

# M.Phil./Ph.D. ADMISSION TEST, 2018

## Paper II

### Subject : 105 - BOTANY

Roll No. (In figures) .....(In words) .....

OMR Sheet Sr. No. ....

Signatures of Invigilators 1. .... 2. ....

Names of Invigilators 1. .... 2. ....

Time : 2 Hours

Max. Marks : 200

### GENERAL INSTRUCTIONS

1. Read the instructions given on the Question Booklet and OMR Sheet before starting the answers. All the entries should be filled by **blue or black ball point pen**.
  2. The Question Booklet contains **100** questions and all questions are compulsory.
  3. Each question is of **2** marks. There is **no negative marking**.
  4. Candidates must ensure that the Question Booklet issued to them has all the questions. Defective Question Booklet can be got changed within **10** minutes.
1. प्रश्नों के उत्तर लिखने से पूर्व प्रश्न-पुस्तिका और ओ.एम.आर. शीट पर दिये हुए निर्देश पढ़ें। सभी प्रविष्टियाँ नीले अथवा काले बॉल पॉइन्ट पेन से भरें।
  2. प्रश्न-पुस्तिका में **100** प्रश्न हैं और सभी प्रश्न अनिवार्य हैं।
  3. प्रत्येक प्रश्न **2** अंक का है। कोई नकारात्मक अंकन (negative marking) नहीं होगा।
  4. परीक्षार्थी सुनिश्चित कर लें कि उन्हें जो प्रश्न-पुस्तिका दी गई है उसमें सभी प्रश्न अंकित हैं। त्रुटिपूर्ण प्रश्न-पुस्तिका **10** मिनट की अवधि में बदलवाई जा सकती है।

5. In case of any discrepancy between English and Hindi versions of a question, English version will be taken as correct, wherever there are both versions.
  6. Select and darken the circle corresponding to the answer [(A) or (B) or (C) or (D)] in OMR sheet.
  7. In case more than one circles are darkened in a question, it will not be evaluated.
  8. Do not make any stray marks on OMR sheet and do not fold it.
  9. Any candidate found removing pages from the Question Booklet may be disqualified and prosecuted.
  10. Use of unfair means will disqualify the candidate from the examination.
  11. Cell phone, calculator or any such devices are not allowed in the Examination Hall.
  12. No candidate is allowed to leave the seat before handing over the original OMR sheet to the invigilator. Candidate can take Question Booklet and Carbon copy of OMR sheet.
5. किसी प्रश्न के अंग्रेजी और हिन्दी रूपान्तरणों में भिन्नता होने की स्थिति में अंग्रेजी रूपान्तरण सही माना जायेगा जहाँ प्रश्न-पत्र दोनों भाषाओं में है।
  6. सही उत्तर का चयन करें तथा सम्बन्धित [(A) अथवा (B) अथवा (C) अथवा (D)] गोले को ओ.एम.आर. शीट में काला करें।
  7. किसी प्रश्न में एक से अधिक गोले को काला करने पर उसे जाँचा नहीं जायेगा।
  8. ओ.एम.आर. शीट पर किसी तरह का चिह्न न बनायें और न ही उसे मोड़ें।
  9. प्रश्न-पुस्तिका से पृष्ठ निकालते हुए पाये जाने पर परीक्षार्थी को अयोग्य घोषित किया जा सकता है और उसके विरुद्ध विधिक कार्यवाही भी की जा सकती है।
  10. अनुचित साधनों का उपयोग करने पर परीक्षार्थी को परीक्षा के लिए अयोग्य घोषित कर दिया जायेगा।
  11. सेलफोन, संगणक और ऐसी किसी भी अन्य प्रविधियों को परीक्षा भवन में लाने की अनुमति नहीं है।
  12. ओ.एम.आर. शीट की मूल प्रति वीक्षक को सुपुर्द किये बिना किसी भी परीक्षार्थी को अपना स्थान छोड़ने की अनुमति नहीं है। परीक्षार्थी प्रश्न-पुस्तिका एवं ओ.एम.आर. शीट की कार्बन प्रति को अपने साथ ले जा सकेगा।

1. Which of the following alga is called as agarophyte ?
  - (A) *Porphyra*
  - (B) *Batrachospermum*
  - (C) *Sargassum*
  - (D) *Gracilaria*
  
