TSPSC Degree Lecturer

Previous Year Paper

Botany 2018 Paper II

Hall Ticket Number

Q.B. No. 100301

Booklet Code : A

Marks : 100

DL-315-BOT

Time : 120 Minutes

Paper-II

Signature of the Candidate

Signature of the Invigilator

INSTRUCTIONS TO THE CANDIDATE
(Read the Instructions carefully before Answering)

1. Separate Optical Mark Reader (OMR) Answer Sheet is supplied to you along with Question Paper Booklet. Please read and follow the instructions on the OMR Answer Sheet for marking the responses and the required data.
2. The candidate should ensure that the **Booklet Code printed on OMR Answer Sheet and Booklet Code supplied are same.**
3. **Immediately on opening the Question Paper Booklet by tearing off the paper seal, please check for (*i*) The same booklet code (A/B/C/D) on each page. (*ii*) Serial Number of the questions (1-100), (*iii*) The number of pages and (*iv*) Correct Printing.** In case of any defect, please report to the invigilator and ask for replacement of booklet with same code within five minutes from the commencement of the test.
4. Electronic gadgets like Cell Phone, Calculator, Watches and Mathematical/Log Tables are not permitted into the examination hall.
5. **There will be 1/4 negative mark for every wrong answer.** However, if the response to the question is left blank without answering, there will be no penalty of negative mark for that question.
6. Record your answer on the OMR answer sheet by using Blue/Black ball point pen to darken the appropriate circles of (1), (2), (3) or (4) corresponding to the concerned question number in the OMR answer sheet. Darkening of more than one circle against any question automatically gets invalidated and will be treated as wrong answer.
7. Change of an answer is **NOT** allowed.
8. Rough work should be done only in the space provided in the Question Paper Booklet.
9. **Return the OMR Answer Sheet and Question Paper Booklet to the invigilator before leaving the examination hall.** Failure to return the OMR sheet and Question Paper Booklet is liable for criminal action.

This Booklet consists of **17** Pages for **100** Questions +**2** page of Rough Work +**1** Title Page i.e. Total **20** pages

1. Of the following, which is the best description of the second law of thermodynamics ?

(1) The total energy of the universe is a constant

(2) The efficiency of the heat engine can never be greater than 20 percent

(3) The entropy of the universe is always increasing

(4) As the altitude increases, the boiling point of water decreases

2. The velocity of an enzyme catalyzed reaction was measured as a function of substrate concentration in the presence and absence of an inhibitor separately. The line-Weaver Burk plot of the data generated two straight lines that intersected on the Y-axis. The nature of this inhibition is :

(1) Uncompetitive (2) Noncompetitive

(3) Competitive (4) Mixed

3. All of the following statements about monomeric G proteins are true *except* :

(1) They are regulated by GTP-GDP exchange proteins.

(2) They are regulated by GTPase activating proteins.

(3) They regulate enzymes that synthesize cGMP.

(4) They regulate hormone signal.

4. Carbon fixing enzyme in C_4 plants is :

(1) Alpha amylase (2) RUBISCO

(3) Sucrose synthase (4) PEP carboxylase

5. Which of the following represents the sequence of electron flow in the light reactions of photosynthesis in higher plants ?

(1) $H_2O \rightarrow$ photosystem I $\rightarrow$ photosystem II $\rightarrow$ NADP

(2) $H_2O \rightarrow$ photosystem II $\rightarrow$ photosystem I $\rightarrow$ NADP

(3) $H_2O \rightarrow$ photosystem II $\rightarrow$ photosystem I $\rightarrow$ ATP

(4) NADPH $\rightarrow$ photosystem I $\rightarrow$ photosystem II $\rightarrow O_2$

6. The glyoxylate cycle is found in plants and bacteria but not in animals. The lack of this cycle in animals results in the inability to :

