# BOTANY 2006

1. Exploitation and analy i of variability of genetic resources for improvement of existing crops under cultivation is referred to as :
(a) Primary introduction
(b) secondary introduction
(c) Domestication
(d) Acclimatization cum introduction

2. Compilation of the historical *"De Materia Medica"* was carried out by:
(a) Bentham
(b) Bentham and Hooker
(c) Theophrastus
(d) Theophrastus and Aristotle

3. Aplanogamic type of sexual reproduction occurs in
(a) *Oedogonium*
(b) *Chara*
(c) *Volvox*
(d) *Zygnema*

4. The zoospores of *Vaucheria* are
(a) Aflagellate
(b) Uniflagella te
(c) Multiflagellate
(d) Biflagella te

5. The most primitive type of life cycle in algae is
(a) Haplontic
(b) Diplontic
(c) Haplobiontic
(d) Diplobiontic

6. Cleistothecia of which of the following fungus contains coiled appendages on the periderm:
(a) *Uncinula*
(b) *Erysiphe*
(c) *Colletotrichum*
(d) *Venturia*

7. Key membrane sterol in most of the fungi is
(a) Cholesterol
(b) Ergosterol
(c) Mannitol
(d) None of the above

8. Nutrition in slime fungi is
(a) Absorptive
(b) Phagotrophic
(c) Necrotrophic
(d) Autotrophic

9. Which among the following is used as a biocontrol agent?
(a) *Trichoderma viridae*
(b) *Pythium debaryanum*
(c) *Phytophthora infestans*
(d) *Erysiphe polygoni*

10. Phialidic type of conidia are found in
(a) *Asperigillus*
(b) *Albugo*
(c) *Phytophthora*
(d) *Pythium*

11. When the tissue close to vein turns yellow and the remaining surface o~ stays green; the condition is known as
(a) Vein bending
(b) Vein clearing
(c) Variegation
(d) Vennation

12. When archegonia are borne at the apex of main axis or its branches, the condition is known a
(a) Acrocarpous
(b) Pleurocarpou
(c) Stigmatocarpous
(d) Cleistocarpous

13. Conducting tissue in mosses is made up of:
(a) Xylem
(b) Collenchyma
(c) Phloem
(d) Parenchyma

14. Green plastids are present in the cells of young antheridium of:
(a) *Riccia*
(b) *Funaria*
(c) *Pellia*
(d) *Anthoceros*

15. A group of fused sporangia with distinct partition walls is known as
(a) Sorus
(b) Synangium

(c) Both (a) and (b)
(d) None of the above

16. Which of the following can induce apogamy in fern gametophytes?
(a) Low concentration of sucrose'
(b) Medium concentration of sucrose
(c) High concentration of sucrose
(d) All of the above

17. Which of the following is richly found m functional megasporophyte of *Selaginella* ?
(a) Vacuoles
(b) Starch
(c) Cytoplasm
(d) Cytoplasmic RNA

18. Which of the following genera lacks a female cone?
(a) *Cycas*
(b) *Cedrus*
(c) *Ephedra*
(d) None of the above

19. The form genus *Caytonia* was first discovered by
(a) H. H. Thomas
(b) T. M. Harris
(c) K. R. Sporne
(d) B. Sahni

20. **In** which. geological period flowering plants first appeared?
(a) Ordovician
(b) Cambrian
(c) Devonian
(d) Cretaceous

21. Girdling leaf-traces are the characteristic feature of the stem of:
(a) *Ephedra*
(b) *Cycas*
(c) *Cedrus*
(d) *Pinus*

22. Which of the following living pteriodophytic order shows more resemblances with Rhyniaceae?
(a) Psilotales
(b) Lycopodiales
(c) Ophioglossales
(d) Equisetales

23. The International Code for Botanical Nomenclature (ICBN) governs the nomenclature of:

(a) Plants alone
(b) Plants and fungi
(c) Plants and bacteria
(d) Plan and viruses

24. The mo t primitive group in dicots as per Engler a Prantl is
(a) Ranales
(b) A teraceae
(c) Amentiferae
(d) Iagnoliaceae

25. An inventory of the plants of a defined geographical region is known as
(a) Conspectus
(b) Revision
(c) Monograph
(d) Flora

26. which of the following families are the stamens syngenesious ?
(a) Apiaceae
(b) Asteraceae
(c) Ranunculaceae
(d) Rosaceae

