KAS (P) Examination, 2009

BOTANY

[03]

Time Allowed : Two Hours] *[Max. Marks : 300*

1. Virus free plants can be obtained by :
   (a) Antibiotic treatment
   (b) Shoot apex culture
   (c) Root apex culture
   (d) Culturing phloem of stem

2. Plants produced through pollen culture in-vitro are :
   (a) Gyno-androgenic
   (b) Male plants
   (c) Androgenic plants
   (d) Sporogenic

3. Who discovered that morphogenesis in culture medium is controlled by hormones ?
   (a) Muir et. al.
   (b) Hilder brandt
   (c) Murashige & Skoog
   (d) Skoog & Miller

4. Golden rice developed through transgenic technique is enriched with :
   (a) High Lysine
   (b) High Methionine
   (c) High Glutenin
   (d) High Vitamin

5. In callus culture, roots can be induced by supply of :
   (a) Auxin and no cytokinin
   (b) Higher concentration of auxin and lower concentration of cytokinin
   (c) Higher concentration of cytokinin and lower concentration of auxins
   (d) Both auxins and cytokinins in equal proportion

6. Embryo like structures produced through the culture of somatic cells are known as :
   (a) Embryo
   (b) Oogamous Embryo
   (c) Embryoids
   (d) Synthetic Embryo

7. Genetic variations caused during tissue culture are called as :
   (a) Gametoclonal variations
   (b) Protoclonal variations
   (c) Somaclonal variations
   (d) Any of the above

8. The most common auxin for the induction of somatic embryogenesis is :
   (a) 2, 4 – D
   (b) 2, 4, 5 – T
   (c) N. A. A.
   (d) I. B. A.

9. The haploid plants produced through anther culture :

(a) Reproduce normally

(b) Do not flower

(c) Flower profusely but gametes are not formed

(d) Exhibit abnormal development

10. Saffron is obtained from styles and stigma of :

(a) Elettaria

(b) Cinnamomum

(c) Crocus

(d) Syzygium

11. Biodiversity decrease with :

(a) Increasing Altitude and Latitude

(b) Decreasing Altitude and Latitude

(c) Increasing Altitude and Decreasing Latitude

(d) Decreasing Altitude and Increasing Latitude

12. How many biogeographic regions exist in India ?

(a) 7

(b) 9

(c) 10

(d) 12

13. The concept of "Hot Spot" was given by :

(a) George Cuvier

(b) N. E. Borlaug

(c) Al Gore

(d) Norman Hyer

14. India possess 2.4% of the total land area of the world, but abound what percentage of global biodiversity ?

(a) 7.7%

(b) 4.4%

(c) 2.4%

(d) 10%

15. India is center of diversity of :

(a) Maize

(b) Rice

(c) Eucalyptus

(d) Sunflower

16. When nucleated and enucleated protoplasts are fused together, the resulting product is termed appropriately as :

(a) Hybrid

(b) Somatic hybrid

(c) Cybrid

(d) Clone

17. Surface sterilization of explants prior to inoculation is done by :

(a) Autoclaving

(b) U. V. rays

(c) Sodium Hypochlorite treatment

(d) X-rays

18. Somatic hybrids are achieved through :

(a) Grafting

(b) Conjugation

(c) Recombinant DNA technology

(d) Protoplast fusion

19. Which technique can be helpful in overcoming hybridization barriers :
(a) Shoot apex culture
(b) Embryo rescue
(c) Protoplast fusion
(d) Both (b) and (c)

20. Modern biotechnology is based on :
(a) Protoplast fusion
(b) Tissue culture
(c) Genetic engineering
(d) Recombinant proteins

21. *Puccinia graminis* is heteroecious and completes its life cycle on wheat and barberry. Which kinds of spores are formed on barberry :
(a) Uredospores
(b) Aeciospores
(c) Pycniospores
(d) Aeciospores and Pycniospores

22. A coenogamete of *Rhizopus* may sometimes behave as a zygospore. This type of zygospore is known as :
(a) Oospore
(b) Azygospore
(c) Coenozygospore
(d) Aplanospore

23. Which disease is caused by *Cercospora* in groundnut ?
(a) Rust disease
(b) Leaf spot disease
(c) Smut disease
(d) Tikka disease

