COURSE CODE : 132

Time : 2 Hours
Max : 400 Marks

Instructions to Candidates:

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.
2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
3. Read each question carefully and shade the relevant answer (A) or (B) or (C) or (D) in the relevant box of the ANSWER SHEET using HB pencil.
4. Avoid blind guessing. A wrong answer will fetch you -1 mark and the correct answer will fetch 4 marks.
5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
6. Do not open the question paper until the start signal is given.
7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
9. Use of Calculators, Tables, etc. are prohibited.
1. Which of the following species is restricted to a given area?
   (A) Allopatric species  (B) Sympatric species
   (C) Sibling species    (D) Endemic species

2. Species which are able to exchange genes freely without loss of fertility or vigour is known as
   (A) Superspecies       (B) Coenospecies
   (C) Ecospecies         (D) Semispecies

3. Binomial nomenclature was introduced by
   (A) John ray           (B) Carlous Linnaeus
   (C) De candolle        (D) Darwin

4. Binomial nomenclature means
   (A) Every organism is having one scientific name with a combination of genus and species
   (B) Organism contains generic name
   (C) Organism contains specific name
   (D) None of these

5. Carlous Linnaeus system is an artificial system because
   (A) It is based on evolutionary trends
   (B) It is based on number of characters
   (C) It is based on a few characters of superficial similarities and dissimilarities on morphology
   (D) It is phylogenetic

6. Which of the taxa is not recognized by a botanist?
   (A) Family             (B) Species
   (C) Subspecies         (D) Order

7. The outlook of the classical systematic is embodied in
   (A) Species concept    (B) Biological concept
   (C) Typological concept (D) None of these

8. The term ‘Systematics’ was coined by
   (A) Ernst Haecker      (B) De Candolle
   (C) Copeland           (D) Carlous Linnaeus
9. The correct sequence of taxa is
   (A) Class-Order- Family- Tribe -Genus-Species
   (B) Class-Order- Tribe- Family-Genus-Species
   (C) Phylum-Order-Class-Tribe-Genus-Species
   (D) Phylum-Tribe-Class-Order-Genus-Species

10. A taxonomic system based only on the traits that reflect the order in time in which branches arose in a phylogenetic tree is called
    (A) Phylogeny                         (B) Cladistics
    (C) Classical evolutionary taxonomy   (D) Phenetics

11. Phylogeny describes a species
    (A) Morphological similarities with other species
    (B) Evolutionary history
    (C) Geographic distribution
    (D) Reproductive compatibilities with other species

12. A taxonomic system based on all phenotypic similarities equally weighted and without regard to evolutionary relationship is called
    (A) Phylogeny                         (B) Cladistics
    (C) Classical evolutionary taxonomy   (D) Phenetics

13. A taxonomic system that uses phenotypic similarities as well as judgment of homologies along a branching sequence is called
    (A) Phylogeny                         (B) Cladistics
    (C) Classical evolutionary taxonomy   (D) Phenetics

14. The important aspects of the study of taxonamy are
    (A) Nomenclature                     (B) Classification
    (C) Identification                   (D) All of the above

15. The binomial system of nomenclature was initially devised by
    (A) Linnaeus                         (B) Casper Bauhin
    (C) De Candolle                      (D) Caesalpino

16. The first international Botanical Congress met in
    (A) Paris                            (B) Vienna
    (C) Cambridge                        (D) Geneva
17. The first laws of botanical nomenclature was framed by
   (A) Augustine P. de Candolle  (B) Alphonse de Candolle
   (C) Casimir de Candolle  (D) Linnaeus

18. The repetition of the generic name as a specific epithet is called
   (A) Homonymy  (B) Synonymy
   (C) Tautonymy  (D) None of the above

19. Binomials become trinomials when
   (A) The name of the species is changed
   (B) The name of the genus is changed
   (C) When the subspecific category is also indicated
   (D) None of the above

20. The particular specimen or element designated by the author of a taxon is designated as
   (A) Paratype  (B) Holotype
   (C) Lectotype  (D) Neotype

21. The first phylogenetic system of plant classification to be ever put forth was that of
   (A) Bentham and Hooker  (B) Engler and Prantl
   (C) Hutchinson  (D) Eichler

22. The first person to propose the concept of species was
   (A) Charles Darwin  (B) Linnaeus
   (C) Tournefort  (D) John Ray

23. A specimen or element selected by a competent worker as a substitute for an undesignated, missing or destroyed holotype is called
   (A) Neotype  (B) Paratype
   (C) Cotyppe  (D) Leucotype

24. One of the two or more specimens or elements designated simultaneously as the type is called
   (A) Isotype  (B) Syntype
   (C) Neotype  (D) Paratype
25. A second specimen from the same plant from which the holotype was collected is called
   (A) Isotype  (B) Paratype
   (C) Neotype  (D) Cotype