2. Volvocine line of evolution is seen in \_\_\_\_\_.
  - (A) blue-green algae
  - (B) brown algae
  - (C) green algae
  - (D) red algae
  
3. Which one of the following is **wrongly** matched ?
  - (A) Cyanophyta - Nostoc
  - (B) Chlorophyta - *Chlamydomonas*
  - (C) Rhodophyta - *Batrachospermum*
  - (D) Phaeophyta - *Chlorella*
  
4. *Albugo candida* is \_\_\_\_\_.
  - (A) Facultative parasite
  - (B) Facultative saprophyte
  - (C) Obligate parasite
  - (D) Obligate symbiont
  
5. Which of the following is **not** a gametophytic feature in *Marchantia* ?
  - (A) Archegonia
  - (B) Protonema
  - (C) Gemmae
  - (D) Elaters
  
6. *Anthoceros* has \_\_\_\_\_ in its sporophyte.
  - (A) Spores and elators
  - (B) Peristome and spores
  - (C) Peristome and elators
  - (D) Peristome and gemmae
  
7. Which of the following is tree fern ?
  - (A) *Blechnum*
  - (B) *Cyathea*
  - (C) *Nephrolepis*
  - (D) *Marsilea*
  
8. The **correct** sequence of the reproductive structures in pteridophyte is \_\_\_\_\_.
  - (A) Sporocarp - Spores - Sporangia - Sori
  - (B) Spores - Sporocarp - Sporangia - Sori
  - (C) Spores - Sporangia - Sori - Sporocarp
  - (D) Spores - Sporocarp - Sori - Sporangia
  
9. The late blight of potato is caused by \_\_\_\_\_.
  - (A) *Synchytrium endobioticum*
  - (B) *Phytophthora infestans*
  - (C) *Alternaria solanii*
  - (D) *Pythium vineae*
  
10. A document containing a comprehensive account of specific taxonomic group, generally a genus or family, is \_\_\_\_\_.
  - (A) Manual
  - (B) Flora
  - (C) Monograph
  - (D) Revision

11. A plan to adopt two words to coin a name was originally devised by \_\_\_\_\_.
- (A) Carl Linnaeus  
(B) Alphonse De Candolle  
(C) Gaspard Bauhin  
(D) Augustin De Candolle
12. The concept of ecological pyramid was first put forth by \_\_\_\_\_.
- (A) Charles Darwin  
(B) Howard Odum  
(C) Charles Elton  
(D) Eugene Odum
13. The intermediate zone between the two communities is known as \_\_\_\_\_.
- (A) Ecotype  
(B) Ecosere  
(C) Ecomet  
(D) Ecotone
14. In the leaf, the xylem is distributed towards \_\_\_\_\_.
- (A) Centre  
(B) Periphery  
(C) Abaxial side  
(D) Adaxial side
15. The interfascicular cambium forms non-vascular tissues, therefore, vascular tissue formation is restricted to fascicular cambium only. Such activity is found in \_\_\_\_\_.
- (A) *Bignonia*  
(B) *Bougainvillea*  
(C) *Dracaena*  
(D) *Aristolochia*
16. The Pyramid of numbers is inverted in case of \_\_\_\_\_ food chain.
- (A) Parasitic  
(B) Grassland  
(C) Forest  
(D) Ocean
17. Red Data Book contains data of all \_\_\_\_\_ species.
- (A) Plants  
(B) Endemic  
(C) Animals  
(D) Threatened
18. The endosperm of gymnosperms is \_\_\_\_\_.
- (A) diploid  
(B) polyploid  
(C) haploid  
(D) triploid
19. Origin of angiosperms is considered as 'Abominable mystery' by \_\_\_\_\_.
- (A) Charles Darwin  
(B) Alfred Wegner  
(C) Charles Elton  
(D) Armen Takhtajan
20. The disappearance of the traditional division of angiosperms into dicotyledons and monocotyledons is major outcome of \_\_\_\_\_ system of classification.
- (A) Armen Takhtajan  
(B) Cronquist  
(C) APG  
(D) Engler and Prantl's

