DU MSc Botany

Topic:- BOT MSC S2

1) Gram-negative bacteria are more resistant to antibiotics than Gram-positive bacteria because they possess
[Question ID = 416]

1. Outer lipopolysaccharide layer [Option ID = 1658]
2. Thin peptidoglycan wall [Option ID = 1659]
3. Porin proteins [Option ID = 1660]
4. Teichoic acid [Option ID = 1661]

Correct Answer :-

- Outer lipopolysaccharide layer [Option ID = 1658]

2) The necessary free energy for flagellar rotation in bacteria is derived from
[Question ID = 417]

1. ATP [Option ID = 1662]
2. proton gradient across the plasma membrane [Option ID = 1663]
3. breakdown of high energy molecules [Option ID = 1664]
4. electron gradient across the plasma membrane [Option ID = 1665]

Correct Answer :-

- proton gradient across the plasma membrane [Option ID = 1663]

3) The organisms that derive energy from chemical oxidation, and use inorganic carbon as the carbon source are known as
[Question ID = 418]

1. Photoautotrophs [Option ID = 1666]
2. Photoheterotrophs [Option ID = 1667]
3. Chemoautotrophs [Option ID = 1668]
4. Chemoheterotrophs [Option ID = 1669]

Correct Answer :-

- Chemoautotrophs [Option ID = 1668]

4) Microorganisms that are capable of growth and reproduction in low temperatures, ranging from −20°C to +10°C, are known as
[Question ID = 419]

1. Mesophiles [Option ID = 1670]
2. Thermophiles [Option ID = 1671]
3. Psychrophiles [Option ID = 1672]
4. Barophiles [Option ID = 1673]

Correct Answer :-

- Psychrophiles [Option ID = 1672]

5) Which one of the following algae can survive in Dead sea?

[Question ID = 420]

1. *Batrachospermum*

   [Option ID = 1674]
2. *Dunaliella*

   [Option ID = 1675]
3. *Spirogyra*

   [Option ID = 1676]
4. *Pandorina*

   [Option ID = 1677]

Correct Answer :-

- *Dunaliella*

  [Option ID = 1675]

6) Carrageenan is produced from

[Question ID = 421]

1. *Gracilaria verrucosa*

   [Option ID = 1678]

2. *Laminaria japonica*

   [Option ID = 1679]
3. *Kappaphycus alverzii*

   [Option ID = 1680]
4. *Sargassum natans*

   [Option ID = 1681]

Correct Answer :-

- *Kappaphycus alverzii*

  [Option ID = 1680]

7) Which one of the following is a parasitic alga?

[Question ID = 422]

1. *Chaetophora*

   [Option ID = 1682]
2. *Bulbochaete*

   [Option ID = 1683]
3. *Cephaleuros*

   [Option ID = 1684]
4. *Trentepohlia*

   [Option ID = 1685]

Correct Answer :-

- *Cephaleuros*

  [Option ID = 1684]

8) The nucule of Chara is capped by
[Question ID = 423]

1. Nodal cells [Option ID = 1686]
2. Internodal cells [Option ID = 1687]
3. Tube cells [Option ID = 1688]
4. Corona cells [Option ID = 1689]

Correct Answer :-

- Corona cells [Option ID = 1689]

9) The enzymes that detect improperly folded proteins are located in
[Question ID = 424]

1. Golgi complex [Option ID = 1690]
2. Endoplasmic reticulum [Option ID = 1691]
3. Cytoplasm [Option ID = 1692]
4. Proteasome [Option ID = 1693]

Correct Answer :-

- Endoplasmic reticulum [Option ID = 1691]

10) The movement of cargo from Endoplasmic reticulum to vesicular-tubular cluster (VTC) or the ER-Golgi intermediate compartment (ERGIC) occurs via
[Question ID = 425]

1. Clathirin coated vesicle only [Option ID = 1694]
2. COP-I coated vesicle only [Option ID = 1695]
3. Both COP-I and Clathirin coated vesicles [Option ID = 1696]
4. COP-II coated vesicles only [Option ID = 1697]

Correct Answer :-

- COP-II coated vesicles only [Option ID = 1697]

11) The balance between which of the following proteins determines the progress of cells from G2 to M phase of cell cycle?
[Question ID = 426]

1. Cdc25 phophatase and Wee1 kinase [Option ID = 1698]
2. Cdc2 kinase and Cdc45 [Option ID = 1699]
3. Cdc2 kinase and G1 cyclin [Option ID = 1700]
4. Cdc2 kinase and APC [Option ID = 1701]

Correct Answer :-

- Cdc25 phophatase and Wee1 kinase [Option ID = 1698]

12) Pulsed-field gel electrophoresis is a procedure used to separate large DNA molecules
[Question ID = 427]

1. by alternating the direction of applied voltage across a semi-solid gel in pulsed manner. [Option ID = 1702]
2. by alternating the intensity of applied voltage across a semi-solid gel in pulsed manner. [Option ID = 1703]
3. by loading the nucleic acid mixture on the separating gel in pulsed manner. [Option ID = 1704]
4. By cleaving the large DNA molecules in pulsed manner before loading the same on to the separating gel. [Option ID = 1705]

Correct Answer :-

- by alternating the direction of applied voltage across a semi-solid gel in pulsed manner. [Option ID = 1702]

13) A disaccharide formed by linking two glucose molecules by ß-1,4 glycosidic bond is
[Question ID = 428]

1. Maltose [Option ID = 1706]
2. Cellobiose [Option ID = 1707]
3. Trehalose [Option ID = 1708]
4. Lactose [Option ID = 1709]

Correct Answer :-

- Cellobiose [Option ID = 1707]

14) The concentration of H^+ in a solution having pH 4.0 is
[Question ID = 429]