(1) Synthesize oxaloacetate from isocitrate

(2) Synthesize glutamate from malate

(3) Perform gluconeogenesis from amino acids

(4) Perform gluconeogenesis from lipids

7. The selective screening of cryptochrome mutants over phytochromes should be done under :

(1) Blue light (2) White light

(3) Red + blue light (4) Red light

8. Photoinhibitory damage is reflected by :

(1) High turnover rate of D1 protein in PSII

(2) Low turnover rate of D1 protein in PSII

(3) High turnover rate of D2 protein in PSII

(4) Low turnover rate of D2 protein in PSII

9. The hormone that is rapidly synthesized during water stress is :

(1) Cytokinin (2) ABA

(3) Auxin (4) GA3

10. Resistance to herbicide glyphosate in the transgenic plants is brought by :

(1) Glutamine synthase

(2) Acetoacetate synthetase

(3) Enolpyruvyl shikimate-3-phosphate synthase

(4) Aspartate aminotransferase

11. During vernalization FLC gene epigenetically suppressed by

(1) HDACs (2) PRC2 complex

(3) PRMT (4) TET

12. Which of the following is *not* true for allelochemicals ?

(1) Non-nutrinational molecules

(2) Stimulatory and inhibitory activity on neighboring plants

(3) Secreted by all parts of plants

(4) Secondary metabolites

13. Aquaporins are class of proteins that are relatively abundant in plant membranes. The following are certain statements regarding the properties of aquaporins :

(I) Aquaporins form water channels in membrane

(II) Some aquaporins also transport uncharged molecules such as NH_3

(III) The activity of aquaporins is not regulated by phosphorylation

(IV) The activity of aquaporin is regulated by calcium concentration and reactive oxygen species.

Which one of the following combinations of the above statements is *correct* ?

(1) I, II and IV (2) II, III and IV

(3) I, III and IV (4) I, II and III

14. Which of the following plant groups are evolved during the Silurian period ?

(1) Bryophyta (2) Psilophyta

(3) Lycophyta (4) Spherrophyta

15. Which of the following best describes a significant difference between vascular and non-vascular plants ?

(1) Vascular plants have lignified cell walls to provide mechanical support, whereas non-vascular plants do not

(2) Non-vascular plants are homosporous, whereas vascular plants are heterosporous

(3) In non-vascular plants the cells of the xylem and phloem are living, whereas in vascular plants they are non-living

(4) In vascular plants, the sporangia grow above the rest of the plant easy dispersal of spores, whereas in non-vascular plants they do not

16. Which of the following tissues is useful for conduction of food material in the rhizome of polytrichum ?

(1) Leptoids (2) Hydroids

(3) Stereids (4) Amylom

17. Which of the following was more abundant during Cretaceous period ?

(1) Mosses (2) Gymnosperms

(3) Angiosperms (4) Lycophytes

18. Which of the following statements are *correct* ?

(A) Thick walled tracheids and narrow rays is the character of pycnoxylic wood.

(B) Thin walled tracheids and broad rays is the character of manoxylic wood.

(C) Thick walled tracheids and broad rays is the character of pycnoxylic wood.

(D) The wood of pinus is pycnoxylic acid.

(1) (A), (B) and (D) (2) (A), (B) and (C)

(3) (B), (C) and (D) (4) (A), (B), (C) and (D)

19. What is the shape of conifer leaf adapted to heavy snow ?

(1) Flattened (2) Cubical

(3) Needle like (4) Scaly

20. Which of the following is the difference between the Shoot Apical Meristem (SAM) to Root Apical Meristem (RAM) ?

(*a*) RAM is not involved in organogenesis

(*b*) RAM produces new cells acropetally to renew the root cap

(*c*) RAM is involved in organogenesis

(1) (*a*) and (*b*) (2) (*b*) and (*c*)

(3) (*a*) and (*c*) (4) (*a*), (*b*) and (*c*)

21. Which of the following is/are the function(s) of Expansins ?

(*a*) involved in reaction methylation

(*b*) involved in transglycosylation

(*c*) involved in acetylation

(*d*) Cross-linking network in cell walls

(1) (*a*) and (*b*) (2) (*a*), (*b*), (*c*) and (*d*)

(3) (*a*) and (*d*) (4) (*d*) only

22. WOX (Wuschel Homeo box like) family related to :

(1) Cell division and development in the early embryo of *Arabidopsis*

(2) Photosignaling in *Arabidopsis*

(3) Transpiration in *Arabidopsis*

(4) Vascular tissue proliferation

23. Below are examples of plants with symbiotic associations. Which is best combination ?

(*a*)	*Glyine max*	(I)	*Brudyrhizobium japonicum*
(*b*)	*Trifolium sativa*	(II)	*Rhizobium leguminosarum*
(*c*)	*Saccharum app*	(III)	*Gluconacetobacter diazotrophicus*
(*d*)	*Medicago sativa*	(IV)	*Sinorhizobium meliloti*

