. Activity of aquaporin is regulated by pH and reactive oxygen species. [Option ID = 9651]

**Correct Answer :-**

- Aquaporins cannot transport uncharged molecules like  $\text{NH}_3$ . [Option ID = 9652]

**3) Which of the following statements is NOT correct about *Gnetum*?**

**[Question ID = 2368]**

1. Tapetal layer is completely absent in the microsporangium. [Option ID = 9470]
2. There are no distinct archegonia, and some free nuclei of the female gametophyte function as eggs. [Option ID = 9472]
3. The female gametophyte is formed before fertilization. [Option ID = 9471]
4. The secondary wood contains vessels. [Option ID = 9469]

**Correct Answer :-**

- Tapetal layer is completely absent in the microsporangium. [Option ID = 9470]

**4) Which of the following statement is not true about lenticels?**

**[Question ID = 2371]**

1. They are formed by the higher activity of phellogen in some limited areas of the periderm [Option ID = 9481]
2. They start appearing during the early stages of primary growth [Option ID = 9484]
3. They are found in stems as well as roots [Option ID = 9483]
4. They permit the entry of air through the peridem [Option ID = 9482]

**Correct Answer :-**

- They start appearing during the early stages of primary growth [Option ID = 9484]

**5) Which of the following is not true about the classic experiment carried out to study the nature of mutations by the 1969 Nobel prize-winning team of Max Luria and Salvador Delbruck?**

**[Question ID = 2392]**

1. Equal number of T1 phage resistant colonies were obtained in all the plates. [Option ID = 9568]
2. It demonstrated that genetic mutations arise in the absence of selection, and not as a response to selection. [Option ID = 9566]
3. It is also called as Fluctuation Test [Option ID = 9565]
4. They inoculated equal number of *E. coli* into separate culture tubes with and without T1 phage. [Option ID = 9567]

**Correct Answer :-**

- Equal number of T1 phage resistant colonies were obtained in all the plates. [Option ID = 9568]

**6) Which of the following chemical substances are secreted by some animals for communication with other members of their species?**

**[Question ID = 2401]**

1. Terpenoids [Option ID = 9603]
2. Pheromones [Option ID = 9604]
3. Alkaloids [Option ID = 9601]
4. Phenols [Option ID = 9602]

**Correct Answer :-**

- Pheromones [Option ID = 9604]

**7) Which of the following is the regulatory body conferring approval for transgenic plants?**

**[Question ID = 2431]**

1. NBRI [Option ID = 9724]
2. GEAC [Option ID = 9723]
3. NBPGR [Option ID = 9721]
4. NBA [Option ID = 9722]

**Correct Answer :-**

- GEAC [Option ID = 9723]

**8) Which of the following parts is not observed in a mature seed-coat?**

**[Question ID = 2407]**

1. Aril [Option ID = 9628]
2. Epidermis [Option ID = 9625]
3. Aerenchyma [Option ID = 9626]
4. Hypodermis [Option ID = 9627]

**Correct Answer :-**

- Aril [Option ID = 9628]

**9) Which type of wood is found in *Pinus* and *Cycas*?**

**[Question ID = 2367]**

1. Manoxylic in *Pinus*, and pycnoxylic in *Cycas* [Option ID = 9466]
2. Manoxylic in both [Option ID = 9468]
3. Pycnoxylic in both [Option ID = 9467]
4. Pycnoxylic in *Pinus*, and manoxylic in *Cycas* [Option ID = 9465]

**Correct Answer :-**

- Pycnoxylic in *Pinus*, and manoxylic in *Cycas* [Option ID = 9465]

**10) Which one of the following is the most primitive basal angiosperm?**

**[Question ID = 2434]**

1. *Nymphaea* [Option ID = 9734]
2. *Hibiscus* [Option ID = 9736]
3. *Amborella* [Option ID = 9733]
4. *Magnolia* [Option ID = 9735]

**Correct Answer :-**

- *Amborella* [Option ID = 9733]

**11) Which one of the following sets of compounds is used as biopesticides?**

**[Question ID = 2384]**

1. Pyrethrin, Azadirachtin, Spilanthol [Option ID = 9533]
2. Pyrethrin, Jatrophine, Curcumin [Option ID = 9535]
3. Capsaicin, Citronella oil, Piperine [Option ID = 9536]
4. Azadirachtin, Taxol, Curcumin [Option ID = 9534]

**Correct Answer :-**

- Pyrethrin, Azadirachtin, Spilanthol [Option ID = 9533]

**12) Which one of the following statements about cDNA libraries is not correct?**

**[Question ID = 2428]**

1. They can be used to study quantitative variations in gene expressions levels between different tissues [Option ID = 9711]
2. They can be used to analyse variations in gene expression patterns between different developmental stages of a plant [Option ID = 9712]
3. They can be used to study alternatively spliced forms of a gene [Option ID = 9710]
4. They are generally composed of larger fragments as compared to genomic DNA libraries [Option ID = 9709]

**Correct Answer :-**

- They are generally composed of larger fragments as compared to genomic DNA libraries [Option ID = 9709]

**13) Which one of the following statements is not correct?**

**[Question ID = 2436]**

1. Keys are based on phylogeny. [Option ID = 9744]
2. In a taxonomic key, the two leads together comprise a couplet. [Option ID = 9743]
3. All keys comprise sequence of two contrasting statements, each statement is known as a lead. [Option ID = 9742]
4. All taxonomic keys are dichotomous. [Option ID = 9741]