1. 0.4 M [Option ID = 1710]
2. 4.0 M [Option ID = 1711]
3. 0.4 mM [Option ID = 1712]
4. 40 mM [Option ID = 1713]

Correct Answer :-

- 0.4 mM [Option ID = 1712]

15) Vacuum is maintained in the column of a transmission electron microscope to increase the
[Question ID = 430]

1. focal length of the condenser, objective and projector lenses. [Option ID = 1714]
2. emission of electrons from the electron gun. [Option ID = 1715]
3. the resolution of the image. [Option ID = 1716]
4. mean free path of the electrons. [Option ID = 1717]

Correct Answer :-

- mean free path of the electrons. [Option ID = 1717]

16) The myosin head decoration experiment reveals that
[Question ID = 431]

1. microfilaments are composed of G-actin and are polar in nature. [Option ID = 1718]
2. one end of microfilaments is favoured for addition of new G-actin monomers. [Option ID = 1719]
3. ATPase-binding cleft is exposed to the surrounding solution on one side of microfilaments. [Option ID = 1720]
4. microfilaments are involved in muscle contraction. [Option ID = 1721]

Correct Answer :-

- microfilaments are composed of G-actin and are polar in nature. [Option ID = 1718]

17) Asexual fruiting body consisting of conidiophores aggregated into parallel bundles is termed as
[Question ID = 432]

1. Sporodochium [Option ID = 1722]
2. Pycnidium [Option ID = 1723]
3. Acervulus [Option ID = 1724]
4. Synnema [Option ID = 1725]

Correct Answer :-

- Synnema [Option ID = 1725]

18) Which one of the following statements is INCORRECT for *Puccinia graminis* f. sp. *tritici* - causal organism for black rust of wheat?

[Question ID = 433]

1. It is a classic example of a heterothallic, macrocyclic and heteroecious rust fungus.

   [Option ID = 1726]
2. Urediniospores are dikaryotic, thick wall spores incapable of re-infecting wheat plant but infect the alternate host, barberry.

   [Option ID = 1727]
3. Teliospores are two-celled, thick-walled, initially diakaryotic, later becoming monokaryotic due to karyogamy resulting in the formation of diploid nucleus in each cell.

   [Option ID = 1728]
4. Basidiospores are halpoid spores and are responsible for infecting alternate host, barberry

   [Option ID = 1729]

Correct Answer :-

- Urediniospores are dikaryotic, thick wall spores incapable of re-infecting wheat plant but infect the alternate host, barberry.

[Option ID = 1727]

19) Plant pathogens *Phytophthora*, *Albugo* and *Plasmopara* belong to the kingdom

[Question ID = 434]

1. Fungi

   [Option ID = 1730]
2. Protista

   [Option ID = 1731]
3. Straminipila

   [Option ID = 1732]
4. Monera

   [Option ID = 1733]

Correct Answer :-

- Straminipila

[Option ID = 1732]

20) Which one of the following pairs is INCORRECTLY matched?

[Question ID = 435]

1. Woronin bodies near septal pores - Ascomycota [Option ID = 1734]
2. Dolipore septa in the hyphae - Basidiomycota [Option ID = 1735]
3. Dikaryotic hyphae - Chytridiomycota [Option ID = 1736]
4. Cell wall made up of chitin and chitosan - Zygomycota [Option ID = 1737]

Correct Answer :-

- Dikaryotic hyphae - Chytridiomycota [Option ID = 1736]

21) In Myxomycetes, the diploid stage is represented by

[Question ID = 436]

1. Myxamoebae and swarm cells [Option ID = 1738]
2. Swarm cells and plasmodium [Option ID = 1739]
3. Plasmodium and sporangium [Option ID = 1740]
4. Sporangium, myxamoebae and plasmodium [Option ID = 1741]

Correct Answer :-

- Plasmodium and sporangium [Option ID = 1740]

22) Which one of the following shows continuous spore production throughout the growing season due to the activity of basal meristem in the sporophyte?

[Question ID = 437]

1. *Funaria*

   [Option ID = 1742]
2. *Anthoceros*

   [Option ID = 1743]
3. *Sphagnum*

   [Option ID = 1744]
4. *Porella*

   [Option ID = 1745]

Correct Answer :-

- *Anthoceros*

[Option ID = 1743]

23) Which one of the following statements is INCORRECT?

[Question ID = 438]

1. Sporophyte of *Riccia* lacks foot, seta and elaters.

   [Option ID = 1746]
2. Basal elatorophore is found in the sporophyte of *Pellia*.

   [Option ID = 1747]
3. In *Funaria,* extensively branched heterotrichus protonema is produced after spore germination.

   [Option ID = 1748]
4. In *Sphagnum,* spore dispersal is facilitated by the peristome.

[Option ID = 1749]

Correct Answer :-

- In *Sphagnum*, spore dispersal is facilitated by the peristome.

[Option ID = 1749]

24) Which one of the following statements is INCORRECT about *Marchantia*?

[Question ID = 439]

1. Multicellular rhizoids are present.

[Option ID = 1750]

2. Thallus tissue consists of photosynthetic and storage zones.

[Option ID = 1751]

3. Air pores are present on the upper epidermis, which facilitate gaseous exchange.

[Option ID = 1752]

4. The groups of archegonia are surrounded by perichaetium.

[Option ID = 1753]

Correct Answer :-

- Multicellular rhizoids are present.

[Option ID = 1750]

25) One of the five evolutionary processes envisaged in Telome theory, the one that possibly led to origin and evolution of venation in leaves and the complex anastomosing vascular system in the stem is

[Question ID = 440]

1. Overtopping [Option ID = 1754]
2. Planation [Option ID = 1755]
3. Incurvation [Option ID = 1756]
4. Syngenesis [Option ID = 1757]

Correct Answer :-

- Syngenesis [Option ID = 1757]

26) Which one of the following is mismatched?