(1) (*a*) (I), (*b*)—(II), (*c*)—(III), (*d*)—(IV)

(2) (*a*)—(IV), (*b*)—(II), (*c*)—(I), (*d*)—(III)

(3) (*a*)—(III), (*b*)—(II), (*c*)—(IV), (*d*)—(I)

(4) (*a*)—(III), (*b*)—(I), (*c*)—(IV), (*d*)—(II)

24. A mutation deleting an upstream activating sequence for a single gene would be expected to be :

(1) polar (2) trans-dominant

(3) silent revertible (4) *cis-dominant*

25. After pollination, the following events are very important for fertilization to occur in flowering plants ?

(1) Sperms swim to the egg and the polar nuclei

(2) Meiosis occurs within the pollen grain

(3) A pollen tube grows from the stigma to the ovule

(4) Petals close around the reproductive parts

26. Aspirin delays senescence in cut parts of plant and keeps flower fresh for longer time. The effect of aspirin is :

(1) by decreasing the synthesis of ethylene

(2) by increasing the synthesis of ABA

(3) by increasing the synthesis cytokinins

(4) by increasing the synthesis of GA

27. Somatic embryos from cotyledon explants would develop in which of the following sequences ?

(1) Globular, torpedo, heart, cotyledonary stage

(2) Globular, heart, torpedo and cotyledonary stage

(3) Cotyledonary, heart, globular and torpedo

(4) Cotyledonary, torpedo, heart and globular

28. Lockhart equation explains relationship between the :

(1) rate of increase in cell volume, turgor pressure and cell wall

(2) cell volume and respiration speed

(3) cell volume and cellular organelles health

(4) cell volume and oxidative phosphorylation rate

29. Asda-Halliwell pathway protects plants against oxidative stress during unfavorable environmental growth regimes. The following are some statements related to the stresstolerance mechanism through this pathway in plants :

(1) Oxygen acceptor electrons as an alternative electron acceptor

(2) Hydrogen peroxide is reduced by catalase to form water

(3) Ascorbate is oxidized and regenerated

(4) Glutathione is oxidized and reduced

30. Which are *true* in case of pollen allergens ?

(*a*) Includes pectin-degrading enzymes

(*b*) Diseases resistant proteins

(*c*) Ca^{+2} Binding proteins

(1) (*a*) only (2) (*b*) only

(3) (*c*) only (4) (*a*), (*b*), (*c*)

31. The fruits undergo burst in respiration as they ripen is called :

(1) respiratory hormone burst (2) respiratory climacteric

(3) respiratory elevation (4) respiratory depression

32. What are the chemicals found in stem and root of phyllanthus amarus respectively ?

(1) Phyllemblic acid and Ascorbic acid

(2) Ascorbic acid and Phyllemblic acid

(3) Glycoflavones and Saponin

(4) Saponin and Glycoflavones

33. ICAR-Indian Institute of Horticulture Research is located in :

(1) Maharashtra (2) Kerala

(3) Telangana (4) Karnataka

34. Which of the following is best match ?

(*a*)	Sundarban	(I)	Sanctury
(*b*)	Bandipur	(II)	Biodiversity hot spot
(*c*)	Hazaribagh	(III)	National Park
(*d*)	Western Ghat	(IV)	Biosphere reserve

(1) (*a*)—(IV), (*b*)—(III), (*c*)—(I), (*d*)—(II)

(2) (*a*)—(II), (*b*)—(III), (*c*)—(IV), (*d*)—(I)

(3) (*a*)—(IV), (*b*)—(II), (*c*)—(III), (*d*)—(I)

(4) (*a*)—(II), (*b*)—(IV), (*c*)—(I), (*d*)—(III)

35. The largest rattan genus distributed in Asia is :

(1) Calamus (2) Daemonorops

(3) Ceratolobus (4) Korthalsia

36. Phyllanthus genus growth forms including :

(*a*) annual and perennial herbs

(*b*) shrubs and climbers

(*c*) floating aquatics and herbs

(*d*) succulents and perennial herbs

(1) (*a*) and (*b*) (2) (*a*), (*b*), (c) and (*d*)

(3) (*a*) and (*c*) (4) (*b*), (c) and (*d*)