**Correct Answer :-**

**14) Which one of the following statements is not true?**

**[Question ID = 2444]**

1. Cremocarp is characterstic fruit of Apiaceae [Option ID = 9776]
2. Cypsela is characteristic fruit of Poaceae [Option ID = 9775]
3. Verticillaster is the characteristic inflorescence of Lamiaceae. [Option ID = 9774]
4. The grouping of taxa by overall similarity is called phenetics. [Option ID = 9773]

**Correct Answer :-**

- Cypsela is characteristic fruit of Poaceae [Option ID = 9775]

**15) Which one of the following statements is not true for aposporous embryo sac development?**

**[Question ID = 2408]**

1. Three megaspores degenerate while functional haploid megaspore undergoes megagametogenesis. [Option ID = 9630]
2. All the four megaspores degenerate while an aposporous initial forms the embryo sac. [Option ID = 9631]
3. Tetrad is surrounded by a callose wall. [Option ID = 9632]
4. The first and second meiotic divisions result in a tetrad of megaspores. [Option ID = 9629]

**Correct Answer :-**

- Three megaspores degenerate while functional haploid megaspore undergoes megagametogenesis. [Option ID = 9630]

**16) Which one of the following statements is false for a population that is under natural selection?**

**[Question ID = 2388]**

1. At a given point of time, the sum total of all genotypic frequencies is equal to 1. [Option ID = 9552]
2. At a given point of time for any given bi-allelic gene, the sum of the allele frequencies would be equal to one. [Option ID = 9551]
3. The genotypic frequencies can be estimated if the allele frequencies are known. [Option ID = 9550]
4. The population will not exhibit Hardy-Weinberg equilibrium. [Option ID = 9549]

**Correct Answer :-**

- The genotypic frequencies can be estimated if the allele frequencies are known. [Option ID = 9550]

**17) Which one of the following statements is not correct?**

**[Question ID = 2363]**

1. In bryophytes, meiosis occurs in the gametangia to produce sperms and eggs [Option ID = 9449]

2. Amphigastria are found in *Porella* [Option ID = 9451]
3. In *Anthoceros*, each cell contains single large chloroplast with a pyrenoid [Option ID = 9450]
4. In *Funaria*, the dominant stage of life cycle is gametophytic [Option ID = 9452]

**Correct Answer :-**

- In bryophytes, meiosis occurs in the gametangia to produce sperms and eggs [Option ID = 9449]

**18) Which one of the following is not a constituent of an ayurvedic herbal formulation, 'Trifala'?**

**[Question ID = 2381]**

1. *Emblica officinalis* [Option ID = 9524]
2. *Terminalia bellerica* [Option ID = 9521]
3. *Terminalia arjuna* [Option ID = 9522]
4. *Terminalia officinalis* [Option ID = 9523]

**Correct Answer :-**

- *Terminalia arjuna* [Option ID = 9522]

**19) Which one of the following is not a member of Poaceae?**

**[Question ID = 2440]**

1. *Hordeum vulgare* [Option ID = 9757]
2. *Triticum aestivum* [Option ID = 9758]
3. *Secale cereale* [Option ID = 9760]
4. *Cynodon dactylon* [Option ID = 9759]

**Correct Answer :-**

**20) Which one of the following is not found in *Marchantia* ?**

**[Question ID = 2365]**

1. Barrel shaped epidermal pores in the thallus [Option ID = 9458]
2. Smooth walled as well as tuberculated rhizoids [Option ID = 9457]
3. Filamentous protonema [Option ID = 9460]
4. Elaters [Option ID = 9459]

**Correct Answer :-**

- Filamentous protonema [Option ID = 9460]

**21) Which one of the following contributes to the formation of peatlands?**

**[Question ID = 2362]**

1. *Sphagnum* [Option ID = 9448]
2. *Riccia* [Option ID = 9445]
3. *Porella* [Option ID = 9446]
4. *Cooksonia* [Option ID = 9447]

**Correct Answer :-**

- *Sphagnum* [Option ID = 9448]

**22) Which one of the following crops was the first to have its nuclear genome sequenced?**

**[Question ID = 2429]**

1. Maize [Option ID = 9713]
2. Barley [Option ID = 9716]
3. Rice [Option ID = 9715]
4. Wheat [Option ID = 9714]

**Correct Answer :-**

- Rice [Option ID = 9715]

**23) Which one of the following is considered to be a signal metabolite that regulates the partitioning between sucrose and starch synthesis?**

**[Question ID = 2423]**

1. Fructose 6-phosphate [Option ID = 9691]
2. Fructose 2-phosphate [Option ID = 9692]
3. Fructose-2, 6-bisphosphate [Option ID = 9689]
4. Fructose-1, 6-bisphosphate [Option ID = 9690]

**Correct Answer :-**

- Fructose-2, 6-bisphosphate [Option ID = 9689]

**24) Which one of the following is an incorrect combination?**

**[Question ID = 2383]**

1. *Diospyros melanoxylon* – Indian beedi [Option ID = 9530]
2. *Cichorium intybus* – khus-khus [Option ID = 9532]
3. *Pongamia pinnata* – biodiesel [Option ID = 9531]
4. *Betula bhojpatra* – bhojpatra [Option ID = 9529]

**Correct Answer :-**

- *Cichorium intybus* – khus-khus [Option ID = 9532]