[Question ID = 441]

1. Rhizophore –a leafless root producing axial organ in *Selaginella*

[Option ID = 1758]

2. Synangium – a group of three fused sporangia in *Psilotum*

[Option ID = 1759]

3. Stomium – membranous covering of a sorus in *Pteris*

[Option ID = 1760]

4. Vallecular canals- Schizogenous canals in the stem cortex of *Equisetum*

[Option ID = 1761]

Correct Answer :-

- Stomium – membranous covering of a sorus in *Pteris*

[Option ID = 1760]

27) Which one of the following is INCORRECT about Gnetum?

[Question ID = 442]

1. Vessels are present in the secondary xylem. [Option ID = 1762]
2. Leaves show reticulate venation pattern. [Option ID = 1763]
3. There are no archegonia and some nuclei of female gametophyte function as eggs. [Option ID = 1764]
4. Development of female gametophyte is monosporic. [Option ID = 1765]

Correct Answer :-

- Development of female gametophyte is monosporic. [Option ID = 1765]

28) The type of stomata where the stoma is surrounded by three subsidiary cells, one of which is significantly smaller than the other two are termed as

[Question ID = 443]

1. Anomocytic [Option ID = 1766]
2. Anisocytic [Option ID = 1767]
3. Diacytic [Option ID = 1768]
4. Paracytic [Option ID = 1769]

Correct Answer :-

- Anisocytic [Option ID = 1767]

29) Which one of the following statements is INCORRECT for non-articulate laticifers?
[Question ID = 444]
1. They originate from single cells. [Option ID = 1770]
2. They do not undergo fusion with other similar cells. [Option ID = 1771]
3. They typically arise in primary plant body. [Option ID = 1772]
4. Latex containing cells present in Hevea are examples of nonarticulated laticifers. [Option ID = 1773]

Correct Answer :-
- Latex containing cells present in Hevea are examples of nonarticulated laticifers. [Option ID = 1773]

30) According to Hanstein's 'Histogen theory', periblem, one of the three histogens, forms
[Question ID = 445]
1. Cortex [Option ID = 1774]
2. Epidermis [Option ID = 1775]
3. primary vascular and associated ground tissue [Option ID = 1776]
4. Inter-fescicular region [Option ID = 1777]

Correct Answer :-
- Cortex [Option ID = 1774]

31) Primary peripheral thickening meristems are the characteristic feature of
[Question ID = 446]
1. Orchids [Option ID = 1778]
2. Brassicaceae [Option ID = 1779]
3. Basal angiosperms [Option ID = 1780]
4. Palms [Option ID = 1781]

Correct Answer :-
- Palms [Option ID = 1781]

32) Choose the INCORRECT statement about plants with ring porous woods.
[Question ID = 447]
1. Such plants are deciduous type. [Option ID = 1782]
2. It is a plesiomorphic feature. [Option ID = 1783]
3. Such plants serve as ideal material for dendrochronology. [Option ID = 1784]
4. The lumen of vessels varies in different seasons of the year. [Option ID = 1785]

Correct Answer :-
- It is a plesiomorphic feature. [Option ID = 1783]

33) In bijugate plants with helical phyllotaxy, the angle of divergence (angle between radii drawn to the centre of successively produced primordia) is approximately
[Question ID = 448]
1. 68.7 degrees [Option ID = 1786]
2. 78.7 degrees [Option ID = 1787]
3. 88.7 degrees [Option ID = 1788]
4. 98.7 degrees [Option ID = 1789]

Correct Answer :-
- 68.7 degrees [Option ID = 1786]

34) Plastochron refers to
[Question ID = 449]
1. the time interval between inception of two successive primordia. [Option ID = 1790]
2. the order in which leaves are borne around the stem axis. [Option ID = 1791]
3. pigmented plastids of the epidermal layer. [Option ID = 1792]
4. the order in which flowers are borne around the inflorescence axis. [Option ID = 1793]

Correct Answer :-
- the time interval between inception of two successive primordia. [Option ID = 1790]

35) Parenchyma surrounding the vessels and extending tangentially in wing-shaped masses is known as
[Question ID = 450]
1. Confluent parenchyma [Option ID = 1794]
2. Aliform parenchyma [Option ID = 1795]
3. Paratracheal parenchyma [Option ID = 1796]
4. Terminal parenchyma [Option ID = 1797]

Correct Answer :-
- Aliform parenchyma [Option ID = 1795]

36) Clove is a
[Question ID = 451]

1. vegetative bud. [Option ID = 1798]
2. Fruit. [Option ID = 1799]
3. Seed. [Option ID = 1800]
4. dried flower bud. [Option ID = 1801]

Correct Answer :-

- dried flower bud. [Option ID = 1801]

37) Which one of the following is NOT an oilseed crop?

[Question ID = 452]

1. *Brassica juncea*

   [Option ID = 1802]
2. *Carthamus tinctorius*

   [Option ID = 1803]
3. *Brassica campestris*

   [Option ID = 1804]
4. *Helianthus annuus*

   [Option ID = 1805]

Correct Answer :-

- *Brassica campestris*

  [Option ID = 1804]

38) Which plant is commonly called "Indian Bay Leaf" plant:

[Question ID = 453]

1. *Cinnamomum verum*

   [Option ID = 1806]
2. *Commiphora wightii*

   [Option ID = 1807]
3. *Cinnamomum camphora*

   [Option ID = 1808]
4. *Cinnamomum tamala*

   [Option ID = 1809]

Correct Answer :-

- *Cinnamomum tamala*

  [Option ID = 1809]

39) Match the items mentioned in List I with those of List II:

List I Medicinal Plant	List II Bioactive compound
A. *Strychnos-nux vomica*	**I. Lysergic acid**
B. *Atropa belladonna*	**II. Quinine**
C. *Cinchona ladgeriana*	**III. Hyoscyamine**
D. *Claviceps purpurea*	**IV. Strychnicine**

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

[Question ID = 454]

1. A - I, B - II, C - III, D - IV

   [Option ID = 1810]
2. A - IV, B - I, C - II, D - III

   [Option ID = 1811]
3. A - IV, B - III, C - II, D - I

   [Option ID = 1812]
4. A - IV, B - II, C - I, D - III

   [Option ID = 1813]

Correct Answer :-

- A - IV, B - III, C - II, D - I

  [Option ID = 1812]

40) Bast fibres are obtained from:

A. *Crotalaria juncea*
B. *Corchorus capsularis*
C. *Bombax ceiba*
D. *Cannabis sativa*
Choose the *correct* answer from the options given below:

[Question ID = 455]

1. B and C only

   [Option ID = 1814]
2. A, B, C and D

   [Option ID = 1815]
3. A, B and D only

   [Option ID = 1816]
4. B and D only

   [Option ID = 1817]

Correct Answer :-

- A, B and D only

  [Option ID = 1816]

41) Match the items of Columns I, II & III and pick up the *correct* option given below:

Column I	Column II	Column III
p. IRRI	a. Maize & wheat	i. Shimla
q. CIMMYT	b. Rice	ii. Lucknow
r. CPRI	c. Potato	iii. Mexico
s. CIMAP	d. Medicinal & aromatic plants	iv. Philippines

[Question ID = 456]

1. p-a-i; q-b-ii; r-c-iii; s-d-iv

   [Option ID = 1818]
2. p-b-iv; q-a-iii; r-d-i; s-c-ii

   [Option ID = 1819]
3. p-b-iv; q-a-iii; r-c-i; s-d-ii

   [Option ID = 1820]
4. p-a-i; q-c-ii; r-b-iv; s-d-iii

   [Option ID = 1821]

Correct Answer :-

- p-b-iv; q-a-iii; r-c-i; s-d-ii

  [Option ID = 1820]

42) Which of the following is the centre of origin of *Arachis hypogea*?

[Question ID = 457]

1. South America

   [Option ID = 1822]
2. South Africa

   [Option ID = 1823]
3. Southeast Asia

   [Option ID = 1824]
4. Central Asia

   [Option ID = 1825]

Correct Answer :-

- South America

  [Option ID = 1822]

43) Which one of the following statements is NOT TRUE for the high-resolution map of T4 *rII* locus developed by Seymour Benzer?

[Question ID = 458]

1. Two mutants having mutations in different regions of rII locus can produce recombinant wild-type phages when crossed.

[Option ID = 1826]
2. He used both recombination and complementation between mutants.

[Option ID = 1827]
3. The *rII* mutants used were conditional mutants.

[Option ID = 1828]
4. His experiments showed that recombination can occur between genes and not within genes.

[Option ID = 1829]

Correct Answer :-

- His experiments showed that recombination can occur between genes and not within genes.

[Option ID = 1829]

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44) Which one of the following statements is NOT TRUE?
[Question ID = 459]

1. Quantitative traits are polygenic in nature. [Option ID = 1830]
2. There can be multiple alleles of a locus, but a diploid individual can have a maximum of two alleles. [Option ID = 1831]
3. The two sister chromatids have different allelic configurations. [Option ID = 1832]
4. Genetic maps are generally collinear with physical maps. [Option ID = 1833]

Correct Answer :-

- The two sister chromatids have different allelic configurations. [Option ID = 1832]

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45) The direction of coiling in a pond snail species, X exhibits maternal effect. Assuming that the coiling is governed by a single locus with two alleles where dextral coiling (to the right) is dominant over sinistral coiling (to the left), what will be the phenotype of F2 individuals, if a homozygous sinistral female is crossed with a homozygous dextral male?
[Question ID = 460]

1. All dextral [Option ID = 1834]
2. All sinistral [Option ID = 1835]
3. Both dextral and sinistral in 3:1 ratio [Option ID = 1836]
4. Both sinistral and dextral in 3:1 ratio [Option ID = 1837]

Correct Answer :-

- All dextral [Option ID = 1834]

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46) Inheritance of MN blood types is controlled by codominant alleles M and N. In a population of 200 individuals, the blood types observed were; type M= 114, type MN=76 and type NN=10. If the population is in Hardy-Weinberg equilibrium, the frequency of alleles M and N will be
[Question ID = 461]

1. 0.24 and 0.76, respectively. [Option ID = 1838]
2. 0.76 and 0.24, respectively. [Option ID = 1839]
3. 0.57 and 0.63, respectively. [Option ID = 1840]
4. 0.63 and 0.57, respectively. [Option ID = 1841]

Correct Answer :-

- 0.76 and 0.24, respectively. [Option ID = 1839]

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47) Spontaneous mutations in protein coding genes that do not result in change of amino acids are termed
[Question ID = 462]

1. transversions. [Option ID = 1842]
2. nonsense mutations. [Option ID = 1843]
3. synonymous mutations. [Option ID = 1844]
4. transitions. [Option ID = 1845]

Correct Answer :-

- synonymous mutations. [Option ID = 1844]

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48) A haploid was generated from a plant. The haploid produced perfect bivalents during meiosis. The plant from which haploid was generated was a/an
[Question ID = 463]

1. haploid. [Option ID = 1846]
2. autotetraploid. [Option ID = 1847]
3. allotetraploid. [Option ID = 1848]
4. diploid. [Option ID = 1849]

Correct Answer :-

- autotetraploid. [Option ID = 1847]

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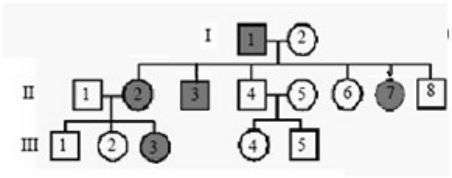
49) Which one of the following statements is NOT TRUE about Isochromosomes?
[Question ID = 464]

1. Formation of isochromosome causes monosomy for one arm. [Option ID = 1850]
2. Formation of isochromosomes generates deficiency loops. [Option ID = 1851]
3. Isochromosomes are formed by misdivision. [Option ID = 1852]
4. Formation of isochromosome causes trisomy for one arm. [Option ID = 1853]

Correct Answer :-

- Formation of isochromosomes generates deficiency loops. [Option ID = 1851]

50) What is the mode of inheritance in the pedigree given below?