37. Gurmarin is obtained from :

(1) *Mangifera indica* (2) *Andrographs* sps

(3) *Eucalyptus* sps (4) *Gymnema sylvestre*

38. Shola is :

(1) Dryland

(2) Deciduous forest surrounded by grassland

(3) Chapprals

(4) Evergreen forest surrounded by grassland

39. Gir national park is located in :

(1) Sikkim (2) Karnataka

(3) Gujarat (4) Maharashtra

40. Find the *correct* match of ICAR Research Institutes with places :

(*a*)	Central Plantation Crop Research Institute	(I)	Hyderabad
(*b*)	Central Institute of Cotton Research	(II)	Kanpur
(*c*)	Indian Institute of Pulses Research	(III)	Kasaragod
(*d*)	Central Research Institute of Dryland Agriculture	(IV)	Nagpur

(1) (*a*)—(I), (*b*)—(II), (*c*)—(III), (*d*)—(IV)

(2) (*a*)—(II), (*b*)—(III), (*c*)—(IV), (*d*)—(I)

(3) (*a*)—(III), (*b*)—(IV), (*c*)—(II), (*d*)—(I)

(4) (*a*)—(IV), (*b*)—(II), (*c*)—(III), (*d*)—(I)

41. Chromosome organization demonstrated from a series of biochemical, electron microscopic and X-ray crystallographic studies. When interphase chromatin is isolated in low salt buffer and observed under EMS 11 nm bead on string organization is seen. Interphase chromatin directly observed under EM shows 30 nm fibre. When histones are depleted from metaphase chromosome and visualized under EM, it shows a huge number of very large loops associated with scaffold.

The following interpretations can be made from these :

(I) 11 nm fibre is formed when nucleosomes are brought closer by scaffold

(II) 30 nm interphase chromatin is formed by zig-zag organization of a nucleosomes of 11 nm fibre

(III) 30 nm fibre makes a solenoid packing to form the metaphase chromosome

(IV) 30 nm fibre gets organized into loops due to SARs getting associated with scaffold proteins and coming closer

The *correct* combination of interpretations is :

(1) (I) and (IV) (2) (I) and (III)

(3) (I) and (II) (4) (II) and (IV)

42. Polytene chromosome is generated due to :

(1) Failure of DNA replication

(2) Repeated DNA replication without segregation of chromosomes

(3) Pairing of homologous chromosomes

(4) Due to extensive transcription process

43. The concept of recon was proposed by Seymour Benzer by studying recombination between :

(1) Lysis mutants of bacteriophage T4

(2) White eye mutants of *Drosophila melanogaster*

(3) Biochemical mutants of *Neurospora crassa*

(4) Auxotrophic mutants of *Escherichia coli*

44. When bacteria are transformed with DNA, the effectiveness with which they take up DNA is quantified as the transformation efficiency. If the operational definition of transformation efficiency is the number of bacterial colonies obtained when bacteria are incubated with 1 microgram of DNA. A new student prepared bacterial cells suitable for transformation. On testing his preparation, he obtained 800 colonies when he plated the cells with 8 picograms of DNA. His transformation efficiency is :

(1) 1×10^7 (2) 1×10^6

(3) 8×10^9 (4) 8×10^5

45. While designing an experiment for *Agrobacterium* mediated plant transformation, a student noted down the following points :

(*a*) Ti and Ri plasmids induce crown gall and hairy root disease, respectively

(*b*) Enzyme octopine synthase and nopaline synthase involved in the synthesis of octopine and nopaline, respectively are encoded by T-DNA

(*c*) All the six *vir* genes, *vir* A, *vir* B, *vir* C, *vir* D, *vir* E and *vir* G are absolutely required for virulence

(*d*) Almost perfect 25 bp direct repeate sequences flanking all Ti and Ri plasmids in the T-DNA region is essential for T-DNA transfer

Which one of the following combinations of the above statements is *correct* ?

(1) (*a*), (*b*) and (*c*) (2) (*b*), (*c*) and (*d*)

(3) (*a*), (*c*) and (*d*) (4) (*a*), (*b*) and (*d*)

46. In a transformation experiment, donor DNA from an *E. coli* strain with the genotype Z^+Y^+ was used to transform a strain of genotype ZY. The frequencies of transformed classes were :

Z^+Y^+	200
Z^+Y	400
Z^-Y	400
Total	1000

What is the frequency (%) with which Y locus is co-transformed with the Z locus ?