**25) Which one of the following genes does not confer resistance to a herbicide?**

**[Question ID = 2427]**

1. *ALS* [Option ID = 9707]
2. *nptII* [Option ID = 9708]
3. *EPSPS* [Option ID = 9705]
4. *pat* [Option ID = 9706]

**Correct Answer :-**

- *nptII* [Option ID = 9708]

**26) Which series is not included in the Gamopetalae in Bentham and Hooker's system of classification?**

**[Question ID = 2442]**

1. Inferae [Option ID = 9765]

2. Heteromerae [Option ID = 9766]
3. Bicarpoellatae [Option ID = 9767]
4. Thalamiflorae [Option ID = 9768]

**Correct Answer :-**

- Thalamiflorae [Option ID = 9768]

**27) Algae that grow at the interface of water and atmosphere are called as [Question ID = 2349]**

1. epipelagic [Option ID = 9393]
2. benthic [Option ID = 9396]
3. planktonic [Option ID = 9395]
4. neustonic [Option ID = 9394]

**Correct Answer :-**

- neustonic [Option ID = 9394]

**28) In non-graminaceous plant roots, iron is transported across the plasma membrane as [Question ID = 2417]**

1. Both ferrous and ferric ions [Option ID = 9665]
2. Ferrous ions [Option ID = 9667]
3. Ferric ions [Option ID = 9668]
4. Fe-Chelate [Option ID = 9666]

**Correct Answer :-**

- Ferrous ions [Option ID = 9667]

**29) In root nodules of legumes, leg-haemoglobin is important because it [Question ID = 2415]**

1. transports oxygen to the root nodule. [Option ID = 9657]
2. acts as a catalyst in transamination. [Option ID = 9660]
3. acts as an oxygen scavenger. [Option ID = 9658]
4. provides energy to the nitrogen fixing bacterium. [Option ID = 9659]

**Correct Answer :-**

- acts as an oxygen scavenger. [Option ID = 9658]

**30) Hygroscopic fibers located in the reaction wood are termed as [Question ID = 2376]**

1. fiber-tracheids [Option ID = 9504]
2. libriform fibers [Option ID = 9502]
3. gelatinous fibers [Option ID = 9503]
4. substitute fibers [Option ID = 9501]

**Correct Answer :-**

- gelatinous fibers [Option ID = 9503]

**31) Three-dimensional structures of a cell can be studied by using which of the following microscopes? [Question ID = 2348]**

1. Fluorescent [Option ID = 9391]
2. Phase contrast [Option ID = 9390]
3. Differential interference contrast [Option ID = 9392]
4. Bright field [Option ID = 9389]

**Correct Answer :-**

- Differential interference contrast [Option ID = 9392]

**32) Buzz pollination is associated with flowers, wherein the anthers exhibit**

**[Question ID = 2411]**

1. poricidal dehiscence. [Option ID = 9643]
2. explosive dehiscence. [Option ID = 9644]
3. longitudinal dehiscence. [Option ID = 9641]
4. valvular dehiscence. [Option ID = 9642]

**Correct Answer :-**

- poricidal dehiscence. [Option ID = 9643]

**33) A distribution in which individuals within a population have an equal chance of living anywhere within an area is called as**

**[Question ID = 2400]**

1. Random. [Option ID = 9597]
2. Contiguous. [Option ID = 9600]
3. Regular. [Option ID = 9598]
4. Clumped. [Option ID = 9599]

**Correct Answer :-**

- Random. [Option ID = 9597]

**34) The term 'Glabrous' refers to [Question ID = 2373]**

1. sparsely hairy. [Option ID = 9491]
2. lack of trichomes. [Option ID = 9489]
3. presence of glandular trichomes. [Option ID = 9492]
4. presence of bristly hair. [Option ID = 9490]

**Correct Answer :-**

- lack of trichomes. [Option ID = 9489]

**35) Identify the incorrect combination from the following:**

**[Question ID = 2432]**

1. Somaclonal variation – F.C. Steward [Option ID = 9727]
2. GUS reporter system – R.A. Jefferson [Option ID = 9728]
3. Protoplast – E.C. Cocking [Option ID = 9725]
4. Edible vaccine – C.J. Arntzen [Option ID = 9726]

**Correct Answer :-**

- Somaclonal variation – F.C. Steward [Option ID = 9727]



**36) Two different DNA molecules were isolated from a bacterial sample. Further experiments demonstrated that one of these (X) was composed of 40%A, 40%G, 10%T and 10%C but could not be cut by an exonuclease. The second DNA sample (Y) could be cut by the exonuclease and was found to be composed of 30%A, 30%T, 20%G and 20%C. Which one of the following statements can be correctly deduced from the above?**

**[Question ID = 2424]**

1. DNA Y has a double-stranded and circular structure [Option ID = 9694]
2. DNA X has a single-stranded and linear structure [Option ID = 9695]
3. DNA X has a single-stranded and circular structure [Option ID = 9696]
4. DNA X has a double-stranded and linear structure [Option ID = 9693]

**Correct Answer :-**

- DNA X has a single-stranded and circular structure [Option ID = 9696]

**37) A binomial in which the genus name and specific epithet are identical in spelling is called**

**[Question ID = 2439]**

1. Autonym [Option ID = 9753]
2. Basionym [Option ID = 9756]
3. Tautonym [Option ID = 9754]
4. Synonym [Option ID = 9755]