21. The pungency of the onion is due to \_\_\_\_\_.
- (A) Nicotianic acid  
(B) Sulphuric acid  
(C) Allyl propyl disulphide  
(D) Hydrochloric acid
22. For equal distribution of chromosome sets to daughter cells \_\_\_\_\_ play major role.
- (A) Telomere  
(B) Centromere  
(C) Ribosomes  
(D) Chloroplasts
23. An inducer of Lac Operon system is \_\_\_\_\_.
- (A) Lactose  
(B) Galactose  
(C) Allolactose  
(D) Glucose
24. \_\_\_\_\_ is the largest angiosperm family in India.
- (A) Gyperaceae  
(B) Orchidaceae  
(C) Euphorbiaceae  
(D) Poaceae
25. \_\_\_\_\_ theory is also called as polar oscillation theory or shifting of poles.
- (A) Continental drift  
(B) Plate tectonics  
(C) Land bridge  
(D) Pendulum
26. Wildlife Protection Act was established on \_\_\_\_\_.
- (A) 1972  
(B) 1980  
(C) 1992  
(D) 2002
27. \_\_\_\_\_ is endemic tree genus for India.
- (A) *Mangifera*  
(B) *Hardwickia*  
(C) *Azadirachta*  
(D) *Magnolia*
28. \_\_\_\_\_ is chiefly a matter of quality while \_\_\_\_\_ is matter of quantity.
- (A) Flora, flora  
(B) Flora, Flora  
(C) Flora, Fauna  
(D) Fauna, Flora
29. \_\_\_\_\_ is often referred to as Father of Phytogeography.
- (A) Carl Linnaeus  
(B) Alexander Von Humbolt  
(C) Christopher Cook  
(D) Theodore Cooke
30. The role played by a species and its way of life is \_\_\_\_\_.
- (A) niche  
(B) ecosystem  
(C) biome  
(D) habitat

31. Year \_\_\_\_\_ was declared as International Year of Biodiversity.
- (A) 2008  
(B) 2006  
(C) 2012  
(D) 2010
32. ICN stands for :
- (A) Index Containing Names  
(B) International Code of Nomenclature of Algae, Fungi and Plants.  
(C) International Code for New plants  
(D) Indian Code for Nomenclature
33. Artificial classification proposed by Linnaeus used the number of \_\_\_\_\_ for grouping the plants.
- (A) Seeds  
(B) Stamens  
(C) Fruits  
(D) Roots
34. All India Coordinated Pearl Millet Improvement Project (AICPMIP) is located at :
- (A) Pune  
(B) ICRISAT, Hyderabad  
(C) Jodhpur  
(D) IARI, New Delhi
35. The Directorate of Rapeseed-Mustard Research (DRMR) for research on Rapeseed, and Taramira (the oil-seeds) is located in :
- (A) Gujarat  
(B) Rajasthan  
(C) Punjab  
(D) Uttar Pradesh
36. World-known Botanist Dr. Satish C. Maheshwari born in Rajasthan, passed away very recently at Jaipur. His investigations for successful attempts were made through anther culture for production of haploid plants. The other scientist who was associated with this ground breaking research was :
- (A) P. Maheshwari  
(B) B.M. Johri  
(C) Nirmala Maheshwari  
(D) Sipra-Guha Mukherjee
37. The term "Ecosystem" was first used in scientific publication by :
- (A) Eugene Odum  
(B) Howard T. Odum  
(C) G. Evelyn Hutchinson  
(D) Arthur Tansley
38. Select appropriate statement on storage proteins :  
Seed storage proteins are abundant and economically important. The detailed study of seed storage proteins dates from the turn of the century, when Osborne (1924) classified them into :
- (A) Groups on the basis of their extraction and solubility in water (albumins), dilute saline (globulins), alcohol/water mixtures (prolamins), and dilute acid or alkali (glutelins)  
(B) The major seed storage proteins include albumins, globulins, and prolamins  
(C) Peter R. Shewry has contributed through research on biology of storage proteins  
(D) All the above