27. When the guard cells are surrounded by unspecialised epidermal cells; the type of stomata is
(a) Anomocytic
(b) Anisocytic
(c) Diacytic
(d) Paracytic

28. Root endodermis is generally regarded as
(a) Outer most layer of cortex
(b) Inner most layer of cortex
(c) Both of the above
(d) Either (a) or (b)

29. Cambium and cork cambium are examples of:
(a) Apical meristem
(b) Intercalary meristem
(c) Lateral meristem
(d) Primary meristem

30. Pollination occurring between two flowers on the same plant IS termed as:
(a) Autogamy
(b) Xenogamy
(c) Chasmogarny
(d) Geitonogamy

31. The first division of the zygote in Piperad type of the embryogeny
(a) Vertical
(b) Transverse

(c) Oblique
(d) Either (b) or (c)

32. Synthetic seeds are:
(a) Encapsulated zygotic embryos
(b) Encapsulated somatic embryos
(c) Genetically engineered seeds
(d) None of the above

33. When the aperture is on the proximal face, the pollen grains are designated as:
(a) Zonotreme
(b) Anatreme
(c) Pantotreme
(d) Catatreme

34. When the exposed pollen wall shows rod-like elements with swollen tips, the sculpturing is called as
(a) Psilate
(b) Fossulate
(c) Pilate
(d) Baculate

35. The fluidity of biomembranes is ascribed mainly to
(a) The protein component
(b) The lipid component
(c) Both protein and lipid components
(d) Neither protein nor lipid component

36. Which one of the following is the acyl group carrier in the B oxidation of fatty acids?
(a) Coenzyme A
(b) Acyl carrier protein
(c) Both (a) and (b)
(d) Neither (a) nor (b)

37. During photorespiration which of the following reactions takes place in the mitochondrion:
(a) Conversion of glycine to serme
(b) Conversion of serine to $CO_2$ and $NH_3$
(c) Both (a) and (b)
(d) None of the above

38. The receptor in plants that perceives the photoperiodic signal is a
(a) Conjugated protein
(b) Hormone
(c) Non-protein pigment
(d) None of the above

39. Gibberellins produced In the apical portions of both stems and roots cause:

(a) Stem elongation
(b) Growth of lateral branches
(c) Abscission of leaves and fruits
(d) Stem thickening

40. The sterol: phospholipid ratio of membranes is high in
(a) Glycophytes
(b) Halophytes
(c) Psamophytes
(d) Hydrophytes

41.Percentage of phanerophytes in the normal biological spectrum Raunkiaer (1934) is ?
(a) 13
(b) 26
(c) 46
(d) 62

42. Most of the energy in a temperate coniferous forest flows through:
(a) Detritus food chain
(b) Grazing food chain
(c) Auxiliary food chain
(d) All of the above

43. Maximum number of trophic levels in most food webs is about:
(a or 9
(b) 2 or 3
c) 1 or 2
d) 4 or 5

44. Which among the following accounts for much of the biome differences in Net Primary Productivity (NPP)?
a) Length of growing season
b) Leaf area
c) Soil fertility
d) None of the above

45. Pyrramid of number of a parasitic food chain would be always
a) Upright
b) In 'erted
c) Either upright or inverted
d) Neither upright nor inverted

46. Bacteria that use light as energy source and organic substances as carbon source are called as:
(a) Photoautotrophs
(b) Chemoautotrophs
(c) Photoherotrophs
(d) Chemoheterotrophs

47. Archaeobacteria differ from both eubacteria and eukaryotes in

(a) Nature of membrane lipids
(b) RNA polymerase structure
(c) Composition' of their cell walls
(d) All of the above

48. Genetic material in plant viruses is mostly:
(a) DNA
(b) RNA
(c) Both DNA and RNA
(d) None of the above

49. Which one of the following is true for spontaneous reactions?
(a) +S and -H
(b) -S and +H
(c) Both (a) and (b)
(d) Neither (a) nor (b)

50. The most abundant non-reducing soluble sugar in plants is
(a) Lactose
(b) Maltose
(c) Sucrose
(d) Cellobiose

51. The true substrate in most enzymatic reactions that involve ATIL
phoryl donor is
(a) MgATp2-
(b) Mg2+
(c) Mg ADP-
(d) None of the above

52. Which of the following is not formed when yeast is producing wine?
(a) Pyruvic acid
(b) . Ethanol
(c) CO2
(d) Acetyl Co A