24. Spore polymorphism is exhibited by :
(a) Rusts
(b) Smuts
(c) Powdery mildew
(d) Downy mildew

25. Discovery of Bordeux Mixture is coupled to :
(a) Powdery mildew of cucurbits
(b) Downy mildew of Grapes
(c) Late blight of potato
(d) Early blight of Potato

26. Indian Wildlife (Protection) Act was enacted in :
(a) 1952
(b) 1972
(c) 1947
(d) 1997

27. In India "Taungya System" of Agroforestry was first adopted in :
(a) Orissa
(b) Meghalaya
(c) Kerala
(d) Madhya Pradesh

28. "Myrmecophily" is an example of :
(a) Amnensalism
(b) Commensalism
(c) Proto-cooperation
(d) Neutralism

29. "Cauliflory" and "Lianas" are characteristics of :
(a) Temperate deciduous forests
(b) Tropical evergreen rain forests
(c) Chapparal
(d) Tropical Savanna

30. Which of the following is *not* a cause for the loss of Biodiversity ?
(a) Habitat destruction
(b) Co-Extinction
(c) Green House Gases
(d) Alien species

31. The transference of pollen grains from the anthers of one flower to the stigma of the other flower but on the same plant is known as :
(a) Self pollination
(b) Cross pollination
(c) Herkogamy
(d) Geitonogamy

32. Normally the mature pollen grains are 3-celled. Occasionally the pollen grains with more nuclei organize into embryo sac like structure. Such pollen embryo sac like structures were first observed by Nemec in 1898 in which of the following plants ?
(a) Cyperus
(b) Hyacinthus
(c) Scrophularia
(d) None of the above

33. How many meiotic divisions are required to produce 101 wheat grains ?
(a) 101
(b) 52
(c) 127
(d) 201

34. During the development of anthe wall layers if the middle layers ar contributed by both the outer an inner secondary parietal layers, th development of anther wall layer conforms to :
(a) Dicot type
(b) Monocot type
(c) Basic type
(d) Reduced type

35. When the anthers in a flower ar united into a bundle but the filament are free. This type of cohesion c stamen is known as :
(a) Synandrous stamen
(b) Monadelphous stamen
(c) Syngenesious stamen
(d) Protandrous stamen

36. In some plants, seeds germinate insid the fruit while still attached to th mother twig. Such a condition known as :
(a) Parthenogenesis
(b) Ovipary
(c) Vivipary
(d) None of the above

37. Excessive enlargement of disease organ in crucifers because of th increase in cell number is :
(a) Hypertrophy
(b) Epiplasia
(c) Hyperplasia
(d) None of the above

38. Red rot of sugarcane is caused by :
(a) Cercospora
(b) Phytophthora
(c) Xanthomonas
(d) Colletotrichum

39. Late blight of potato is caused by :

(a) *Alternia solanii*

(b) *Phytophthora infestens*

(c) *Albugo candida*

(d) *Fusarium*

40. Loose smut disease of wheat is caused by :

(a) *Ustilago tritici*

(b) *Puccinia graminis*

(c) *Ustilago hordei*

(d) *Fusarium*

41. Segregation of genes takes place during :

(a) Metaphase

(b) Anaphase

(c) Prophase

(d) Embryo formation

42. A dihybrid cross is made between YYrr and yyRR. In F_2 generation, the ratio of parental to recombinant phenotype is :

(a) 9 : 7

(b) 6 : 10

(c) 10 : 6

(d) 7 : 9

43. Which Mendelian principle will not operate if two genes understudy are close together ?

(a) Paired unit factors

(b) Dominance

(c) Segregation

(d) Independent Assortment

44. F_2 generation of a cross between two white flowered strains of sweet pea yields a purple flowered plants : 7 white flowered plants. This is an example of :

(a) Epistasis

(b) Complementary genes

(c) Supplementary genes

(d) Gene inhibition

45. The allele which is unable to express its effect in the presence of another is called :

(a) Codominant

(b) Supplementary

(c) Complementary

(d) Recessive

46. Sexual reproduction brings about :

(a) Polyploidy

(b) Aneuploidy

(c) Euploidy

(d) Genetic recombination

47. When chromosome sets are present in multiple of '*n*', the condition is called as :

(a) Diploidy

(b) Aneuploidy

(c) Haploidy

(d) Euploidy

48. Haploid chromosome number in a plant is 12. What would be the number in a monosomic ?

(a) 23

(b) 22

(c) 25

(d) 26

49. Numerical change in chromosome number which is not exact multiple of haploid genome is :

(a) Triploid

(b) Allopolyploid

(c) Autopolyploid

(d) Aneuploid

50. Triticale is a hybrid produced by a cross between :

(a) Wheat and Rice

(b) Wheat and Rye

(c) Wheat and Sorghum

(d) Wheat and Sugarcane

51. The periderm is composed of :

(a) Phellogen

(b) Phellem

(c) Phelloderm

(d) All of the above

52. In many plants, the xylem parenchyma and ray parenchyma cells develop balloon like protrusions into the tracheary elements. Such ingrowths are known as :