[Question ID = 465]

1. Autosomal dominant

   [Option ID = 1854]
2. Autosomal recessive

   [Option ID = 1855]
3. Sex linked dominant

   [Option ID = 1856]
4. Sex linked recessive

   [Option ID = 1857]

Correct Answer :-

- Autosomal dominant

  [Option ID = 1854]

51) Fill in the blanks with the options given in the correct order:

The Shine-Dalgarno sequence pairs with __(1)___ present in __(2)_____

[Question ID = 466]

1. (1) 5'end of 30S rRNA; (2) 16S ribosomal subunit

   [Option ID = 1858]
2. (1) 3'end of 16S rRNA; (2) 28S ribosomal subunit

   [Option ID = 1859]
3. (1) 3'end of 16S rRNA; (2) 18S ribosomal subunit

   [Option ID = 1860]
4. (1) 3'end of 16S rRNA; (2) 30S ribosomal subunit

   [Option ID = 1861]

Correct Answer :-

- (1) 3'end of 16S rRNA; (2) 30S ribosomal subunit

  [Option ID = 1861]

52) Transcriptionally active regions in eukaryotes are known to be ___(1)___ and generally carry a ___(2)__ mark on the histone proteins

[Question ID = 467]

1. (1) hypoacetylated; (2) H3S14P [Option ID = 1862]
2. (1) hypoacetylated; (2) H3K9Me [Option ID = 1863]
3. (1) hyperacetylated; (2) H3K4Me [Option ID = 1864]
4. (1) hypoacetylated; (2) H3S30P [Option ID = 1865]

Correct Answer :-

- (1) hyperacetylated; (2) H3K4Me [Option ID = 1864]

53) The dinucleotide sequence that marks the 5 ' and 3' end of the exon-intron junctions are

[Question ID = 468]

1. AG, and AC, respectively [Option ID = 1866]
2. AA, and GC, respectively [Option ID = 1867]
3. GT, and AG, respectively [Option ID = 1868]
4. AC, and CG, respectively [Option ID = 1869]

Correct Answer :-

- GT, and AG, respectively [Option ID = 1868]

54) A common outcome of infection by plant viruses like TMV is likely to be

[Question ID = 469]

1. reduced synthesis of polyadenylated RNA in infected cells [Option ID = 1870]

2. altered size distribution on polyadenylated RNA in infected cells [Option ID = 1871]
3. reduced production of RUBISCO in infected cells [Option ID = 1872]
4. reduced accumulation of viral capsid proteins in infected cells [Option ID = 1873]

Correct Answer :-

- reduced production of RUBISCO in infected cells [Option ID = 1872]

55) Translation of multiple polypeptides from a single mRNA does NOT involve
[Question ID = 470]

1. "Leaky scanning" by some eukaryotic ribosomes [Option ID = 1874]
2. protein translation from only the first AUG codon [Option ID = 1875]
3. protein translation from a second AUG codon [Option ID = 1876]
4. successful infection by some plant viruses with genomes containing overlapping reading frames [Option ID = 1877]

Correct Answer :-

- protein translation from only the first AUG codon [Option ID = 1875]

56) The absence of 5' cap structure in many plant viral RNAs is NOT associated with
[Question ID = 471]

1. highly conserved 100 nt long cap-independent translation element (CITE) [Option ID = 1878]
2. presence of cap-independent translation element (CITE) in 5'UTR [Option ID = 1879]
3. presence of cap-independent translation element (CITE) in 3'UTR [Option ID = 1880]
4. co-ordinated translation and replication in positive-sense RNA viruses [Option ID = 1881]

Correct Answer :-

- highly conserved 100 nt long cap-independent translation element (CITE) [Option ID = 1878]

57) Carrying capacity is a characteristic feature of
[Question ID = 472]

1. Exponential growth curve [Option ID = 1882]
2. Sigmoidal growth curve [Option ID = 1883]
3. Polynomial curve [Option ID = 1884]
4. Linear curve [Option ID = 1885]

Correct Answer :-

- Sigmoidal growth curve [Option ID = 1883]

58) Plants, such as, *Prosopis*, *Acacia* and *Capparis* are more likely to occur in

[Question ID = 473]

1. Tropical thorn forests

   [Option ID = 1886]
2. Tropical deciduous forests

   [Option ID = 1887]
3. Tropical evergreen forests

   [Option ID = 1888]
4. Tropical grasslands

   [Option ID = 1889]

Correct Answer :-

- Tropical thorn forests

  [Option ID = 1886]

59) Ecosystem resilience is known to be maximum in
[Question ID = 474]

1. Forest ecosystem [Option ID = 1890]
2. Grassland ecosystem [Option ID = 1891]
3. Desert ecosystem [Option ID = 1892]
4. Tundra ecosystem [Option ID = 1893]

Correct Answer :-

- Grassland ecosystem [Option ID = 1891]

60) Champion and Seth classified the forest type of Delhi as
[Question ID = 475]