53. In feedback inhibition, a metabolic pathway is switched off by:
(a) A rise in temperature
(b) Lack of substrate
(c) Accumulation of end product
(d) Competitive inhibition

54. Covalently bound non-protein component of an enzyme is its
(a) Coenzyme
(b) Cofactor
(c) Apoenzyme
(d) Prosthetic group

55. The rainfall in a district for four (04) months was 50, 40, 15 and 15 millimeters. The mean deviation of rainfall about mean for the given four months is
(a) 30
(b) 15
(c _?_?.*u*-
**(d** 0

The extent of correlation between two related variables decreases, the value of co relation coefficient *(r)* approaches
(a) +1
(b) −1
(c) Zero
(d) None of the above

57. The arithmetic mean of a distribution, in which there are some.extremely high or low values, will either over estimate or under estimate the average position and hence is not a best representative value. The measure of **Central**
Tendency in such a situation is
(a) Median
(b) Mode
(c) Standard deviation
(d) None of the above

58. How many progeny genotypes are expected after selfing of the parent having the genotype 'AABbCC' : '
(a) . Two
(b) Three
(c) Four
(d) Five

59. The epistatic gene differs from dominant gene in that the
(a) Epistatic gene is non-allelic
(b) Epistatic and dominant genes are present at different loci
(c) Both (a) and (b) are false
(d) Both (a) and (b) are true

60. Dominant genes 'A' and 'B' are required for normal hearing. A deaf couple has all children with normal hearing. The probable genotype of the couple IS :
(a) AAbb x aaBB
(b) AaBB x AABb
(c) AaBb x AaBb.
(d) aabb x aabb

61. An allele 'A' after segregation from 'Aa' genotype produces a rm
notype; the condition is called
(a) Point mutation

(b) Paramutation
(c) Frameshift mutation
(d) None of the above

62. A larkspur plant has 16 chromosomes. How many linkage groups does it have?
(a) 4
(b) '8
(c) 16
(d) 20

63. **In** a DNA molecule the percentage of adenine is 18%; the percentage of cytosine is expected to be
(a) 18%
(b) 36%
(c) 27%
(d) 54%

64. The products of one gene required to activate another gene are called
(a) Repressor elements
(b) Co-enzymes
(c) Transcription factors
(d) None of the above

65. Restriction endonucleases cut DNA at :
(a) Palindromic sequences
(b) Methylated sequences
(c) ear exons
(d) Any site

66. The sum total of deleterious genes in a population at a particular time is
(a) Gene pool
(b) Genetic drift
(c) Genetic load
(d) Genetic imbalance

67. The chain initiation and termination codons during protein synthesis respectively are :
(a) AUG and UGA
(b) GUG and UAA
(c) Neither (a) nor (b)
(d) Both (a) and (b)

68. Which of the following commonly known medicinal herb IS used for the treatment of hair fall?
(a) Bunafsha
(b) Kahzaban
(c) Van Wangun
(d) Burza

69. The commercially important active principal "Quercetin" is obtained from:

(a) *Podophyllum hexandrum*
(b) *Atropa belladonna*
(c) *Arnebia benthamii*
(d) *Viola odorata*

70. Which of the following is essential for germplasm exchange ?
(a) Plant introduction
(b) Plant assessment
(c) Plant quarantine
(d) Plant adaptability

# BOTANY 2007

1. "Little leaf' disease of brinjal is caused by:
(a) viruses
(b) mycoplasma
(c) bacteria
(d) phytophthora

2. Adenoviruses are:
(a) DNA containing plant viruses, spheroidal in shape with projecting fibres
(b) RNA containing plant viruses, spheroidal in shape and enveloped
(c) DNA containing animal viruses, spheroidal in shape with projecting fibers
(d) RNA containing animal viruses, spheroidal in shape and enveloped

3. Cell walls of Deuteromycetes contain
(a) chitin-glucan
(b) mannan-glucan
(c) cellulose-glucan
(d) pectin-glucan

*4. Morchella* is a:
(a) Parasitic hymenomycete .
(b) Mycorrhizal gasteromycete
(c): Symbiotic plectomycete
(d) Saprobic discomycete

5. In some plants of *Oedogonium,* the androsporangia are produced on filaments which do not bear oogonia. Such plants are said to be :
(a) Gynandrosporous