**Correct Answer :-**

- Tautonym [Option ID = 9754]

**38) A plant heterozygous for two tightly linked genes A and B, has the genotype AB/ab. Which of the following statements is true when the plant is self-pollinated?**

**[Question ID = 2393]**

1. Both loci will segregate in a 3:1 ratio. [Option ID = 9571]
2. Gametes with genotype AB and ab will be less than those with aB and Ab. [Option ID = 9570]
3. The percentage of all the four types of gametes (AB, ab, Ab, aB) would be equal. [Option ID = 9569]
4. The segregation ratio of the two genes will depend upon the distance between them. [Option ID = 9572]

**Correct Answer :-**

- Both loci will segregate in a 3:1 ratio. [Option ID = 9571]

**39) The study of man-made areas with complex, dynamic ecological systems, influenced by interconnected biological, physical and social components is called as [Question ID = 2397]**

1. Social Ecology. [Option ID = 9588]
2. Ecosystem Ecology. [Option ID = 9586]
3. Urban Ecology. [Option ID = 9587]
4. System Ecology. [Option ID = 9585]

**Correct Answer :-**

- Urban Ecology. [Option ID = 9587]

**40) In a pollen wall, the following enzymes serve as markers for intine and exine, respectively.**

**[Question ID = 2410]**

1. Acid phosphatases and esterases [Option ID = 9637]
2. Pectinases and catalases [Option ID = 9638]
3. Kinases and  $\beta$ -1,3 glucanase [Option ID = 9640]
4. Lipases and cutinases [Option ID = 9639]

**Correct Answer :-**

- Acid phosphatases and esterases [Option ID = 9637]

**41) In a population of diploid individuals, six alleles exist for a particular gene. What is the expected number of alleles present in a chromosome; and types of alleles in a heterozygous individual and in a homozygous individual respectively?**

**[Question ID = 2387]**

1. 2; 2, 1 [Option ID = 9546]
2. 2; 2, 1 [Option ID = 9548]
3. 1; 2, 1 [Option ID = 9547]
4. 1; 2, 2 [Option ID = 9545]

**Correct Answer :-**

- 1; 2, 1 [Option ID = 9547]

**42) Polysporangiate anthers are seen in the family**

**[Question ID = 2409]**

1. Agavaceae. [Option ID = 9636]
2. Annonaceae. [Option ID = 9635]
3. Anacardiaceae. [Option ID = 9634]
4. Amborellaceae. [Option ID = 9633]

**Correct Answer :-**

- Annonaceae. [Option ID = 9635]

**43) Pfr shows maximum absorption at**

**[Question ID = 2416]**

1. 650 nm. [Option ID = 9664]
2. 660 nm. [Option ID = 9662]
3. 466 nm. [Option ID = 9663]
4. 730 nm. [Option ID = 9661]

**Correct Answer :-**

- 730 nm. [Option ID = 9661]

**44) Hyperthermophiles are heat loving microbes that can live in temperature optima above**

**[Question ID = 2399]**

1. 50 °C [Option ID = 9594]
2. 60 °C [Option ID = 9595]
3. 80 °C [Option ID = 9593]

4. 40 °C [Option ID = 9596]

**Correct Answer :-**

- 80 °C [Option ID = 9593]

**45) Dolipore septum is a characteristic of [Question ID = 2356]**

1. Zygomycetes. [Option ID = 9423]
2. Chytridiomycetes. [Option ID = 9424]
3. Basidiomycetes. [Option ID = 9421]
4. Ascomycetes. [Option ID = 9422]

**Correct Answer :-**

- Basidiomycetes. [Option ID = 9421]

**46) PEP carboxylase activity in C<sub>4</sub> and CAM plants is regulated by**

**[Question ID = 2419]**

1. isomerization [Option ID = 9676]
2. carboxylation-decarboxylation [Option ID = 9675]
3. phosphorylation-dephosphorylation [Option ID = 9673]
4. oxidation-reduction [Option ID = 9674]

**Correct Answer :-**

- phosphorylation-dephosphorylation [Option ID = 9673]

**47) A globular or hook-like intracellular structure formed by a biotrophic fungus/oomycete for absorption of nutrients from the host is known as [Question ID = 2359]**

1. sclerotium. [Option ID = 9433]
2. vesicle. [Option ID = 9434]
3. sporophore. [Option ID = 9436]
4. haustorium. [Option ID = 9435]

**Correct Answer :-**

- haustorium. [Option ID = 9435]

**48) Glucosinolates do not occur in**

**[Question ID = 2437]**

1. Papaveraceae [Option ID = 9746]
2. Capparaceae [Option ID = 9747]
3. Brassicaceae [Option ID = 9745]
4. Fabaceae [Option ID = 9748]

**Correct Answer :-**

**49) Fruits of which of the following pair of plants possess aril?**

**[Question ID = 2382]**

1. *Litchi chinensis* and *Aegle marmelos* [Option ID = 9525]
2. *Litchi chinensis* and *Ananas cosmosus* [Option ID = 9528]

3. *Vitis vinifera* and *Aegle marmelos* [Option ID = 9527]
4. *Myristica fragrans* and *Litchi chinensis* [Option ID = 9526]

**Correct Answer :-**

- *Myristica fragrans* and *Litchi chinensis* [Option ID = 9526]

**50) Channel proteins that are located in the outer membrane of Gram-negative bacteria are known as [Question ID = 2345]**