(1) 1 (2) 20

(3) 33.3 (4) 40

47. The melting temperature Tm of a duplex is defined as the temperature at which half the molecules have dissociated into single strands. Tm will be maximal at :

(1) Low ionic strength and high DNA conc.

(2) High ionic strength and high DNA conc.

(3) High ionic strength and low DNA conc.

(4) Low ionic strength and low DNA concentration

48. A silent mutation in a gene results in :

(1) No change in the nucleotide sequence of the mRNA encoded by the gene

(2) No change in the aa sequence of the protein encoded by the gene

(3) No expression of the protein encoded by the gene

(4) An aa substitution that has a significant effect on the functional activity of the protein encoded by the gene

49. A cross is made between a pure breeding plant having red coloured flowers with a pure breeding plant having white coloured flowers. Such a cross is called :

(1) Test cross (2) Monohybrid cross

(3) Dihybrid cross (4) Back cross

50. A moving ant, upon encountering an obstacle, may turn either left or right and continue moving. To test the hypothesis that the direction chosen by the ant is random, the most appropriate statistical test is :

(1) Student's *t*-test (2) χ^2-test of independence

(3) χ^2-test of goodness of fit (4) correlation test

51. The % base pair values of four nucleic acid samples are provided below. Which one of the following samples has the highest Tm ?

(1) A = 31; T = 21; G = 20; C = 28

(2) A = 26; T = 14; G = 34; C = 26

(3) A = 17; T = 19; G = 33; C = 31

(4) A = 20; T = 30; G = 25; C = 25

52. Which is *correct* ?

Spliceosomes

(A) are composed of RNA and protein

(B) recognize RNA sequences that signal for removal of introns

(C) can produce different mRNA molecules by splicing at alternate site

(1) (A) and (B) (2) (A) and (C)

(3) (B) and (C) (4) (A), (B) and (C)

53. Which of the following level of sequence *correctly* represent the classification of plants ?

(1) Kingdom-Division-Class-Order-Family-Genus-Species

(2) Kingdom-Division-Order-Class-Family-Genus-Species

(3) Division-Kingdom-Class-Order-Family-Genus-Species

(4) Kingdom-Division-Class-Family-Order-Genus-Species

54. According to the "Sexual System of Classification" the entire plant kingdom is divided into :

(1) 23 Classes (2) 24 Classes

(3) 240 Classes (4) 1336 Classes

55. Which of the following statements are *correct* ?

(A) Obdiplostemonous means outer whorl of stamens are opposite to petals and inner whorl are opposite to sepals

(B) Ruminate endosperm is present in Annonaceae

(C) Gynostegium is seen in Apocynaceae

(D) Carculus fruits are present in Lamiaceae

(1) (A), (B), (C), (D) (2) (A), (B), (C)

(3) (B), (C), (D) (4) (A), (B), (D)

56. An illustration of the evolutionary relationship among a group of organisms is known as Phylogenetic Tree. This is also known as :

(1) Dendrogram (2) Tree Monogram

(3) Cystogram (4) Genogram

57. Which of the following computer based software is used for phylogenetic analysis based upon multiple organism gene sequence ?

(1) BLAST (2) Clustal W

(3) Pubmed (4) SWISS-PROT

58. Grafting is *not* possible in monocot plants because they :

(1) lack cambium and have scattered vascular bundles

(2) have parallel bundles

(3) are herbaceous

(4) have smaller flower

59. If each stamen of a flower is having 580 pollen mother cells, how many pollen grains are produced from a single flower of Dalbergia ?

(1) 41760 (2) 17200

(3) 20880 (4) 23200

60. A very popular anti-cancer medicinal plant *Catharanthus roseus* belong to :

(1) Malvaceae (2) Apocynaceae

(3) Asclepiadaceae (4) Lamiaceae

61. The malpighian cells in the seed coat of Fabaceae are :

(1) Macrosclereids (2) Brachysclereids

(3) Osteosclereids (4) Astrosclereids

62. How many types of spores are produced after somatic hybridisation and before reduction division in black stem rust of wheat ?