(b) Idioandrosporous
(c) Androsporous
(d) Gynosporous

6. Select the odd one out in respect of the nature of sexual reproduction
(a) *Chlamydomonas debaryana*
(b) *Chlamydomonas media*
(c) *Chlamydomonas coccifera*
(d) *Chlamydomonas eugametos*

7. In which of the following species of *Anthoceros* the whole plant is covered with hair like outgrowths forming water-holding chambers?
(a) *A. arachnoides*
(bl *A. giganteus*
(c) *A. fusiformis*
(d) *A. laevis*

8. In the stem of Polytrichum one or two layers of cells consist of dark brown suberized walls and contain copious starchy contents. This tissue is called:
(a) Hydrom mantle
(b). Hydrom sheath
(c) Leptom mantle
(d) Piliferous layer

9. Rhynia belongs to :
(a) upper Silurian
(b) lower Devonian
(c) middle Devonian
(d} upper Devonian

10. Steles in which leaf gaps occur less frequently and are distantly placed are called:
(a) dictyosteles
(b) medullated steles
(c) perforated steles
(d). solenosteles

**11.** Which of the following is a single pass, single helix transmembrane protein?
(a) Glycophorin
(b) Spectrin
(c) Band 3 protein
(d) Integrin

12. Which of the following ions facilitates assemblage of subunits into a complete ribosome?
(a) Na+
(b) Ca++
(c}, . Mg++
(d) Mn+

13. A plant carrying a duplicated chromosome segment is said to be
(a) Hemizygous
(b) Hyperploid
(c) Disomic haploid
(d), Addition haploid

14. Select the odd one out in terms of the genome constitution
(a) *Gossypium hirsutum*
(b) *Nicotiana tabacum*
(c) *Musa esculentum*
(d). *Brassica juncea*

15. The F2 progeny of "green-round" and "white-wrinkled" seeded parents contains 4 types of plants: *(i)* green-round seeded 10; *(ii)* "green-wrinkled" seeded *69; (iii)* "white-round" seeded 85 and *(iv) "white*-wrinkled" seeded 15. This suggests:
(a) duplicate gene inheritance
(b) linkage in repulsion phase
(c) independent assortment
(d) linkage in coupling phase

16. Which of the following enzymes has both exonuclease 3' ---+ 5' and exonuclease 5' ---+ 3' activities?
(a) cannot reeognise codons GCU, GCC and GCA
(b) can reeognise only codon GCU
(c) can reeognise only codon GCA
(d) can recogmse all the three codons

17. The anticodon IGC :
(a) Prokayotic DNA polymerase I
(b} Prokaryotic DNA polymerase II
(c) Prokaryotic DNA polymerase **III**
(d) Eukaryotic DNA polymerase p

18. Which of the following mutations are likely to occur if DNA is exposed to proflavin dyes ?
(a) Suppressor mutations
(b) Frame shift mutations
(c) Transition mutations
(d) Transversions

19; Isopropyl thiogalactoside is
(a) an inducer
(b) a repressor
(c) a gratuitous inducer
(d) a co-repressor

20. When shed from the sporangium, the microspores have :

(a) one prothallial cell in *Cycas* and two in *Ephedra*
(b) two prothallial cells in *Cycas* and one in *Ephedra*
(c) one prothallial cell in both
(d) two prothallial cells in both

2. Select the odd one out
a) coralloid roots
b) loosely arranged megasporophylis
c) absence of neck canal cells .
(d) gametophytic endosperm.

22. Paleontological evidences reveal that the flowering plants had attained high degree of morphological specialisation during:
(a) Triassic
(b) Jurassic
(c) Cretaceous
(d) Palaeocene

23. On the basis of carpel and stamen morphology and structure of wood which of the following plants seems to be primitive?
(a) *Cucurbita* spp.
(b) *Solanum* spp.
(c) *Convolvulus* spp.
(d) *Degeneria s*pp.