(a) Callose

(b) Tylosoids

(c) Tylose

(d) Rhitidome

53. Largest amount of chloroplast is found in the leaf in :

(a) Guard cell

(b) Bundle sheath

(c) Palisade tissue

(d) Spongy tissue

54. In a vascular bundle if the xyl surrounds phloem, the vascu bundle is known as :

(a) Collateral

(b) Bicollateral

(c) Amphivasal

(d) Amphicribral

55. Grass stem elongates because of activity in :

(a) Apical meristem

(b) Intercalary meristem

(c) Secondary meristem

(d) Primary meristem

56. Cork cells are impervious becausc the presence of :

(a) Cellulose

(b) Suberin

(c) Lignin

(d) Cutin

57. The microsporogenous tissue classified as :

(a) Tunica

(b) Rib meristem

(c) Plate meristem

(d) Mass meristem

58. Sieve tube cells are :

(a) Uninucleate

(b) Multinucleate

(c) Enucleate

(d) Dead cells

59. Secondary growth in monocots does not take place because of :
(a) Scattered vascular bundle
(b) Lack of interfascicular cambium
(c) Lack of intrafascicular cambium
(d) All of the above

60. Molecular scissor used in genetic engineering is :
(a) DNA ligase
(b) DNA polymerase
(c) Restriction enzymes
(d) Helicase

61. Evolution of plant life present :
(a) Gradual progression of sporophytic generation
(b) Gradual reduction of sporophytic generation
(c) Gradual progression of gametophytic generation
(d) Progression of both sporophytic and gametophytic generation

62. Advent and extent of Archaegonium in plant kingdom is an excellent example of :
(a) Evolutionary progression
(b) Evolutionary retrogression
(c) Struggle for existence couple to evolutionary progression
(d) Evolutionary retrogression coupled to conquest of land

63. A metacentric chromosome at metaphase stage will appear as :
(a) I – shaped
(b) J – shaped
(c) L – shaped
(d) V – shaped

64. For the study of apoptosis which of the following organism was selected as an experimental tool :
(a) *Xenopus lavies*
(b) *Tetrahymena thermophila*
(c) *Thermus aquaticus*
(d) *Coenorhabdites elegans*

65. During the cell cycle, RNA and proteins are synthesized during :
(a) G_1 – Phase
(b) G_2 – Phase
(c) S – Phase
(d) Interphase

66. Allele is the :
(a) Alternate traits of a gene pair
(b) Total number of genes for a trait
(c) Total number of chromosomes of a haploid set
(d) Total number of genes present on a chromosome

67. DNA ligase is an enzyme that catalyses the :
(a) Splitting of DNA threads into small bits
(b) Joining of the fragments of DNA
(c) Denaturation of DNA
(d) Synthesis of DNA

68. In meiosis, separation of daughter chromatids takes place at :
(a) Zygotene
(b) Anaphase – I
(c) Anaphase – II
(d) Diakinesis

69. Middle lamella is absent between :
(a) Sieve tubes and companion cells
(b) Guard cells and subsidiary cells
(c) Guard cells of stomata
(d) None of the above

70. During secondary growth, the cambium produces xylem towards inner side and phloem towards outer side because of :
(a) Gravitational force
(b) Its multicellular nature
(c) Difference in supply of hormones on the two sides
(d) All of the above

71. During the course of the origin of life on young earth, macromolecules such as proteins and nucleic acids in aqueous suspension organized into aggregates called as :
(a) Coacervates
(b) Liposomes
(c) Primitosomes
(d) Protosphere

72. The famous book 'Origin of Life' was written by :
(a) Charles Darwin
(b) J. B. S. Haldane
(c) S. L. Miller
(d) A. I. Oparin