(1) 1 (2) 2

(3) 3 (4) 4

63. The cell wall of bacteria is made up of peptidoglycans which consist of the alternating unit of :

(1) N-methylglucosamine and N-acetylglucosamine

(2) N-acetylglucosamine and N-acetyl muramic acid

(3) N-aminoglucosamine and N-acetyl muramic acid

(4) N-acetylglucosamine and M-chlorobenzoic acid

64. Which of the following virus has helical symmetry ?

(1) Adenovirus (2) φX174

(3) Vaccinia (4) TMV

65. What is the genetic material of geminiviruses ?

(1) ssDNA (2) dsDNA

(3) ssRNA (4) DNA-RNA Complex

66. There are small outgrowths on leaf and stem which is usually associated with mosaic. This phenomenon is known as :

(1) Stunting (2) Enations

(3) Virescence (4) Chlorosis

67. A bacterial cell divides once every minute. It takes an hour to fill a glass. How much time will it take to fill half of the glass ?

(1) 30 minutes (2) 15 minutes

(3) 29 minutes (4) 59 minutes

68. The order Centrales and Pennales belong to which of the following class :

(1) Both belong to class Bacillariophceae

(2) Both belong to class Chloromonodineae

(3) Centrales belong to class Bacillariophceae whereas Pennales belong to class Chloromonodineae

(4) Both belong to class Rhodophyceae

69. The members of order Laminariales are commonly known as :

(1) Sinus (2) Desmids

(3) Kelp (4) Laminarin

70. It is compact globose structure formed by the aggregation and adhesion of hyphae which may survive for many years and represent the resting stage of fungus. It accumulates the reserve food also. This mass is known as :

(1) Haustoria (2) Sclerotium

(3) Appressorium (4) Prosenchyma

71. Which of the following highly fatal toxin and carcinogen substance produced by some fungus species which affect the central nervous system ?

(1) Gyromitrin (2) Trisporic acid

(3) Neocercosporin (4) Ephedrine

72. The acrosome is an organelle develop over the head of spermatozoa is derived from :

(1) Smooth endoplasmic reticulum (2) Rough endoplasmic reticulum

(3) Golgi complex (4) Mitochondria

73. Because of presumed lipid content, one of the cellular organelle is also known as Lipochondria. This cellular organelle is :

(1) Smooth endoplasmic reticulum (2) Mitochondria

(3) Golgi Complex (4) Plasma membrane

74. This protein is produced by plant cell wall which acts as mechanical barrier to block spread of pathogen between cells during infection :

(1) Extensin (2) Exarch

(3) Effectors (4) Elicitors

75. Which of the following statements is *correct* about the meiosis cell division ?

(1) It possess 2 cell .divisions, produce 4 daughter cells with haploid no. of chromosome, genetically different from parent

(2) It possess 2 cell divisions, produce 2 daughter cells with haploid no. of chromosome, genetically different from parent

(3) It possess 2 cell divisions, produce 4 daughter cells with diploid no. of chromosome, genetically different from parent

(4) It possess 2 cell divisions, produce 4 daughter cells with haploid no. of chromosome, genetically similar from parent

76. Glucose-6-phosphatase enzyme is found in :

(1) Smooth endoplasmic reticulum (2) Rough endoplasmic reticulum

(3) Sarcoplasmic reticulum (4) Chromatin reticulum

77. Which of the following facilitates movement of substances between the plant cells ?

(1) Plasma membrane (2) Plasmodesmata

(3) Middle lamella (4) Cytoplasm

78. The zone of vegetation at the bottom cold layer of water zone where NO temperature gradient is evident is known as :

(1) Epilimnion (2) Thermocline

(3) Metalimnion (4) Hypolimnion

79. Some insects, birds and mammals in warm humid climates bear darker pigment than the races of some species present in cool and dry climate. This phenomena is known as :

(1) Gloger rule (2) Bergman's rule

(3) Allens rule (4) Jordon's rule

80. This is the process of soil formation through mineral matters and their biological, topographical and climatic interactions. This process is known as :

(1) Melanization (2) Eluviation

(3) Pedogenesis (4) Podosolization

81. Phenology of the plant is affected by its response to alternating high and low temperature in diurnal cycle is known as :