1. barrels [Option ID = 9377]
2. murins [Option ID = 9378]
3. granules [Option ID = 9380]
4. porins [Option ID = 9379]

**Correct Answer :-**

- porins [Option ID = 9379]

**51) Orthorhombic crystals of calcium carbonate are known as [Question ID = 2350]**

1. aragonite. [Option ID = 9397]
2. detritus. [Option ID = 9399]
3. calcite. [Option ID = 9398]
4. stromatolites. [Option ID = 9400]

**Correct Answer :-**

- aragonite. [Option ID = 9397]

**52) Anabolic component of the carbohydrate metabolism includes which one of the following processes?**

**[Question ID = 2421]**

1. Glycogenolysis [Option ID = 9681]
2. Glyconeogenesis [Option ID = 9683]
3. Citric Acid Cycle [Option ID = 9682]
4. Uronic Acid Pathways [Option ID = 9684]

**Correct Answer :-**

- Glyconeogenesis [Option ID = 9683]

**53) Aleurone layer is rich in**

**[Question ID = 2385]**

1. essential oils. [Option ID = 9537]
2. starch grains. [Option ID = 9539]
3. proteins. [Option ID = 9538]
4. dietary fibers. [Option ID = 9540]

**Correct Answer :-**

- proteins. [Option ID = 9538]

**54) Mesogenous stomata refers to stomata**

**[Question ID = 2372]**

1. in which all the subsidiary cells have a common origin with guard cells. [Option ID = 9486]
2. having subsidiary cells that are indistinguishable from other epidermal cells. [Option ID = 9487]
3. having subsidiary cells that are aligned parallel to the long axis of the guard cells. [Option ID = 9488]
4. occurring in mesophytic plants. [Option ID = 9485]

**Correct Answer :-**

- in which all the subsidiary cells have a common origin with guard cells. [Option ID = 9486]

**55) Vestures refer to [Question ID = 2377]**

1. Plasmodesmatal connections between any wood elements [Option ID = 9507]
2. clogged hydathodes [Option ID = 9508]
3. resin droplets accumulated in the non-conducting vessel elements [Option ID = 9505]
4. wall ingrowths that impart sieve-like appearance to pits of the vessels [Option ID = 9506]

**Correct Answer :-**

- wall ingrowths that impart sieve-like appearance to pits of the vessels [Option ID = 9506]

**56) Dormant, tough, non-reproductive structure, produced by bacteria to tide over unfavourable conditions is known as: [Question ID = 2347]**

1. heterocyst [Option ID = 9388]
2. sclerotium [Option ID = 9386]
3. endospore [Option ID = 9385]
4. sporocarp [Option ID = 9387]

**Correct Answer :-**

- endospore [Option ID = 9385]

**57) Gram-negative bacteria are more resistant to antibiotics than Gram-positive bacteria due to the presence of [Question ID = 2346]**

1. outer lipopolysaccharide layer. [Option ID = 9382]
2. peptidoglycan wall. [Option ID = 9381]
3. porin protein. [Option ID = 9383]
4. teichoic acid. [Option ID = 9384]

**Correct Answer :-**

- outer lipopolysaccharide layer. [Option ID = 9382]

**58) In *Lymnaea peregra*, coiling behaviour is controlled by a single gene. Dextral coiling behaviour is governed by dominant allele 'D' and sinistral coiling by recessive allele 'd'. When a cross is made using sinistral as female and dextral as male, all the snails are sinistral in F<sub>1</sub> and dextral in F<sub>2</sub>. Again in F<sub>3</sub> a ratio of 3 dextral and 1 sinistral is observed. This kind of pattern is an example of**

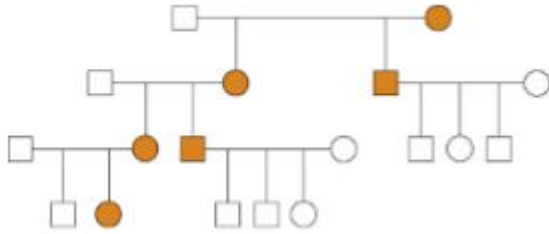
**[Question ID = 2390]**

1. Epistasis [Option ID = 9560]
2. Cytoplasmic maternal inheritance [Option ID = 9558]
3. Cytoplasmic maternal effect [Option ID = 9559]
4. Mendelian inheritance [Option ID = 9557]

**Correct Answer :-**

- Cytoplasmic maternal effect [Option ID = 9559]

**59) Study the following pedigree. What can be the possible inheritance pattern?**



**[Question ID = 2391]**

1. Autosomal inheritance [Option ID = 9564]
2. X-linked inheritance [Option ID = 9561]
3. Y-linked inheritance [Option ID = 9562]
4. Mitochondrial inheritance [Option ID = 9563]

**Correct Answer :-**

- Mitochondrial inheritance [Option ID = 9563]

**60) Accessory cambia, the activity of which leads to formation of a series of cylinders of secondary vascular tissues are found in [Question ID = 2378]**

1. Asclepiadaceae [Option ID = 9512]
2. Chenopodiaceae [Option ID = 9509]
3. Apocynaceae [Option ID = 9511]
4. Bignoniaceae [Option ID = 9510]

**Correct Answer :-**

- Chenopodiaceae [Option ID = 9509]

**61) In species where pollen matures and is released prior to the maturation and receptivity of the gynoecium, the condition is called**