1. Tropical dry evergreen forest [Option ID = 1894]
2. Tropical thorn forest [Option ID = 1895]
3. Tropical dry deciduous forest [Option ID = 1896]
4. Tropical moist evergreen forest [Option ID = 1897]

Correct Answer :-

- Tropical thorn forest [Option ID = 1895]

61) Which one of the following models best explains the prey-predator interaction?
[Question ID = 476]
1. Lotka-Volterra model [Option ID = 1898]
2. Exponential growth model [Option ID = 1899]
3. Sigmoidal growth model [Option ID = 1900]
4. Reverse J shaped model [Option ID = 1901]

Correct Answer :-
- Lotka-Volterra model [Option ID = 1898]

62) The most commonly cited definition for sustainable development was given by
[Question ID = 477]
1. World Commission on Environment and Development [Option ID = 1902]
2. World Committee on Environment and Development [Option ID = 1903]
3. World on Committee Environment and Sustainable Development [Option ID = 1904]
4. World Commission on Environment and Sustainable Development [Option ID = 1905]

Correct Answer :-
- World Commission on Environment and Development [Option ID = 1902]

63) Permafrost is present in which one of the following terrestrial biomes?
[Question ID = 478]
1. Tundra [Option ID = 1906]
2. Temperate rain forest [Option ID = 1907]
3. Tropical rain forest [Option ID = 1908]
4. Chapparals [Option ID = 1909]

Correct Answer :-
- Tundra [Option ID = 1906]

64) The effective date for applying the Principle III (Priority of Publication) of nomenclature is
[Question ID = 479]
1. 1st March 1753 [Option ID = 1910]
2. 1st April 1753 [Option ID = 1911]
3. 1st May 1753 [Option ID = 1912]
4. 1st June 1753 [Option ID = 1913]

Correct Answer :-
- 1st May 1753 [Option ID = 1912]

65) The hypothesis that South Asian region, including north east India served as the 'Cradle of Angiosperms' was given by
[Question ID = 480]
1. Birbal Sahni [Option ID = 1914]
2. Hendrik van Rheede [Option ID = 1915]
3. Joseph Dalton Hooker [Option ID = 1916]
4. Armen Takhtazan [Option ID = 1917]

Correct Answer :-
- Armen Takhtazan [Option ID = 1917]

66) Gynoecial features such as bicarpellary, syncarpous, bilocular, superior ovary, with axile placentation, oblique septum, swollen placenta, simple style, and bilobed stigma are typical of
[Question ID = 481]
1. Brassicaceae [Option ID = 1918]
2. Euphorbiaceae [Option ID = 1919]
3. Lamiacea [Option ID = 1920]
4. Solanaceae [Option ID = 1921]

Correct Answer :-
- Solanaceae [Option ID = 1921]

67) A diagrammatic representation of a relationship tree having branch length proportional to amount of character change is termed
[Question ID = 482]
1. Cladogram [Option ID = 1922]
2. Phenogram [Option ID = 1923]
3. Dendrogram [Option ID = 1924]
4. Phylogram [Option ID = 1925]

Correct Answer :-
- Phylogram [Option ID = 1925]

68) Specimen selected from the original material when no holotype is available is called
[Question ID = 483]

1. Isotype [Option ID = 1926]
2. Lectotype [Option ID = 1927]
3. Paratype [Option ID = 1928]
4. Syntype [Option ID = 1929]

Correct Answer :-

- Lectotype [Option ID = 1927]

69) The suffix 'opsida' indicates which one of the following ranks of plant kingdom?
[Question ID = 484]

1. Family [Option ID = 1930]
2. Class [Option ID = 1931]
3. Order [Option ID = 1932]
4. Division [Option ID = 1933]

Correct Answer :-

- Class [Option ID = 1931]

70) The standard acronym for Central National Herbarium is
[Question ID = 485]

1. CNH [Option ID = 1934]
2. BSI [Option ID = 1935]
3. CDRI [Option ID = 1936]
4. CAL [Option ID = 1937]

Correct Answer :-

- CAL [Option ID = 1937]

71) A name in which the specific epithet exactly repeats the generic name is called
[Question ID = 486]

1. Synonym [Option ID = 1938]
2. Homonym [Option ID = 1939]
3. Basionym [Option ID = 1940]
4. Tautonym [Option ID = 1941]

Correct Answer :-

- Tautonym [Option ID = 1941]

72) An ovule, which becomes curved so that the nucellus and embryo sac lie at right angles to the funicle is
[Question ID = 487]

1. Hemitropous [Option ID = 1942]
2. Campylotropous [Option ID = 1943]
3. Anatropus [Option ID = 1944]
4. Orthotropus [Option ID = 1945]

Correct Answer :-

- Hemitropous [Option ID = 1942]

73) Endothelium is derived from
[Question ID = 488]

1. outer integument [Option ID = 1946]
2. inner integument [Option ID = 1947]
3. nucellus [Option ID = 1948]
4. chalaza [Option ID = 1949]

Correct Answer :-

- inner integument [Option ID = 1947]

74) A bisporic embryo sac derived from the chalazal dyad is

[Question ID = 489]

1. *Endymion type*

   [Option ID = 1950]
2. *Allium type*

   [Option ID = 1951]
3. *Drusa type*

   [Option ID = 1952]
4. *Adoxa type*

   [Option ID = 1953]

Correct Answer :-

- *Allium type*

[Option ID = 1951]

75) A sixteen nucleate embryo sac having 3-celled egg apparatus and eleven antipodals is characterized as

[Question ID = 490]

1. *Plumbago type*

   [Option ID = 1954]
2. *Drusa type*

   [Option ID = 1955]
3. *Peperomia type*

   [Option ID = 1956]
4. *Plumbagella type*

   [Option ID = 1957]