39. Kharchia-65/Kharchia-local, the salt resistant wheats (germplasms) cultivated in part of Rajasthan are :
- Tetraploid
  - Diploid
  - Hexaploid
  - Octoploid
40. Dwarfism is a desirable characteristic for many agricultural plants. Dwarfism is caused by mutations in genes controlling the biosynthesis or signaling pathway of the plant hormone :
- Gibberellic Acid (GA)
  - Ethylene
  - Auxin
  - ABA
41. The plant growth regulator that promotes fruit ripening :
- ABA
  - Strigolactones
  - Brassinosteroid
  - Ethylene
42. Plant growth regulator that affect stomata movement the most, is :
- IAA
  - Strigolactones
  - Ethylene
  - ABA
43. If seeds are germinated in the dark, the seedling(s) have elongated stems, undifferentiated chloroplasts and unexpanded leaves. The control of plant growth, development, and differentiation in response to growth in darkness is called as :
- Skotomorphogenesis
  - Photomorphogenesis
  - Chlorosis
  - Phyto-skoto-morphogenesis
44. Xylogenesis (the formation of water conducting vascular tissue) is an important development in vascular plants. The xylem vessels are composed of fused tracheary elements (TEs)-dead, hollow cells with patterned lignified secondary cell walls. They result from the differentiation of the procambium and cambium cells and undergo cell death to become functional post-mortem. It is a paradigm of plant developmental.
- Immunity
  - PCD (Programmed Cell Death)
  - Hypersensitivity
  - Potency
45. A scientist who received his B.Sc. in Forestry and Ph.D. in Plant Pathology and genetics from the University of Minnesota who was awarded Nobel Peace Prize ?
- Barbara McClintock
  - Barbara Hahn
  - Norman Borlaug
  - M.S. Swaminathan

46. Select **incorrect** statement.

**Bud Dormancy :**

- (A) Is the repeated phase of rest that punctuates periods of growth in the life cycles of many perennial species.
- (B) Is significant in the adaptation of tree species to seasonal changes in climate and the trade-off of the timing of dormancy induction with duration of growth.
- (C) Influences plant production not only through promoting survival during inclement climatic conditions, but also through its effect on biomass accrual during the growing season.
- (D) However, regulation of dormancy from the perspective of global climate change, given that harmonization of the plant's activity-dormancy cycle with local climatic conditions is not critical for survival of tree species.

47. The photoperiodic induction of flowering is a systemic process requiring translocation of a floral stimulus from the leaves to the shoot apical meristem. In response to this stimulus, the apical meristem stops producing leaves to initiate floral development. Florigen is a systemic signal for the transition to flowering in plants. The florigen concept was proposed by :

- (A) M.K. Chailakhyan in 1936
- (B) Hiroyuki Tsuji
- (C) George Coupland
- (D) Jan A.D. Zeevaart

48. Pearl Millet/Bajra is major crop of Rajasthan and other dry regions of the world. The center of origin/diversity of Pearl-Millet is :

- (A) India
- (B) Africa-the diffused Center
- (C) South America
- (D) Indo-China

49. The circadian rhythmic movement of plant leaflets is known as :

- (A) Hydrotropism
- (B) Chemotropism
- (C) Nyctinasty
- (D) Geotropism

50. Quiescent Center resides in :

- (A) Root apex behind the root cap is the region of inactive cells
- (B) Lateral meristems
- (C) Flower meristems
- (D) Intercalary meristems

51. A hilum is a scar or mark left on a seed coat by the former attachment to :

- (A) Micropyle
- (B) Chalaza
- (C) The ovary wall or to the funiculus
- (D) Raphe