26. A topotype is
   (A) A specimen selected to serve as a substitute for the holotype
   (B) A specimen other than the holotype referred to in the original publication
   (C) A specimen used by a second author
   (D) A specimen collected at the type locality

27. Duplication of names is avoided by the application of
   (A) Type concept  (B) The principal of priority
   (C) Synonyms  (D) Homonyms

28. Interspecific hybrids are designated
   (A) By connecting names of both the parents by a multiplication sign
   (B) By giving a new epithet for the hybrid and connecting the generic name and the new epithet by a multiplication sign
   (C) (A) and (B)
   (D) None of the above

29. The names of the intergeneric hybrids are framed
   (A) By adding a multiplication sign between the two parent genera
   (B) By a combination of both generic names and placing the multiplication sign before such a combined name
   (C) (A) and (B) both
   (D) None of the above

30. Reproductive characters are more valuable than vegetative characters in classification because they are
   (A) Relatively more constant  (B) Less influenced by the environment
   (C) More numerous  (D) All of the above

31. Descriptive systematic botany was called by Turrill as
   (A) Biosystematics  (B) Omega taxonomy
   (C) Beta taxonomy  (D) Alpha taxonomy
32. Palynological characters which are widely useful in taxonomy are
   (A) Apertural morphoforms  (B) Exine ornamentation
   (C) Pollen nuclear number  (D) All three of the above

33. Cytotaxonomy utilizes the following different criteria
   (A) Chromosome number  (B) Chromosome morphology
   (C) Cytochemistry  (D) All the above

34. Taxonomy based on identification of evolutionary units within species by determining their genetical interrelationship is called
   (A) Numerical taxonomy  (B) Biochemical taxonomy
   (C) Experimental taxonomy  (D) Chemotaxonomy

35. Who has introduced five kingdom system of biological classification?
   (A) Linnaeus  (B) Copeland
   (C) Ernst Mayr  (D) Robert H. Whittaker

36. Who has suggested six-kingdom classification?
   (A) Whittaker  (B) Carl Woese
   (C) Huxley  (D) Haeckel

37. Six-Kingdom classification is based on the sequence of:
   (A) Nitrogenous bases in DNA  (B) Ribosomal RNA genes
   (C) Messenger RNA genes  (D) Transfer RNA genes

38. Authors of the book Principles of Numerical Taxonomy are
   (A) Alston and Turner  (B) Sokal and Sneath
   (C) Hansen and Rahn  (D) Engler and Prantl

39. The serum diagnosis method in plant taxonomy was pioneered by
   (A) Alston and Turner  (B) Hegenaeuer
   (C) K.C.Meiz  (D) Heywood

40. Which of the following statements regarding alpha diversity is/are correct?
   (A) Alpha diversity is represented by the number of species in a specified area.
   (B) It increases with the total number of individuals encompassed and thus with the increase in the area sampled and the productivity per unit area
   (C) It is less on remote islands and increases as one moves towards the equator.
   (D) All of the above
41. Which of the following statements regarding biodiversity is/are correct?
   (A) Beta diversity is represented by the turnover of the species across space
   (B) Beta diversity refers to the degree to which species composition change along an environmental gradient
   (C) Gamma diversity is a species turnover rate with distance between sites of similar habitat or with expanding geographical area
   (D) All of the above

42. At present, the most significant cause of dwindling biodiversity is probably
   (A) biological magnification of DDT  (B) global warming
   (C) the deterioration of ozone layer  (D) the destruction of habitat

43. Which of the following habitats show the highest diversity of living species?
   (A) Grassland  (B) Temperate forest
   (C) Desert  (D) Tropical rainforest

44. The Red Data Book which lists endangered species is maintained by
   (A) WWF  (B) UNO
   (C) WHO  (D) IUCN

45. Most dangerous threat to wildlife is by
   (A) hunting  (B) overgrazing
   (C) habitat destruction  (D) introduction of exotic species

46. Conservation is
   (A) Proper use of natural resources  (B) Protection of natural resourcres
   (C) Management of natural resources  (D) All of the above

47. Many wild plants and animals are on the verge of extinction due to
   (A) climatic changes  (B) deforestation
   (C) non-availability of food  (D) none of the above

48. The central legislative measures called ‘Wildlife Protection Act’ was passed in
   (A) 1951  (B) 1972  (C) 1977  (D) 1980

49. When was ‘Man and the Biosphere’ programme launched by the UNESCO
   (A) 1965  (B) 1968  (C) 1971  (D) 1986
50. Anastral mitosis is characteristic of
   (A) Higher plants  (B) Higher animals
   (C) All living organisms  (D) Lower animals