73. Which of the following was formed in Miller's experiments ?
(a) Amino acids
(b) Glucose
(c) Nucleotides
(d) Lipids

74. Living evidence for the fact that monocot condition is evolved from dicot condition is :
(a) Trimerous condition of flower
(b) Epiblast
(c) Closed vascular bundles
(d) Geological history

75. Presence of multiciliate male gametes in cycads provide a convincing evidence to consider them as :
(a) Petrified fossils
(b) Living fossils
(c) Pseudo fossils
(d) Ancestor of ferns

76. Origin of life is impossible once again on present living planet earth due to :
(a) Already existing microbes
(b) Abundance of nitrogen in atmosphere
(c) Oxidising status of atmosphere
(d) Ozone layer in atmosphere

77. Apoptosis is coupled to :
(a) Apomixis
(b) Morphogenesis
(c) Oncogenesis
(d) Senescence

78. Taxonomically unrelated species occupying same ecological niche present :
(a) Adaptive radiation
(b) Divergent evolution
(c) Convergent evolution
(d) Sympatric speciation

79. Pitcher of *Nepenthes*, thorn of *opuntia* and stipules of *Lathyrus* exemplify :
(a) Divergent evolution
(b) Convergent evolution
(c) Allopatric speciation
(d) Analogous organs

80. Stomata were first appeared in :
(a) Brown algae like Saragassum
(b) Leaves of Mosses
(c) Leaves of Pteridophytes
(d) Sporophytes of Hornworts

81. Which group of algae has incipient nucleus ?
(a) Myxophyceae
(b) Phaeophyceae
(c) Rhodophyceae
(d) Chlorophyceae

82. The ratio of female and male flowers in a cyathium inflorescence is :
(a) 1 : 1
(b) Many : Many
(c) 1 : Many
(d) Many : 1

83. Generally all the leaves on a plant are more or less of the same shape. However, in some partly submerged and partly aerial plants the leaves may be of different types. This phenomenon is known as :
(a) Anisophylly
(b) Heteromorphism
(c) Heterophylly
(d) All of the above

84. The petiole of a typical leaf is termed as :
(a) Hypopodium
(b) Mesopodium
(c) Epipodium
(d) None of the above

85. The two stipules at the leaf base fuse to form tube like structure covering the internode upto a certain height. Such stipules are known as :
(a) Adnate
(b) Adherent
(c) Ochreate
(d) Convolute

86. When the sheathing leaf base clasps and surrounds the stem completely, the type of leaf is known as :
(a) Caducous
(b) Pulvinus
(c) Amplexicanal
(d) Decurrent

87. In a racemose inflorescence flowers are :
(a) Arranged in basipetal succession
(b) Arranged in acropetal succession
(c) Arranged in acropetal or basipetal succession
(d) Centrifugal

88. In an inflorescence the main peduncle ends in a flower. A lateral branch develops on one side which also ends in a flower. This branch again gives rise to another lateral branch on the same side i.e. all the lateral branches arise either on the left side or right side. This type of inflorescence is :
(a) Corymbose cyme
(b) Dichasial cyme
(c) Helicoid cyme
(d) None of the above

89. A monocarpic plant is one which :
(a) Flowers in spring as well as in autumn
(b) Flowers once in a year
(c) Bears only one fruit
(d) Flowers only once in a life time

90. The classification of plants based on chromosomal characteristics is known as :
(a) Chemotaxonomy
(b) Numerical taxonomy
(c) Biochemical taxonomy
(d) Karyotaxonomy

91. 2n-1-1 designate :
(a) Monosomic
(b) Double monosomic
(c) Nullisomic
(d) Tetrasomic

92. Lichens are distinct group of plants having composite structure consisting of a fungus and an algae-associated in a symbiotic union. This association is called :
(a) Consortium
(b) Helotism
(c) Ascolichens
(d) None of the above

93. Which of the following structures help in respiration of Lichens ?
(a) Cephalodia
(b) Soredia
(c) Isidia
(d) Cyphella

94. If a sporongium in a pteridophyte is derived from a single cell, the development of sporongium is called as :
(a) Leptosporangiate
(b) Heterosporangiate
(c) Eusporangiate
(d) All of the above

95. The stele of *Dryopteris* is :
(a) Siphonostele
(b) Protostele
(c) Dictyostele
(d) Actinostele

96. *Funaria* plant is a gametophyte. It is :
(a) Monoecious and acrocarpous
(b) Dioecious and acrocarpous
(c) Monoecious and pleurocarpous
(d) Dioecious and pleurocarpous