Correct Answer :-

- *Drusa type*

  [Option ID = 1955]

76) Which one of the following statements about hydrophily is INCORRECT?
[Question ID = 491]

1. Pollination may occur above or below the water surface. [Option ID = 1958]
2. Flowers are large and fragrant. [Option ID = 1959]
3. Ovule number per flower is often reduced to one. [Option ID = 1960]
4. Pollen grains usually lack exine and may be covered with mucilage. [Option ID = 1961]

Correct Answer :-

- Flowers are large and fragrant. [Option ID = 1959]

77) Which one of the following statements about successive type of cytokinesis during microsporogenesis is INCORRECT?
[Question ID = 492]

1. Cell plate is formed during/following each telophase in microspore mother cells (mmc). [Option ID = 1962]
2. The four spore nuclei are discrete/isolated in pairs. [Option ID = 1963]
3. Partitioning of cytoplasm occurs through centrifugal progression of cell plate at each telophase and between pairs of nuclei. [Option ID = 1964]
4. Six secondary spindles are formed after telophase II in mmc. [Option ID = 1965]

Correct Answer :-

- Six secondary spindles are formed after telophase II in mmc. [Option ID = 1965]

78) Formation of chasmogamous as well as cleistogamous flowers are reported in

[Question ID = 493]

1. *Areca catechu*

   [Option ID = 1966]
2. *Azadirachta indica*

   [Option ID = 1967]
3. *Arachis hypogea*

   [Option ID = 1968]
4. *Commelina benghalensis*

   [Option ID = 1969]

Correct Answer :-

- *Commelina benghalensis*

  [Option ID = 1969]

79) Bambacioni effect is observed during megasporogenesis in
[Question ID = 494]

1. Allium type [Option ID = 1970]
2. Fritillaria type [Option ID = 1971]
3. Polygonum type [Option ID = 1972]
4. Drusa type [Option ID = 1973]

Correct Answer :-

- Fritillaria type [Option ID = 1971]

80) During daytime, if the CO_2 concentration around the leaves increases,
[Question ID = 495]

1. stomata will open gradually. [Option ID = 1974]
2. stomata will open suddenly. [Option ID = 1975]
3. increase in transpiration will occur. [Option ID = 1976]

4. decrease in transpiration will occur. [Option ID = 1977]

Correct Answer :-

- stomata will open suddenly. [Option ID = 1975]

81) Which of the following statements is/are true for H^+ -ATPase?

a) It uses energy of hydrolysis of ATP.
b) It maintains a high H^+ concentration inside the cell.
c) It is responsible for the maintenance of cytosolic pH in the range of 7.3-7.5.
d) It results in the generation of proton motive force.

[Question ID = 496]

1. Only a and b

   [Option ID = 1978]
2. Only a and c

   [Option ID = 1979]
3. Only a, c and d

   [Option ID = 1980]
4. Only a and d

   [Option ID = 1981]

Correct Answer :-

- Only a, c and d

  [Option ID = 1980]

82) Translocation of sugars from mesophyll cells to sieve-tube elements in leaves is known as
[Question ID = 497]

1. Phloem unloading [Option ID = 1982]
2. Phloem loading [Option ID = 1983]
3. Sieve element unloading [Option ID = 1984]
4. Photoassimilate loading [Option ID = 1985]

Correct Answer :-

- Phloem loading [Option ID = 1983]

83) During light perception by plants, the process of transfer of energy between pigment molecules is called
[Question ID = 498]

1. Fluorescence [Option ID = 1986]
2. Inductive resonance [Option ID = 1987]
3. Vibrational energy [Option ID = 1988]
4. Quantum yield [Option ID = 1989]

Correct Answer :-

- Inductive resonance [Option ID = 1987]

84) Phytotropins refer to
[Question ID = 499]

1. conjugated forms of auxin [Option ID = 1990]
2. non-competitive inhibitors of polar auxin transport [Option ID = 1991]
3. proteins responsible for efflux of auxin [Option ID = 1992]
4. transporters of auxin [Option ID = 1993]

Correct Answer :-

- non-competitive inhibitors of polar auxin transport [Option ID = 1991]

85) Gibberellins are chemical derivatives of:
[Question ID = 500]

1. Phenols [Option ID = 1994]
2. Terpenes [Option ID = 1995]
3. Alkaloids [Option ID = 1996]
4. Fatty acids [Option ID = 1997]

Correct Answer :-

- Terpenes [Option ID = 1995]

86) Which of the following is not a characteristic feature of the seedlings exhibiting “triple response”?
[Question ID = 501]

1. Exaggerated apical/plumular hook [Option ID = 1998]
2. Shortened hypocotyl [Option ID = 1999]
3. Elongated roots [Option ID = 2000]

4. Radically swollen hypocotyls [Option ID = 2001]

Correct Answer :-

- Elongated roots [Option ID = 2000]

87) Climacteric fruits include all of the following, except
[Question ID = 502]

1. Banana [Option ID = 2002]
2. Grapes [Option ID = 2003]
3. Mango [Option ID = 2004]
4. Tomato [Option ID = 2005]

Correct Answer :-

- Grapes [Option ID = 2003]

88) Principal form of carbohydrate translocated by the phloem is
[Question ID = 503]

1. Sucrose [Option ID = 2006]
2. Glucose [Option ID = 2007]
3. Maltose [Option ID = 2008]
4. Fructose [Option ID = 2009]

Correct Answer :-

- Sucrose [Option ID = 2006]

89) The chemical, salicylhydroxamic acid, inhibits
[Question ID = 504]

1. Cytochrome oxidase [Option ID = 2010]
2. Alternative oxidase [Option ID = 2011]
3. ATP synthase [Option ID = 2012]
4. NADH-dehydrogenase [Option ID = 2013]