**[Question ID = 2435]**

1. dichogamy [Option ID = 9739]
2. protoandry [Option ID = 9738]
3. protogyny [Option ID = 9737]
4. androdioecy [Option ID = 9740]

**Correct Answer :-**

- protoandry [Option ID = 9738]

**62) The sexual fruiting body in *Neurospora* is called as [Question ID = 2358]**

1. cleistothecium. [Option ID = 9429]
2. perithecium. [Option ID = 9431]
3. apothecium. [Option ID = 9432]
4. pseudothecium. [Option ID = 9430]

**Correct Answer :-**

- perithecium. [Option ID = 9431]

**63) In the fine mapping of *rII* locus, Benzer was able to demonstrate intragenic recombination in phages mainly because**

**[Question ID = 2389]**

1. of the large number of phage progeny that could be screened. [Option ID = 9554]
2. phages have haploid genomes. [Option ID = 9556]
3. intragenic recombination occurs only in phages. [Option ID = 9553]
4. making crosses in phages is easier. [Option ID = 9555]

**Correct Answer :-**

- of the large number of phage progeny that could be screened. [Option ID = 9554]

**64) Blastozone refers to the [Question ID = 2375]**

1. quiescent centre of Root Apical Meristem (RAM) [Option ID = 9500]
2. marginal meristem of growing leaves [Option ID = 9499]
3. meristematic region located in the rib zone of Shoot Apical Meristem (SAM) [Option ID = 9497]
4. intercalary meristem [Option ID = 9498]

**Correct Answer :-**

- marginal meristem of growing leaves [Option ID = 9499]

**65) The number of nucleosomes associated with one turn of solenoid configuration of chromatin is [Question ID = 2355]**

1. 6 [Option ID = 9419]
2. 2 [Option ID = 9417]
3. 8 [Option ID = 9420]
4. 4 [Option ID = 9418]

**Correct Answer :-**

- 6 [Option ID = 9419]

**66) Lloyd Botanical Garden is located at**

**[Question ID = 2441]**

1. Ootacamund [Option ID = 9762]
2. Srinagar (Kashmir) [Option ID = 9763]
3. Dehra Dun [Option ID = 9764]
4. Darjeeling [Option ID = 9761]

**Correct Answer :-**

- Darjeeling [Option ID = 9761]

**67) Similarity resulting from common ancestry is called**

**[Question ID = 2433]**

1. convergence [Option ID = 9732]
2. homology [Option ID = 9730]
3. homoplasy [Option ID = 9729]

4. homonym [Option ID = 9731]

**Correct Answer :-**

- homology [Option ID = 9730]

**68) Fluorochromatic reaction test to ascertain pollen viability was developed by**

**[Question ID = 2412]**

1. J. Heslop-Harrison. [Option ID = 9647]
2. E. Strasburger. [Option ID = 9646]
3. S.G. Nawaschin. [Option ID = 9648]
4. P. Maheshwari. [Option ID = 9645]

**Correct Answer :-**

- J. Heslop-Harrison. [Option ID = 9647]

**69) In *Pellia*, the sporogenous tissue develops from the [Question ID = 2364]**

1. amphithecium. [Option ID = 9454]
2. endothecium. [Option ID = 9455]
3. epidermis. [Option ID = 9453]
4. columella. [Option ID = 9456]

**Correct Answer :-**

- endothecium. [Option ID = 9455]

**70) A pollen grain with colpi occurring in the equatorial region is called**

**[Question ID = 2438]**

1. colporate [Option ID = 9752]
2. zonoporate [Option ID = 9750]
3. zonoaperturate [Option ID = 9751]
4. zonocolpate [Option ID = 9749]

**Correct Answer :-**

- zonocolpate [Option ID = 9749]

**71) In plant tissue culture, a high cytokinin : auxin ratio promotes the formation of**

**[Question ID = 2426]**

1. callus. [Option ID = 9702]
2. embryos. [Option ID = 9703]
3. roots. [Option ID = 9701]
4. shoots. [Option ID = 9704]

**Correct Answer :-**

- shoots. [Option ID = 9704]

**72) Which of the following fruits do not have edible mesocarp? [Question ID = 2379]**

1. *Tamarindus indica* [Option ID = 9515]
2. *Punica granatum* [Option ID = 9514]



3. *Mangifera indica* [Option ID = 9516]
4. *Carica papaya* [Option ID = 9513]

**Correct Answer :-**

- *Punica granatum* [Option ID = 9514]

**73) Which of the following horizons in the soil profile has high amount of organic matter?**  
[Question ID = 2398]

1. C [Option ID = 9592]
2. A [Option ID = 9590]
3. B [Option ID = 9591]
4. O [Option ID = 9589]

**Correct Answer :-**

- O [Option ID = 9589]

**74) Which one of the following is used as a sweetener? [Question ID = 2380]**

1. *Syzygium cumini* [Option ID = 9519]
2. *Carica papaya* [Option ID = 9520]
3. *Stevia rebaudiana* [Option ID = 9518]
4. *Gymnema sylvestre* [Option ID = 9517]

**Correct Answer :-**

- *Stevia rebaudiana* [Option ID = 9518]

**75) Which phylum contains organisms that most closely resemble the common ancestor of fungi and animals? [Question ID = 2360]**

1. Zygomycota [Option ID = 9437]
2. Chytridiomycota [Option ID = 9439]
3. Basidiomycota [Option ID = 9440]
4. Ascomycota [Option ID = 9438]