24. +ffi, 1\5' C 5~~5 G(2) is the floral formula of :
(a)' *Helianthus annuus*
(b) *Brassica campestris*
(c) *Lathyrus odoratus*
(d) *Solanum nigrum*

25. A small cup shaped inflorescence con i ting of a single pistillate flower in the centre surrounded by numerous staminate flowers is called
(a) Glomerule
(b) Cyathium
(c). Hypanthodium
(d) Verticillaster

26. Which one of the following is considered equivalent to perianth ?
(a)' Glumes
(b) Lodicules
(c) Superior palea
(d) Inferior palea

27. The process of grouping of organisms into taxa on the basis of overall similarities is called
(a) phenetics
(b)- cladistics
(c) alpha taxonomy

(d) beta taxonomy

28. "Systema Naturae" was written by:
(a) Charles Robert Darwin
(b) George Bentham
(c) Jean Baptiste Lamarck
(d) Carolus Linnaeus

29. According to Bentham and Hooker's classification system the order Rosales falls in which of the following series?
(a) Thalamiflorae
(b)Bicarpillatae
(c) Calyciflorae
(d) Inferae

30. Which of the following plants is perennial and monocarpic ?
(a) *Agave americana*
(b) . *Cocos nucifera*
(c) *Phoenix dactylifera*
(d) ,; *Hevea brasiliensis*
Botany 6

31. Which one of the following is different from others in respect of the nature of its roots?
(a) *Sonneratia* sp.
(b) *Avicinnia* sp.
(c) *Heritiera* sp.
(d) *Pandanus* sp.

32. In some plants the leaves occur along a straight vertical line. This condition is called:
(a) Distichous
(b) Parastichous
(c) Orthostichous
(d)- Unistichous

33. Alburnum and Duramen respectively are alternate names of : .
(a) heartwood and sapwood
(b) sapwood and heartwood
(c) -porous wood and ring-porous wood
(d) ring-porous wood and diffuse-porous wood

34. The sclerenchyma of cortex originates from:
(a) Ra initials
(b) Fusiform initials
(c) Protoderm
(d) Periblem

35. The first lower most leaves of a plant's side branch are called
(a) cataphylls
(b) prophylls
(c) hypsophylls
(d) platyclades

36. The book entitled "Plant Embryology" was written by
(a) Karl Schnarf
(b) P. Maheshwari
(c) D.A. Johansen
(d) G. Davis

37. In respect of chromosome number which one of the following is different?
(a) Embryo sac
(b) Archesporium
'(c) Sporogenous tissue
(d). Spore mother cells

38. In *Dianthus* the style is much longer than the stamens. This condition is called:
(a) Dichogamy
(b) Herkogamy
(c)." Heterostyly
(d) None of the above

39. \If W of a living plant cell is the sum of :
(a) wall pressure and pressure potential
(b) wall pressure and matric potential
(c) osmotic potential and pressure potential
(d).. osmotic potential and solute potential

40. Which of the following diseases is caused in plants due to deficiency of Zn ?
(a) Heart rot of beats
(b) Whiptail of cauliflower
(c). Grey speck of oats
(d) Little leaf of apples

41. Which of the following compounds is a prosthetic group?
(a) FAD
(b) Biotin
(c) LDH
(d) NAD

42. A substrate fails to join the enzyme because its active site is deformed by an analogue of the substrate. This process is called
(a) Allosteric inhibition
(b). Competitive inhibition
(c), E.nd product inhibition
(d) Feedback inhibition

43. Which of the following compounds serves as the electron donor during biological nitrogen fixation ?
(a) 6-Phosphogluconic acid
(b) Acetyl phosphate
(c) Dinitrogeri reductase
(d).Pyruvic acid

44. For carbon fixation during "dark reaction" the three carbon atoms of each
PGA molecules are derived from:
(a) RuBP
(b) $CO_2$
(c) RuBP + $CO_2$
(d), RuBP + $CO_2$ + PEP

45. Which one of the following facts explains "Warburg Effect" ?
(a)" Rate of photosynthesis decreases at low 02 concentration
(b) Rate of photosynthesis increases at low 02 concentration
(c) Rate of photosynthesis decreases at high 02 concentration
(d) Rate of photosynthesis increases at high 02 concentration

46"" The seeds of lettuce are
(a) non-photoblastic
(b) positively photoblastic
(c) negatively photoblastic
(d) ABA induced

47. Plant leaves are:
(a) . Plageotropic
(b) "Diageotropic
(c) Ageotropic
(d) Negatively geotropic

48. Which one of the following compounds shows "Richmond-Lang" effect?
(a) IAA
(b) ABA
(c) $GA_3$
(d) Kinetin

49. The correct sequence of electron acceptors in ATP synthesis" is :
(a) Cytochrome *a, a3' b,* c
(b) Cytochrome *b,* c, *a, a3*
(c) Cytochrome *b,* c, *a3' a*
(d)." Cytochrome c, *b, a, a3*