52. The most stable ecosystem is :

- (A) Pond
- (B) Forest
- (C) Ocean
- (D) Desert

53. Fully developed male gametophyte of flowering plant(s) has :

- (A) 4 nuclei
- (B) 3 nuclei
- (C) 2 nuclei
- (D) 1 nucleus



54. The shorter the wavelength, the more biologically damaging UV radiation can be, if it reaches the earth in sufficient quantity.
- Select appropriate statement :
- (A) UV-A is the most damaging and but it does not reach to the earth passing through the Ozone layer.
- (B) UV-B radiations are not harmful and most of the UV-B radiations of the sun are absorbed by Ozone.
- (C) All UV-C is not absorbed by Oxygen and Ozone.
- (D) UV-C is very dangerous but all UV-C is absorbed by Oxygen and Ozone.
55. A class of plant growth regulator exudates secreted by roots in the rhizosphere that inhibit shoot branching, promotes (i) symbiosis with AM fungi and (ii) seed germination of root parasitic plants of plants.
- (A) ABA
- (B) Cytokinins
- (C) Ethylene
- (D) Strigolactones
56. Non-leguminous plant(s) species that biologically fix nitrogen in association of Frankia, through nodulation are :
- (A) *Parasponia* species
- (B) *Parasponia*, *Casuarina* and *Alnus* species
- (C) *Casuarina* and *Alnus* species
- (D) *Zyzyphus* and *Casuarina* and *Alnus* species
57. Select **correct** statement :
- (A) Mineral reserves of Phosphorous(P) are renewable.
- (B) P-losses via erosion and leaching are responsible for eutrophication of water bodies and ecosystem degradation.
- (C) Reliance on costly P-fertilizers poses no threat to food security.
- (D) No microbe can P-mobilize and promote P-mineralization.
58. *Lacandonia schismatica* a hermaphrodite monocot is alone among 2,50,000 species of Angiosperms that has central stamen surrounded by a peripheral gynoeceum. This is an example of :
- (A) Single nucleotide mutation
- (B) Inversion
- (C) Homeotic mutation
- (D) Genetic inversion
59. Root hairs are :
- (A) Non-hair cells derived from epidermis and/or cortex of roots.
- (B) Invisible structures originated from cortex and help in water/mineral absorption.
- (C) Long tubular-shaped outgrowth(s) from epidermal cell(s).
- (D) Multicellular long tubular-shaped outgrowth(s) from epidermal cell(s).
60. Wood :
- (A) Is primary and secondary xylem of plants.
- (B) Provides structural support but does not enable water transport.
- (C) Is composed of cellulose, hemicellulose and callose.
- (D) Is composed of cellulose, hemicellulose and lignin.
61. The structure that functions as the interface between plant and atmosphere exerting control over gaseous diffusion and balancing the uptake of carbon dioxide with the loss of water are :
- (A) Stomata
- (B) Lenticels
- (C) Cuticle and its openings
- (D) None of the above

62. Leaves are derived from :
- The Central Zone of the Shoot Apical Meristem (SAM)
  - The Peripheral Zone of the SAM
  - Slow growing cells of the SAM
  - Undifferentiated cell of the SAM
63. MENDEL hoped that the highly polymorphic genus *Hieracium* would be particularly promising for verifying the laws of inheritance that he had discovered while working on *Pisum*. But all his incredibly painstaking emasculation and crossing experiments on *Hieracium* led to results that, to his consternation, seemingly stood in direct contradiction to his laws. It was later on discovered that :
- Hieracium* is one of the comparatively few angiosperms in which embryos develop asexually; i.e., they derive from the parthenogenetic development of apomeiotically formed, unreduced eggs with  $2n$  chromosomes
  - Seeds with such embryos give rise to clones, i.e., exact copies of their respective mother plants. Asexual reproduction by seeds, today termed apomixis (earlier synonym : apogamy), occurs in most species of *Hieracium* used by Mendel, and this simple fact explains the second of the above-mentioned contradictions that he noticed
  - Both (A) and (B)
  - None of the above
64. Some species of *Melandrium/Silene* ( $2n=24$ ), a dioecious species system with heteromorphic sex chromosomes (XY, males and XX, females), has a strong genetic commitment for sex determination. It has been found that :
- X chromosome is longer than chromosome Y and it suppresses female organ formation.
  - Y chromosome is longer than X and part of it suppresses female organ formation.
  - If female suppressing part of Y chromosome is deleted, the mutant plants produce hermaphrodite flowers.
  - Both (B) and (C)
65. Records indicate that present carbon dioxide concentration of the atmosphere is around :
- About 415 ppm
  - 500 ppm
  - 350 ppm
  - 300 ppm
66. A biologist Norman Myers coined the term "biodiversity hotspot" in 1988 as a biogeographic region characterized both by exceptional levels of plant endemism and by serious levels of habitat loss. India is one of the 17 megadiverse countries in the world. In India there are :
- Four biodiversity hotspots for biological diversity point of view
  - Three biodiversity hotspots
  - Two biodiversity hotspots
  - Four biodiversity hotspots with Andaman and Nicobar Islands as an additional hotspot
67. Transport across a membrane is said to be coupled when :
- Two molecules are transported across the membrane in the same direction.
  - Membrane transport is coupled to an energy source, such as ATP hydrolysis.
  - Transport of one ion down its gradient provides the energy to transport another molecule against its gradient.
  - Both the concentration gradient and membrane potential determine the rate of transport across membrane.
68. If tip of the actively growing coleoptile is covered with opaque cap and light is provided from one direction :
- The coleoptile will bend in the direction of light.
  - Coleoptile will bend opposite to the direction of light.
  - No curvature will take place.
  - Coleoptile will rotate on its axis.