**Correct Answer :-**

- Chytridiomycota [Option ID = 9439]

**76) Majority of the enzymes are inactive [Question ID = 2353]**

1. above 75°C [Option ID = 9412]
2. between 25-30°C [Option ID = 9410]
3. at 25°C [Option ID = 9409]
4. at 15°C [Option ID = 9411]

**Correct Answer :-**

- above 75°C [Option ID = 9412]

**77) Syngenesious stamens are characteristic of the family**

**[Question ID = 2443]**

1. Ranunculaceae [Option ID = 9769]
2. Brassicaceae [Option ID = 9772]
3. Malvaceae [Option ID = 9770]
4. Asteraceae [Option ID = 9771]

**Correct Answer :-**

- Asteraceae [Option ID = 9771]

**78) High activity of sucrose synthase is present in**

**[Question ID = 2422]**

1. tissues that utilize sucrose [Option ID = 9686]
2. tissues that synthesize sucrose [Option ID = 9685]
3. sucrose exporting tissue [Option ID = 9688]
4. photosynthetic leaves [Option ID = 9687]

**Correct Answer :-**

- tissues that utilize sucrose [Option ID = 9686]

**79) Methionine is the precursor of which of the following plant growth regulators?**

**[Question ID = 2418]**

1. Indole acetic acid [Option ID = 9670]
2. Cytokinins [Option ID = 9671]
3. Ethylene [Option ID = 9672]
4. Absciscic acid [Option ID = 9669]

**Correct Answer :-**

- Ethylene [Option ID = 9672]

**80) Trichoblasts are [Question ID = 2370]**

1. excessively multiplying cells in the root epidermis [Option ID = 9480]
2. cells that markedly differ from other cells in the same tissue [Option ID = 9479]
3. cells in the root epidermis that gives rise to root hair [Option ID = 9477]
4. epidermal outgrowths that may or may not be glandular [Option ID = 9478]

**Correct Answer :-**

- cells in the root epidermis that gives rise to root hair [Option ID = 9477]

**81) Which of the following enzyme is involved in tRNA synthesis? [Question ID = 2396]**

1. RNA polymerase II [Option ID = 9582]
2. RNA polymerase IV [Option ID = 9584]
3. RNA Polymerase I [Option ID = 9581]
4. RNA Polymerase III [Option ID = 9583]

**Correct Answer :-**

- RNA Polymerase III [Option ID = 9583]

**82) Which one of the following is a phospholipid? [Question ID = 2352]**

1. Proline [Option ID = 9407]
2. Methionine [Option ID = 9405]
3. Lecithin [Option ID = 9408]
4. Valine [Option ID = 9406]

**Correct Answer :-**

- Lecithin [Option ID = 9408]

**83) Which one of the following amino acids has a nonpolar, aliphatic R group? [Question ID = 2351]**

1. Lysine [Option ID = 9401]
2. Arginine [Option ID = 9403]
3. Glycine [Option ID = 9404]
4. Histidine [Option ID = 9402]

**Correct Answer :-**

- Glycine [Option ID = 9404]

**84) Gynobasic style is a characteristic feature of the family**

**[Question ID = 2386]**

1. Lamiaceae [Option ID = 9543]
2. Papilionaceae [Option ID = 9541]
3. Apiaceae [Option ID = 9544]
4. Asteraceae [Option ID = 9542]

**Correct Answer :-**

- Lamiaceae [Option ID = 9543]

**85) Amphigynous antheridium is found in the genus [Question ID = 2357]**

1. *Phytophthora*. [Option ID = 9425]
2. *Alternaria*. [Option ID = 9426]
3. *Botrytis*. [Option ID = 9428]
4. *Fusarium*. [Option ID = 9427]

**Correct Answer :-**

- *Phytophthora*. [Option ID = 9425]

**86) Transfusion tissue in *Cycas* functions as [Question ID = 2366]**

1. micropyle closing tissue after pollination. [Option ID = 9463]
2. lateral conducting channel for water in the leaves. [Option ID = 9461]
3. mucilage secreting tissue in the ducts. [Option ID = 9462]
4. nutritive tissue for embryo. [Option ID = 9464]

**Correct Answer :-**

- lateral conducting channel for water in the leaves. [Option ID = 9461]

**87) The Shannon-Weiner index measures: [Question ID = 2403]**

1. General diversity [Option ID = 9610]
2. Evenness [Option ID = 9611]
3. Similarity-dissimilarity [Option ID = 9612]
4. Dominance [Option ID = 9609]

**Correct Answer :-**

- General diversity [Option ID = 9610]

**88) Hypostase refers to**

**[Question ID = 2405]**

1. a group of cells below the embryo sac and above the funiculus. [Option ID = 9618]
2. nucellar cells above the embryo sac. [Option ID = 9619]
3. parietal cells. [Option ID = 9620]
4. a cap-like structure of cutinized cells above the embryo sac. [Option ID = 9617]

**Correct Answer :-**

- a group of cells below the embryo sac and above the funiculus. [Option ID = 9618]

**89) Volatile substances that attract pollinators are emitted by [Question ID = 2374]**

1. nectaries [Option ID = 9495]
2. osmophores [Option ID = 9493]
3. hydathodes [Option ID = 9494]
4. myrosine cells [Option ID = 9496]

**Correct Answer :-**

- osmophores [Option ID = 9493]