51. Phragmoplast is
   (A) Plastid capable of fragmentation
   (B) Plastid capable of duplication
   (C) Cell plate formed of ER and dictyosomes (Secretory vesicles) during cytokinensis
   (D) Cell plate formed by ER, dictyosome (secretory vesicles) and portion of spindle fibre

52. Hodgkin’s disease is an example of
   (A) Osteoma  (B) Human lymphoma
   (C) Carcinoma  (D) Leukaemia

53. Vaccination against small pox means introduction in our body of
   (A) WBCs obtained from animals
   (B) Antibodies produced in other animals
   (C) Actual weakened germs
   (D) None of these

54. For the chemical change A—B, it is found that the rate of reaction doubles when the concentration is increased four times. The order of the reaction is
   (A) Half  (B) One
   (C) Two  (D) Zero

55. The degeneracy of genetic code means that
   (A) The same amino acid can be coded by two or more codes
   (B) All the living organisms on the earth have the same codes
   (C) Genetic code varies with different organisms
   (D) The same code may code more than one amino acid

56. What is the function of centrosome?
   (A) Formation of spindle fibre
   (B) Duplication of DNA
   (C) Division of centromere
   (D) Longitudinal splitting of chromosomes
57. The whole enzyme molecule called holoenzyme is made up of proteinaceous part and a cofactor. Proteinaceous part is
   (A) Coenzyme (B) Apoenzyme
   (C) Proenzyme (D) Prosthetic group

58. One of the following ratio is constant in DNA's of different species.
   (A) A + T / C + G (B) A + G / T + C
   (C) A + C / T + G (D) A + U / C + G

59. The element required for the activation of DNA and RNA is
   (A) Ca²⁺ (B) Mg²⁺
   (C) K⁺ (D) Cu²⁺

60. Emerson enhancement proves that
   (A) There are two photochemical reactions in light reaction
   (B) There are light and dark reactions in photosynthesis
   (C) Photophosphorylation
   (D) Photorespiration

61. Species most vulnerable to extinction from human activities are those with
   (A) Low carrying capacities (B) High population growth rates
   (C) Large niches (D) Many natural predators

62. Species is
   (A) Specific class of evolution (B) Specific unit of evolution
   (C) Specific unit of the evolutionary (D) History of a race

63. A species is taxonomically
   (A) A fundamental unit in the phylogenetic history of organisms
   (B) A group of evolutionary related population
   (C) A base category to which most taxonomic information is attached
   (D) A population with common characteristics as evolutionary base of variation

64. The species inhabiting different geographical areas are
   (A) Sympatric (B) Allopatric
   (C) Sibling species (D) Morphospecies
65. Two or more species occupying identical or overlapping areas are known as
   (A) Sympatric  (B) Subspecies
   (C) Allopatric  (D) Sibling species

66. Related species which are reproductively isolated but morphologically similar are called
   (A) Sympatric  (B) Allopatric
   (C) Sibling species  (D) Morphospecies

67. Of all the taxa, the only one that exists in nature as a biologically cohesive unit is the
   (A) Species  (B) Genus
   (C) Kingdom  (D) Phylum

68. Static concept of species was put forward by
   (A) Darwin  (B) Theophrastus
   (C) De candolle  (D) Linnaeus

69. Mayr’s biological concept of species is mainly based on
   (A) Morphology  (B) Reproductive isolation
   (C) Modes of reproduction  (D) Morphology and reproduction

70. Linnaeus system of classification was based on
   (A) Cytology  (B) Morphology
   (C) Ecology  (D) Embryology

71. Natural classification is based on
   (A) Ontogeny  (B) Morphology
   (C) Phylogeny  (D) Both morphology and phylogeny

72. Natural system of classification differs from artificial system is
   (A) Developing evolutionary trends
   (B) Employing only one floral trait
   (C) Taking only one vegetative trait
   (D) Bringing out similarities and dissimilarities

73. Classification given by Bentham and Hooker is
   (A) Numerical  (B) Artificial
   (C) Natural  (D) Phylogenetic
74. Phylogenetic system brings about
   (A) Grouping according to evolutionary trends
   (B) Grouping on the basis of increasing complexities
   (C) Grouping according to morphological characters
   (D) Reproductive similarities

75. Who is the author of ‘Species Plantarum’?
   (A) Charles Darwin   (B) John Ray
   (C) Carlous Linnaeus (D) Julian Huxley

76. Who proposed phylogenetic classification of plants?
   (A) Hutchinson       (B) Linnaeus
   (C) De candolle      (D) Bentham and Hooker

77. The concept of genus was proposed by
   (A) John Ray         (B) Hooker
   (C) Tournefort       (D) Bessey

78. The term “Taxanomy” was first proposed by the French Botanist:
   (A) De candolle      (B) Linnaeus
   (C) Lamarck          (D) Nageli