Correct Answer :-

- Alternative oxidase [Option ID = 2011]

90) Spherosomes store
[Question ID = 505]

1. Waxes [Option ID = 2014]
2. Sterols [Option ID = 2015]
3. Terpenoids [Option ID = 2016]
4. Triacylglycerols [Option ID = 2017]

Correct Answer :-

- Triacylglycerols [Option ID = 2017]

91) The main enzyme for Nitric oxide (NO) production in plants is
[Question ID = 506]

1. Nitrate reductase [Option ID = 2018]
2. Nitrite reductase [Option ID = 2019]
3. Nitric oxide synthase [Option ID = 2020]
4. Xanthine oxidoreductase [Option ID = 2021]

Correct Answer :-

- Nitrate reductase [Option ID = 2018]

92) In Crassulacean Acid Metabolism, photosynthesis occurs during night when stomata are open and CO_2 is fixed as
[Question ID = 507]

1. Malic acid [Option ID = 2022]
2. Pyruvate [Option ID = 2023]
3. Glyceraldehyde 3-Phosphate [Option ID = 2024]
4. Ribulose 1, 5-Bisphosphate [Option ID = 2025]

Correct Answer :-

- Malic acid [Option ID = 2022]

93) The enzyme responsible for carbon fixation in C3 Photosynthesis is
[Question ID = 508]

1. PEP Carboxylase [Option ID = 2026]
2. Ribulose-1, 5-bisphosphate carboxylase/oxygenase [Option ID = 2027]
3. Hexokinase [Option ID = 2028]
4. Pyruvate Dehydrogenase [Option ID = 2029]

Correct Answer :-

- Ribulose-1, 5-bisphosphate carboxylase/oxygenase [Option ID = 2027]

94) Which one of the following has a spiral metabolic pathway?
[Question ID = 509]
1. Glycolysis [Option ID = 2030]
2. Citric acid cycle [Option ID = 2031]
3. Glyoxylate cycle [Option ID = 2032]
4. Fatty acid biosynthesis [Option ID = 2033]

Correct Answer :-
- Fatty acid biosynthesis [Option ID = 2033]

95) Which wavelength of light (in nm) is photosynthetically active radiation for anoxygenic photosynthetic organisms?
[Question ID = 510]
1. 100-390 [Option ID = 2034]
2. 390-430 [Option ID = 2035]
3. 400-700 [Option ID = 2036]
4. 760-1000 [Option ID = 2037]

Correct Answer :-
- 760-1000 [Option ID = 2037]

96) Which one of the following statements regarding genetic transformation of plants is correct?

[Question ID = 511]
1. The virulence genes of *Agrobacterium* need to be located on the same plasmid as the T-DNA for genetic transformation to occur.

   [Option ID = 2038]
2. Microprojectile bombardment will always introduce only one copy of the transgene into the host cell.

   [Option ID = 2039]
3. A positive selection marker gene used for selection of transformed calli should be expressed under a tissue-specific promoter.

   [Option ID = 2040]
4. *Agrobacterium*-mediated transformation can be used for both transient expression studies as well as development of stable transgenics.

   [Option ID = 2041]

Correct Answer :-
- *Agrobacterium*-mediated transformation can be used for both transient expression studies as well as development of stable transgenics.

  [Option ID = 2041]

97) A circular DNA of 4.36 kb was digested with different restriction enzymes and sizes (in kb) of fragments obtained are listed below.

PstI - 4.36

EcoRI - 4.36

Sal I - 4.36

EcoRI + Sal I - 3.98 and 0.38

EcoRI + PstI - 3.61 and 0.75

PstI + Sal I - 3.23 and 1.13

Based on the above information, which one of the following statements is *correct*?

[Question ID = 512]
1. PstI site is located between EcoRI and SalI

   [Option ID = 2042]
2. SalI is located between PstI and EcoRI

   [Option ID = 2043]
3. EcoRI is located between PstI and SalI

   [Option ID = 2044]
4. SalI and PstI have overlapping recognition sequences in the plasmid.

   [Option ID = 2045]

Correct Answer :-
- EcoRI is located between PstI and SalI

  [Option ID = 2044]

98) Which one of the following promoters is NOT a constitutive promoter?
[Question ID = 513]
1. CaMV35S [Option ID = 2046]
2. NOS [Option ID = 2047]
3. UBI1 [Option ID = 2048]

4. SUC2 [Option ID = 2049]

Correct Answer :-

- SUC2 [Option ID = 2049]

99) Which one of the following statements is INCORRECT?

[Question ID = 514]

1. BAP is the most abundantly naturally occurring cytokinin in higher plants [Option ID = 2050]
2. 2iP is synthesized by ipt gene of Agrobacterium tumefaciens [Option ID = 2051]
3. Methionine, an amino acid is the precursor of ABA synthesis [Option ID = 2052]
4. IAA is synthesized from amino acid tryptophan through mevalonic acid pathway [Option ID = 2053]

Correct Answer :-

- BAP is the most abundantly naturally occurring cytokinin in higher plants [Option ID = 2050]

100) Match the scientists given in List I with their discoveries in List II

List I Scientist	List II Discovery
A. Larkin and Scowcroft	I. Golden rice-2
B. Arntzen	II. Somatic embryogenesis
C. F.C. Steward	III. Somaclonal variations
D. Paine et al	IV. Edible Vaccine

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

[Question ID = 515]

1. A - II, B - I, C - IV, D - III

   [Option ID = 2054]
2. A - III, B - IV, C - I, D - II

   [Option ID = 2055]
3. A - III, B - IV, C - II, D - I

   [Option ID = 2056]
4. A - IV, B - I, C - II, D - III

   [Option ID = 2057]

Correct Answer :-

- A - III, B - IV, C - II, D - I

  [Option ID = 2056]