**90) The factor responsible for mediating binding of core RNA polymerase to promoter is**

**[Question ID = 2395]**

1.  $\delta$ -70 [Option ID = 9580]
2.  $\alpha$ -70 [Option ID = 9577]
3.  $\Gamma$ -55 [Option ID = 9579]
4.  $\sigma$ -70 [Option ID = 9578]

**Correct Answer :-**

- $\sigma$ -70 [Option ID = 9578]

**91) The members of which of the following angiosperm families do not form endosperm?**

**[Question ID = 2406]**

1. Poaceae [Option ID = 9621]
2. Papilionaceae [Option ID = 9624]
3. Brassicaceae [Option ID = 9623]
4. Podostemaceae [Option ID = 9622]

**Correct Answer :-**

- Podostemaceae [Option ID = 9622]

**92) The probability of death of organisms with different ages in the current year is shown in**

**[Question ID = 2402]**

1. Survivorship curve [Option ID = 9605]
2. Static life table [Option ID = 9606]
3. Natality [Option ID = 9608]
4. Cohort life table [Option ID = 9607]

**Correct Answer :-**

- Static life table [Option ID = 9606]

**93) The smallest known virus is**

**[Question ID = 2361]**

1. *Escherichia coli* [Option ID = 9441]
2. Tobacco necrosis satellite virus [Option ID = 9444]
3. Tobacco mosaic virus [Option ID = 9443]
4. Vaccinia virus [Option ID = 9442]

**Correct Answer :-**

- Tobacco necrosis satellite virus [Option ID = 9444]

**94) The water potential of pure water at atmospheric pressure is**

**[Question ID = 2414]**

1. -2.3 bar. [Option ID = 9653]
2. 1 bar. [Option ID = 9656]
3. 0 bar. [Option ID = 9655]
4. +2.3 bar. [Option ID = 9654]

**Correct Answer :-**

- 0 bar. [Option ID = 9655]

**95) The microsporangia in the male cone and ovules in female cones of *Pinus* are positioned on the**

**[Question ID = 2369]**

1. adaxial surface of the sporophylls [Option ID = 9475]
2. adaxial surface and abaxial surface of the sporophylls, respectively [Option ID = 9473]
3. abaxial surface and adaxial surface of the sporophylls, respectively [Option ID = 9474]
4. abaxial surface of the sporophylls [Option ID = 9476]

**Correct Answer :-**

- abaxial surface and adaxial surface of the sporophylls, respectively [Option ID = 9474]

**96) The term "Bio-pharming" refers to**

**[Question ID = 2430]**

1. synthesis of drugs from transgenic plants/animals. [Option ID = 9718]
2. large scale farming of medicinal plants. [Option ID = 9720]
3. genetically modified foods from plants. [Option ID = 9717]
4. recombinant drugs from bacteria. [Option ID = 9719]

**Correct Answer :-**

- synthesis of drugs from transgenic plants/animals. [Option ID = 9718]

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

**5' – ATGACGATGGACACATGACATAGACGATAATGCCGTGAC – 3'**

**In the absence of T<sub>m</sub> effects, which one of the following sets of primers could, theoretically, be used to amplify the target sequence by PCR? [Question ID = 2425]**

1. 5' – ATGACGA – 3' and 5' – CCGTGAC – 3' [Option ID = 9700]
2. 5' – ATGACGA – 3' and 5' – GTCACGG – 3' [Option ID = 9697]
3. 5' – TACTGCT – 3' and 5' – GGCACTG – 3' [Option ID = 9698]
4. 5' – TCGTCAT – 3' and 5' – CCGTGAC – 3' [Option ID = 9699]

**Correct Answer :-**

- 5' – ATGACGA – 3' and 5' – GTCACGG – 3' [Option ID = 9697]

**98) The concept of symbiogenesis was first articulated by [Question ID = 2354]**

1. Lynn Margulis [Option ID = 9414]
2. Lynn Sagan [Option ID = 9416]
3. Ivan Wallin [Option ID = 9413]
4. Konstantin Mereschkowski [Option ID = 9415]

**Correct Answer :-**

- Konstantin Mereschkowski [Option ID = 9415]

**99) Mark the correct pairing of scientists and their contributions**

<b>I Nirenberg and Matthei</b>	<b>1 Telomerase</b>
<b>II Sidney Altman and Thomas Cech</b>	<b>2 DNA Polymerase I</b>
<b>III Arthur Kornberg</b>	<b>3 Ribozyme</b>
<b>IV Elizabeth Blackburn</b>	<b>4 Genetic code</b>

**[Question ID = 2394]**

1. I-4; II-3; III-2; IV-1 [Option ID = 9575]
2. I-4; II-3; III-1; IV-2 [Option ID = 9574]
3. I-2; II-1; III-4; IV-3 [Option ID = 9573]
4. I-3; II-4; III-2; IV-1 [Option ID = 9576]

**Correct Answer :-**

- I-4; II-3; III-2; IV-1 [Option ID = 9575]

**100) One molecule of Calmodulin, a calcium binding protein in eukaryotic cells binds to \_\_\_\_\_ Ca<sup>2+</sup> ions.**

**[Question ID = 2420]**

1. 4 [Option ID = 9677]
2. 2 [Option ID = 9678]
3. 8 [Option ID = 9679]
4. 14 [Option ID = 9680]

**Correct Answer :-**

- 4 [Option ID = 9677]