69. During aerobic respiration electrons travel downhill and finally reach upto :
- Glucose to ATP to electron transport chain to NADH.
  - Food to glycolysis to Krebs' cycle to NADH to ATP.
  - Food to Krebs' cycle to ATP to NAD<sup>+</sup>.
  - Food to NADH to electron transport chain to oxygen.
70. Legume root nodules contain *leg* haemoglobin. Its function is to regulate :
- Expression of *nif* genes
  - Dinitrogenase activity
  - Oxygen supply
  - Nodule growth
71. During which phase of the cell cycle is DNA replicated ?
- G<sub>1</sub> phase
  - S phase
  - G<sub>2</sub> phase
  - M phase
72. Out of several gibberellins identified in plants, which one of the following is NOT bioactive ?
- GA<sub>1</sub>
  - GA<sub>3</sub>
  - GA<sub>4</sub>
  - GA<sub>5</sub>
73. Which of the following statement is **not** correct for terpenes or terpenoids ?
- Synthesised from Acetyl CoA
  - Sterols are triterpene derivatives
  - Gibberellins are diterpenes
  - Cytokinins are triterpenes
74. Which of the following kinase catalysed reaction is a reversible step in glycolysis ?
- Phosphofructo-kinase
  - Pyruvate kinase
  - Phosphoglycerokinase
  - Hexokinase
75. Which one of the following is **not** true for a chloroplast ?
- It contains DNA as genetic material
  - It produces ATP
  - It has an electron transport chain
  - It contains a transcription apparatus but no translational apparatus
76. Which among the following enzymes is **not** a component of nitrogen assimilation complex ?
- Nitrate reductase
  - Glutamate synthase
  - Lactate dehydrogenase
  - Glutamine synthetase
77. The K<sub>m</sub> of an enzyme is :
- One half of the V<sub>max</sub>
  - Dissociation constant
  - The substrate concentration that gives maximal velocity
  - The substrate concentration that gives half maximal velocity

78. What will happen if chloroplast thylakoids are suspended in pH 4 buffer and then rapidly transferred into a pH 8 buffer ?
- (A) Large amount of ATP formed from ADP+Pi without light.
- (B) Large amount of ATP formed from ADP+Pi with light.
- (C) Large amount of ADP+Pi formed from ATP in absence of light.
- (D) None of the above
79. A carotenoid-less mutant was grown under normal sunlight, it will experience :
- (A) increased photosynthetic rate
- (B) increased chlorophyll biosynthesis
- (C) reduced photorespiration
- (D) increased chlorophyll oxidation and necrosis
80. Which one of the following is **correct** for CAM plants ?
- (A) Stomata open in day time and RUBISCO fixes  $\text{CO}_2$  during night.
- (B) Stomata are largely closed in day time and PEPcase fixes  $\text{HCO}_3^-$  in night.
- (C) Stomata and RUBISCO absent in CAM plants and no  $\text{CO}_2$  is fixed.
- (D) RUBISCO and PEPcase both active and fix  $\text{CO}_2$  and  $\text{HCO}_3^-$  during night time.
81. At meiosis 20% gametes are recombinant for two genes. The distance between two genes will be :
- (A) 5 cM
- (B) 10 cM
- (C) 20 cM
- (D) 40 cM
82. Sodium alginate is used in :
- (A) Protoplast culture
- (B) Artificial seed formation
- (C) Cryopreservation
- (D) Media gelling agent
83. Which of the following is the **correct** sequence for the movement of electrons during the light-dependent reactions of plants ?
- (A) PS 680 to P 700 to Water and to  $\text{NADP}^+$
- (B) Water to P 700 to  $\text{NADP}^+$  to P 680
- (C) P 700 to P 680 to  $\text{NADP}^+$  to Water
- (D) Water to P 680 to P 700 to  $\text{NADP}^+$
84. The first living beings on earth were anaerobic because :
- (A) There was no oxygen on earth
- (B) Oxygen damages proteins
- (C) Oxygen interferes with the action of ribozymes
- (D) They evolved in deep sea
85. Which statement about amino acids is **correct** ?
- (A) In the formation of proteins, it is condensation reaction that links the amino group of one amino acid to the variable side chain of the adjacent amino acid.
- (B) The variable side chains of all the amino acids are highly reactive and carry a charge at neutral pH.
- (C) The peptide bond that links amino acids together in protein is type of ionic bond which explains why proteins are unstable at high temperatures.
- (D) They always have at least one amino group and at least one carboxyl group.