(1) Phenotherm (2) Thermoperiodism

(3) Thermophile (4) Hekistotherms

82. The cooling of seeds at low temperature in order to accelerate flowering is known as :

(1) Photoperiodism (2) Aestivation

(3) Vernalization (4) Senotherm

83. Same species differ in appearance due to environmentally induced variations are known as :

(1) Ecads (2) Ecospecies

(3) Ecotypes (4) Ecocline

84. Species that occur in different geographical regions are called :

(1) Sympatric (2) Allopatric

(3) Amphitheatric (4) Fasciation

85. In context with population ecology "a bell-shaped polygon" is related to :

(1) Age structure of population (2) Natality of population

(3) Size and density of population (4) Dispersion of population

86. In plant ecology the "Seral Stage" is related to :

(1) Size and density of population (2) Climax Community

(3) Seed dormancy (4) Ecological natality

87. What is the total area of "Gulf of Mannar Biosphere Reserve" in terms of Square kilometer ?

(1) 1,500 (2) 10,500

(3) 2,837 (4) 5,520

88. Plants that are grown in polluted soil, their roots can extract the contaminant like heavy metals by one of the two ways; either breaks the contaminant down in the soil or to suck the contaminant up and above it in the stem and leaves of plant. This phenomenon is called :

(1) Phytoremediation (2) Bio-magnification

(3) Phytomining (4) Bio-transformation

89. Major pollutants responsible for depletion of ozone layer in the atmosphere are :

(1) Chlorofluorocarbons, nitrogen oxides and hydrocarbons

(2) Sulfur dioxides, methane and Carbon monoxide

(3) Carbon monoxide and Carbon dioxide

(4) PAN and Carbon monoxide

90. What is "Micropropagation" ?

(1) Regeneration of whole plant through tissue culture media

(2) Microbes and plant culture in same nutrient media

(3) Development of microbes in plant cell and tissues

(4) Transfer of genes into plant using microorganism

91. The asexual propagation of plants by detachment of some part of the plant body e.g. a cutting and its subsequent development into a complete plant is called :

(1) Synchronous culture (2) Vegetative propagation

(3) Parasexual hybridization (4) Morphogenesis

92. These are cells or plant containing nucleus of one species but cytoplasm from both the parental species are called :

(1) Cybrid (2) Capsella

(3) Callus (4) Meristemoid

93. Nicotine is plant based secondary metabolites which is used as :

(1) Perfume (2) Insecticides

(3) Anti-biotics (4) Hormones

94. What is "Canavanine" ?

(1) A type of vitamin

(2) A type of monosaccharides

(3) A type of plant hormone

(4) An amino acid which is not found in protein

95. Liquid Nitrogen is used in the laboratories for cryopreservation of seeds, pollens etc. What is the temperature of liquid Nitrogen ?

(1) –96°F (2) –96°C

(3) –196°F (4) –196°C

96. 'F' factor is the very important feature of *E. coli*. Replication of F factor in *E. coli* is strictly controlled. The F factor contains gene *oriS*, *rep E*, *parA*, *parB* and *parC*. Based upon these features Shizuya *et al* in 1992 developed a high capacity DNA insert vector, which is very much in use for preparing genomic library of higher organisms. What is the name of the vector ?

(1) BAC vector (2) PAC vector

(3) YAC vector (4) Fosmid vector

97. During isolation of DNA from plant cell, a particular ratio of phenol : chloroform : isoamyl alcohol is used. How do they work ?

(1) Phenol denature protein and isoamyl alcohol denature plasmid DNA

(2) Phenol denature protein and isoamyl alcohol prevent loss of DNA and frothing

(3) Phenol denature cell wall and isoamyl alcohol denature plasma membrane

(4) This ratio helps in the final stage of DNA isolation for precipitation of DNA

98. Which of the following diseases is caused by *Agrobacterium tumefaciens* ?

(1) brain tumor in human

(2) powdery mildew disease in any agricultural crop

(3) bacterial blight in rice

(4) plant tumor

99. Autoclaving is the method of sterilization of equipment, certain buffers and media. Usually, at what temperature and pressure it is used in the laboratory ?

(1) 221°C and 15 pounds of psi respectively

(2) 121°C and 15 pounds of psi respectively

(3) 115°C and 121 pounds of psi respectively

(4) 221°C and 115 pounds of psi respectively

100. Which of the following antibiotic resisiance gene is present in YAC vector ?

(1) Ampicillin (2) Chloramphenicol

(3) Kanamycin (4) Streptomycin

Space for Rough Work

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