50. Who amongst the following has contributed extensively to the study of Indian grass-land ecology?
(a) R Misra
(b) G.S. Puri
(c) J.S. Singh
(d) RR. Das

51. Which of the following statements is *true?*
(a) The ecological pyramid of numbers is inverted in a tree ecosystem
(b) The ecological pyramid of numbers is upright in a tree ecosystem
(c) The ecological pyramid of numbers is inverted in herbaceous ecosystem
(d) The ecological pyramid of biomass is upright in an aquatic ecosystem

52. The plant species that thrive well in narrow salinity and narrow temperature ranges are called respectively as :
(a) Euryhaline and Eurythermal
(b) Stenohaline and Stenothermal
(c) Steno1'r'aJ/ne and Eurythermal
(d) Euryhaline and Stenothermal

*53. Acacia senegal* and *Rhizophora* sp. respectively are
(a) Psammophyte-Lithophyte
(b) Lithophyte-Psychrophyte
(c) Psychrophyte-Halophyte
(d) Psammophyte-Halophyte

54. Morphologically different populations when grown in an identical habitat become uniform and the variations disappear. Such populations are called:
(a)' Ecotones
(b) Ecoclines
(c) Ecads
(d) Ecotypes

55. A climax community represented by a single dominant species is called
(a)" Society
(b) Lociation
(C) Consociation

(d) Association

56. Which of the following plants produces a caryopsis ?
(a) *Triticum aestivum*
(b) *Artemisia annua*
(c).. *Solanum tuberosum*
(d) *Lathyrus odoratus*

57. The famous timber "Saguan" is obtained from
(a)*Eucalyptus globosus*
(b) *Tectona grandis*
(c)*Shorea robusta*
(d) *Dalbergia sissoo*

58. The common gunny bag fibre is obtained from
(a) *Crotolaria juncea*
(b) *Cocos nucifera* .
(c) *Corchorus capsularis*
(d) *Quercus superba*

59. pBR327 is :
(a) yeast plasmid vector
(b) phagemid pBluescript vector
(c) pUC vector
(d) *E. coli* plasmid vector

60. Which of the following properties of Ti plasmids of*Agrobacterium* made them a suitable choice for use as vectors ?
(a) Large size
(b) Absence of unique restriction sites
(c) Tumour induction properties
(d) Presence of *vir* gene.

# BOTANY 2008

1. Bacteria cann*ot* survive in a highly salted pickle because
(A) Salt inhibits reproduction
(B) Pickle, does not contain nutrients necessary for bacterial growth
(C) Bacteria do not get enough light for photosynthesis
(D) Bacterial cells become plasmolysed and consequently killed

2. In which of the following conditions transpiration would be the most rapid?
(A) High humidity

(B) Excess of water in the soil
(C) Low humidity and high temperature
(D) Low wind velocity

3. Which of the following denotes the covalently bound non-protein component of an enzyme?
(A) Coenzyme
(B) Cofactor
(C) Apoenzyme
(D) Prosthetic group

4. Majority of the higher plants growing in well-aerated soils rich in organic matter preferably utilize:
(A) $NH_4+$
(B) $N0_2$
(C) $N0_3$
(D) Organic nitrogen

5. In most of the enzymatic reactions that involve ATP as the phosphoryl donor, the *true* substrate is
(A) Mg ATP2-
(B) Mn ATP2-
(C) Ca ATP2-
(D) None of the above

6. During photorespiration, the conversion of glycine to serine, and of serine to $CO_2$ and $NH_3$ takes place in :
(A) Chloroplasts
(B) Mitochondria
(C) Peroxisomes
(D) None of the above

7. Which of the following enzymes is/are synthesized *de novo* during the germination of lipid-storing seeds?
(A) Isocitrate lyase
(B) Malate synthetase
(C) Both of the above
(D) None of the above

8. Which of the following plant hormones delay senescence?
(A) Cytokinins
(B) Auxins
(C) Gibberellins
(D) Ethylene

9. The photosynthetically active radiation (PAR) is
(A) < 400 nm
(B) Between 400 to 700 nm
(C) >740 nm

(D) None of the above

10. Sleep movement of beans is an example of:
(A) Epinasty
(B) Nyctinasty
(C) Thigmonasty
(1) Seismonasty

11. In the hydrological cycle, precipitation exceeds evaporation and transpiration over the:
(A) Land surfaces
(B) Oceans
(C) Both of the above
(D) None of the above