86. Which of the following plant hormones is **incorrectly** paired with its function ?

- (A) Auxins - responsible for apical dominance
- (B) Abscisic acid - regulates the rate of transpiration
- (C) Cytokinins - delays senescence
- (D) Gibberellins - promote bud and seed dormancy

87. What would be the result of meiosis in commercial bananas which are triploid ?

- (A) Aneuploid gametes
- (B) Triploid gametes
- (C) 50% diploid and 50% haploid gametes
- (D) No gametes at all

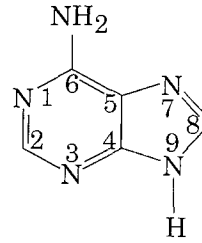
88. Most accurate method to determine the molecular weight of a given polypeptide is :

- (A) Gel permeation chromatography
- (B) SDS-PAGE
- (C) Analytical ultracentrifugation
- (D) MALDI-TOF mass spectrometry

89. Which of the following is **correct** statement ?

- (A) Lysosomes originate from Golgi apparatus.
- (B) Lysosomal enzymes are synthesized in ribosome present on ER.
- (C) Lysosomes are polymorphic and heterogenous organelles.
- (D) All are correct statements.

90. Name the nucleic acid base shown below :



- (A) Adenine
- (B) Guanine
- (C) Cytosine
- (D) Thymine

91. If the thylakoid are treated with detergent to solubilize lipids and then the proteins gently isolated, the following complexes will be observed, except :

- (A) ATP synthase
- (B) Cytochrome oxidase
- (C) Light harvesting complex
- (D) Pheophytin

92. Which one among the following is **not** a source of Vitamin in MS medium ?

- (A) Thiamine
- (B) Nicotinic acid
- (C) Glycine
- (D) Pyridoxine

93. Which one of the following is **not** a characteristic of the fungi ?

- (A) They are all absorptive heterotrophs
- (B) They have cell walls made of chitin
- (C) They are eukaryotic heterotrophs
- (D) They always have motile stages

94. Which one of the following DNA markers can be used to distinguish between a homozygote and a heterozygote ?
- (A) RAPD  
(B) AFLP  
(C) RFLP  
(D) ISSR
95. Which one of the following is a fungal disease of plants ?
- (A) Cucumber mosaic  
(B) Crown gall  
(C) Fire blight of pear  
(D) Apple scab
96. How many microliters of 0.1 M solution of sodium chloride will make 10 ml of 5 mM sodium chloride ?
- (A) 200  
(B) 100  
(C) 500  
(D) 10
97. 5-Bromouracil induces mutation because it :
- (A) Replaces a T and binds to G rather than A  
(B) Replaces a G and binds to A rather than C  
(C) Changes the binding affinity of G  
(D) Changes the binding affinity of T
98. Which activity is **not** found in the RecBD complex ?
- (A) Helicase  
(B) Endonuclease  
(C) RecA recruitment  
(D) None of the above
99. Among the following which are the features of Z-DNA ?
- (A) Left handed, glycosyl bond 'anti' for purine and 'syn' for pyrimidines.  
(B) Left handed, glycosyl bond 'syn' for purine and 'anti' for pyrimidines.  
(C) Right handed, glycosyl bond 'anti' for purine and 'syn' for pyrimidines.  
(D) Right handed, glycosyl bond 'syn' for purine and 'anti' for pyrimidines.
100. Which of the following is common to both chloroplast and mitochondria ?
- (A) Oxidative phosphorylation  
(B) Electron-acceptor pair  
(C) Photophosphorylation  
(D) Double stranded circular DNA genome

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