97. The alga showing bryophytic featur is :
(a) *Chara*
(b) *Cephaleuros*
(c) *Sargassum*
(d) *Fucus*

98. Flagellation is not present at any stag of the life cycle in which of th following ?
(a) *Vaucheria*
(b) *Ulothrix*
(c) *Volvox*
(d) *Spirogyra*

99. Ancestral stock of land plants believed to be :
(a) Rhodophyceae
(b) Phaeophyceae
(c) Xanthophyceae
(d) Chlorophyceae

100. Which statement is correct abo viruses ?
(a) They are not host specific
(b) They are not parasitic
(c) They remain unaffected by exposure to sunlight
(d) All of the above

101. The transport of photosynthates is favoured by the presence of :
(a) Boron
(b) Molybdenum
(c) Zinc
(d) Phosphorus

102. Water stress hormone is :
(a) Cytokinin
(b) Ethylene
(c) Gibberellins
(d) Abscisic acid

103. The important lipid present in Plasma membrane is :
(a) Sterols
(b) Phospholipids
(c) Glycolipids
(d) All of the above

104. Indole 3-acetaldehyde is converted to IAA by :
(a) Oxidation
(b) Carboxylation
(c) Reduction
(d) Oxidation and reduction both

105. The plants produced through anther culture may be :
(a) Haploid
(b) Diploid
(c) Polyploid
(d) All of the above

106. Through normal breeding programme, production of hexaploid is a difficult and time consuming task. However, hexaploid may be produced through :
(a) Pollen culture
(b) Ovule culture
(c) Endosperm culture
(d) All of the above

107. The hypodermal female archesporial cell divides transversely cutting off parietal cell and an inner sporogenous cell. The parietal cell may undergo a few periclinal divisions so that the sporogenous cell becomes embedded in a massive nucellus. Such an ovule is called as :
(a) Tenuinucellate
(b) Crassinucellate
(c) Pseudocrassinucellate
(d) Pseudonucellate

108. In majority of the angiosperms the embryo sac develops from the chalazal functional megaspore. However, in which of the following families, the embryo sac develops from micropylar megaspore ?
(a) Polygonaceae
(b) Podostemaceae
(c) Onagraceae
(d) Liliaceae

109. The development of endosperm is a unique feature in majority of the angiosperms. However, in which of the following families endosperm does not develop at all ?
(a) Podostemaceae
(b) Orchidaceae
(c) Trapaceae
(d) All of the above

110. The pollen grains normally germinate on the stigma. However, the pollen grains may germinate :
(a) In vivo
(b) In vitro
(c) In situ
(d) All of the above

111. Usually the microspores separate from one another shortly after meiosis. However in which of the following families the spore remain together to form pollinia ?
(a) Asteraceae
(b) Labiatae
(c) Asclepiadaceae
(d) Scrophuliaraceae

112. An element needed to reduce nitrate to nitrite is :
(a) Boron
(b) Molybdenum
(c) Zinc
(d) Iron

113. In a citric acid cycle decarboxylation occurs at :
(a) Citric acid converts to α-keto-glutaric acid
(b) Succinic acid converts to malic acid
(c) Malic acid converts to oxaloacetic acid
(d) Oxaloacetic acid converts to citric acid

114. The first event in photosynthesis is :
(a) Photoexcitation of chlorophyll and electron emission
(b) Photolysis of water
(c) Release of oxygen
(d) Synthesis of ATP

115. The conversion of phosphoglyceric acid to phosphoglyceraldehyde in photosynthesis takes place by :
(a) Oxidation
(b) Hydrolysis
(c) Electrolysis
(d) Reduction

116. Formation of fructose in C_4 plan occurs in the chloroplast of :
(a) Mesophyl cells
(b) Bundle sheath
(c) Guard cells
(d) Palisade tissue

117. One of the following plant functions not generally controlled by auxins :
(a) Apical dominance
(b) Phototropism
(c) Photosynthesis
(d) Growth

118. A natural growth regulator is :
(a) Benzaldehyde
(b) 2, 4-D
(c) NAA
(d) Ethylene

119. Phytol tail of chlorophyll molecule is
(a) Carbohydrate
(b) Protein
(c) Lipid
(d) Alcohol

120. The tension with which water is h by soil at its field capacity is :
(a) – 1/3 bar
(b) 1 bar
(c) 15 bar
(d) 30 bar