12. The length of the food chains is limited by :
(A) Less energy available to support more trophic levels
(B) Less ecological efficiency of different trophic levels
(C) Both of the above
(D) High energy available to disrupt trophic levels

13. The pioneer plants in the secondary succession are usually:
(A) Lichens
B) Weeds
(C) Ferns
(D) All of the above

14. Aerial roots, vivipary and succulence are the common adaptations of:
(A) Xerophytes
(B) Hydrophytes
(C) Mesophytes
(D) Halophytes

15. Kashmir Valley falls within the Indian biogeographic region of:
(A) Trans-Himalaya
(B) Eastern Himalaya
(C) Northwestern Himalaya
(D) Central Himalaya

16. Ecologically, a population is defined as :
(A) A single group of interbreeding individuals of the same species
(B) A single group of interbreeding individuals of different species
(C) A single group of interbreeding individuals of a few species
(D) A single group. of interbreeding individuals of many species

17. Which of the following genera includes fibre plants?
A) *Oryza*
B) *Brassica*

(C) *Atropa*
(D) *Gossypium*

18. The drugs extracted from *Podophyllum hexandrum* are
(A) Anti-carcinogenic
(B) Sedative
(C) Diuretic
(D) Aphrodisiac

19. Which of the following is used as a cloning vector in plants?
(A) Cosmid
(B) Phagemid
(C) Ti Plasmid
(D) YAC

20. When a mature cell reverts back to meristematic state and forms an undifferentiated callus tissue, the process is termed as
(A) Postdifferentiation
(B) Redifferentiation
(C) Dedifferentiation
(D) Predifferentiation

21. In diploid organisms, the formation of multivalents at meiosis is due to
(A) Monosomy
(B) Inversion
(C) Duplication
(D) Reciprocal translocation

22. An anticodon of *tRNA* recognizes more than one codon of *mRNA*. This explains:
(A) Wobble hypothesis
(B) Degeneracy of genetic code
(C) Universality of genetic code
(D) Triplet nature of genetic code

23. How many Trisomies are possible in an individual with $2n = 20$
(A) 5
(B) 10
(C) 15
(D) 20

24. A wild allele 'A' after segregation from 'Aa' genotype gives a mutant phenotype; the condition is called as
(A) Point mutation
(B) Paramutation
(C) Frameshift mutation
(D) Back mutation

25. PBR-322 is :
(A) An artificially constructed plasmid
(B) A natural plasmid
(C) A cosrnid
CD) A phagemid

26. In a DNA molecule with percentage of Guanine as 24, Adenine is expected to be:
*(A) 52%*
(B) 48%
(C) 26%
(D) ''24%

27. The ~fatty acid tail in a phospholipid molecule is
*(A)* Hydrophobic
(B) Hydrophilic
(C) Amphipathic
(D) None of the above

28. Which DNA sequences are functional even at a great distance from either side of the transcriptional initiation site of a gene?
*(A)* Response elements
(B) Promoters
(C) Enhancers
(D) Operators

29. Brown eye is dominant over blue eye. A brown-eyed couple has a blue-eyed child. The genotype of the couple would be
*(A)* BB x bb
(B) bb x bb
(C) BB x Bb
(D) Bb x Bb

30. Which mutation of the sequence GATCCT is a transition?
*(A)* GGTCCT
(B) GTTCCT
(C) GTATCCT
(D) GTCCT

31. A motile flagellated asexual cell is called:
(A) Sperm
(B) Zoospore
(C) Oospore
CD) Androspore

32. Algae are classified into major groups on the basis of:
(A) Nature of the reserve food product
(B) Chemical composition of the cell wall

(C) The type of pigment
(D) 'Vegetative characters

33. The conjugating gametangia of *Rhizopus* are
(A). Physiologically similar but morphologically dissimilar
(B) Physiologically dissimilar but morphologically similar
(C) Physiologically similar and morphologically similar
(D) Physiologically dissimilar and morphologically dissimilar

34. All fungi lack :
(A) Centrioles
(B) Cell wall
(C) Rhizoids
(D) Haustoria

35. The capsule of the sporophyte in *Polytrichum* lacks:
(A) Operculum
(B) Peristome
(C) Columella
(D) None of the above

*36. Equisetum* is :
(A) Incipiently heterosporous
(B) Distinctly heterosporous
(C) Homosporous
(D) Asporous

37. The form genus *Rhynia* was discovered by:
(A) Kidston and Lang
(B) Arnold
(C) Birbal Sahni
(D) Campbell

38.The simplest known sporophyte among Bryophyta occurs in
*(A) Funaria*
*(B) Anthoceros*
*(C) Marchantia*
*(D) Riccia*

39. One of the main reasons for including Cyanophyceae in Procaryota is:
(A) Absence of sexual reproduction
(B) Absence of flagellated spores
(C)Absence of nuclear membrane
(D) Presence of mucilaginous sheath

40. The genome of plant viruses is mostly:

(A) ssDNA
(B) ssRNA
(C) dsDNA
(D) dsRNA

41. Which of the following is *not* a characteristic feature of *Cycas?*
(A) Circinate vernation of foliage leaves
(B) Armed parenchyma
(C) Motile sperms
(D) Vessels in the xylem

42. K.R Sporne (1974) has placed ~ the order Cordaitales in the group:
(A)Coniferopsida
(B)Cycadopsida
(C)Gnetopsida
(D)Cordaitopsida

43. The form genus *Caytonia* represents
(A) Microsporophyll
(B) Megasporophyll
(C) Foliage leaf
(D) All of the above

44. Which of the following statements in *not* correct?
(A) All seed plants are heterosporous
(B) *Selaginella* shows incipient seed habit
(C) All vascular plants bear seeds
(D) The seeds have survival value

45. Amongst the following attributes of a flower, which one is considered to be the primitive?
(A) Floral parts fused
(B) Ovary superior
(C) Symmetry bilateral
(D) Floral parts reduced to less than four
(A)

46. In tetradynamous condition, the stamens are arranged in two whorls of:
(A) 2 (short) + 2 (long)
(B) 2 (long) + 4 (short)
(C) 4 (short) + 4 (long)
(D) 4 (long) + 2 (short)

47. In a dichotomous taxonomic key, the statement "Flowers red" would be called:
(A) A lead
(B) A couplet
(C) A triplet

(D) A character

48. The Pome type of fruit occurs in
A) Pomegranate
(B) Peach
(C) Plum
(D) Pear

49. In a descending order, the correct sequence of the following categories in the taxonomic hierarchy would be :
(A) Class, Division, Order, Family, Genus, Species
(B) Order, Division, Class, Family, Genus, Species
(C) Division, Class, Order, Family, Genus, Species
(D) Division, Order, Class, Family, Genus, Species

50. Bentham and Hooker's system of classification of plants was published in the
(A) Genera Plantarum
(B) Species Plantarum
(C) Historia Plantarum
(D) Systema Naturae

51. The first pollinating agents in angiosperms were probably
(A) Beetles
(B) Birds
(C) Bats
D) Butterflies

52. The Quiescent Center is a reservoir of cells showing
(A) High meristematic activity
(B) Occasional meristematic activity
(C) No meristematic activity
(D) Annual meristematic activity

53. The companion cells are absent in :
(A) Halophytes
(B) Xerophytes
(C) Monocots
(D) Gymnosperms

54. Which of the following structures is *not* found in an angiosperm leaf?
(A) Periderm
(B) Guard cell
(C) Chloroplast
(D) Phloem

55. The structural arrangement of wood components is called as

(A) Texture of wood
(B). Figure of wood
(C) Grain of wood
(D) Gravity of wood

56. The annual growth rings are distinct in plants growing in the:
(A) Tropical regions
(B) Arctic regions
(C). Grasslands
(D) Temperate regions

57. The Tunica and Corpus regions of the shoot apex are usually distinguished by the:
(A) Numbers of cell division
(B) Rates of cell division
(C) Planes of cell division
(D) None of the above

58: The female gametophyte of a typical dicot at the time of fertilization is
(A) 8-nucleate, 8-celled
(B) 8-nucleate, 7-celled
(C) 7-nucleate,7-celled
(D) 7-nucleate, 8-celled

59. The function of the tapetum in an anther is related to:
(A) Dehiscence
(B) Division"
(C) Protection
(D) Nutrition

60. The single cotyledon in grass embryo is called
(A) Scutellum
B) Coleorhiza
(C) Coleoptile
(D) Endothelium