79. A food web
   (A) Increases variety of food at each trophic level
   (B) Delicately balances the interrelations amongst organisms
   (C) Decreases variety of food but increases quantity of food at each trophic level
   (D) Increases variety as well as quantity of food at each trophic level

80. Measurement of the rate of O₂ consumption in unit volume of water over a period of time is done to find out
   (A) Biogas generation   (B) Biological oxygen demand
   (C) Biosynthetic path ways (D) Fermentation

81. Agroecosystem is unstable because of
   (A) Lack of variety   (B) Lack of biological control
   (C) Both (A) and (B)  (D) Being man-made
82. Taxanomy without the phylogeny is like bones without flesh is a statement of
   (A) John Hutchinson  (B) Bentham and Hooker
   (C) Takhtajan       (D) Oswald Tippo

83. Which of the following compound is efflorescent?
   (A) Soda ash       (B) Baking soda
   (C) Soda-Lime      (D) Washing soda

84. Oxygen can have positive oxidation state only in
   (A) Fluorides      (B) Chlorides
   (C) Iodine         (D) All

85. In Eutheria, if the fertilized ovum is implanted in the uterine wall, then further development of the foetus cannot occur
   (A) Without the formation of placenta  (B) In the presence of progesterone
   (C) In the presence of foetal membranes  (D) With mother's hormones

86. The oral contraceptive pill used by women
   (A) permits ovulation, but prevents fertilization
   (B) permits ovulation, but blocks luteinization
   (C) permits fertilization but interferes with implantation
   (D) inhibits ovulation by suppressing pituitary LH secretion

87. The fertilized egg in human female gets implanted in the uterus after
   (A) two months of fertilization  (B) about one week days of fertilization
   (C) one month of fertilization  (D) three weeks of fertilization

88. "Red gland" in the anterior chamber of swim bladder in physoclistous fishes serves as:
   (A) the site where hemoglobin is produce
   (B) the place where from oxygen is produced
   (C) an organ where oxygen is absorbed
   (D) a hydrostatic organ
89. Choroid, besides pigments, includes tapetum lucidum which may act as
   (i) Dark adaptation device
   (ii) Light reflecting device and is found in
   (iii) Nocturnal terrestrial animals, elasmobranchs and fishes living in deep water
   (iv) Limbless amphibians and all fishes
The correct combination of functions of tapetum lucidum and the groups in which it is found is
   (A) (i) and (iii)          (B) (ii) and (iii)
   (C) (ii) and (iv)         (D) (i) and (iv)

90. Can the wing of Draco be homologized with that of bat?
   (A) Yes, because both have membranes of skin
   (B) No, because membranes in Draco are supported by greatly lengthened six pairs of ribs and in bat by the anus, greatly elongated 2nd through 5th fingers, hind limbs and usually all or part of the tail
   (C) Yes, because wings of both of them can be folded and expanded according to the need
   (D) No, because the wing of Draco is used for gliding while that of bat is used for flying

91. Electric organs of fishes are highly modified masses of
   (A) nerve cells          (B) muscle cells
   (C) elastic fibres       (D) white fibres

92. The body movements of fishes are brought about by alternate expansion and contraction of myotomes. The paired fins, dorsal fin and anal fin are associated with locomotion or movement of fishes. Which one of the following sets correctly indicates the part played by the fine during rapid swimming of fishes?
   Paired fins :
   (A) For balancing so that the fish remains in position.
   (B) For balancing
   (C) Act as keel to give stability to the body
   (D) For balancing and giving stability to the body
   Dorsal and anal fins :
   Form keel which can be lowered or raised as per needs to give stability to the body
   For balancing and to give stability to the body For balancing
   To rise or lower the body as per needs
93. The largest and the most powerful adductor muscles in flying bird is the
   (A) coracobrachialis longus       (B) pectoralis major
   (C) pectoralis minor              (D) tensor longus

94. Genetic recombination takes place during
   (A) prophase of meiotic division-I (B) metaphase of meiotic division-II
   (C) prophase of meiotic division-II (D) metaphase of meiotic division-I

95. Which one of the following is tightly bound to the cell membrane?
   (A) c-AMP                         (B) Adenylate cyclase
   (C) Ribonuclease                   (D) ATP

96. Which of the following pair(s) of animals and organs is/are correctly matched?
   (i) Balanoglossus – Oral hood
   (ii) Ascidian – Tube feet
   (iii) Amphioxus – Velum
   Select the correct answer using the codes given below:
   Codes:
   (A) (i), (ii) and (iii) (B) (i) and (iii) (C) (ii) alone (D) (iii) alone

97. In singing birds, the sound is produced by the
   (A) lungs                        (B) air-sacs         (C) syrinx          (D) larynx

98. A flying bird lands by
   (A) folding the wings back and dropping on the grounds or other substratum
   (B) folding the wings above and back of the body and coming down
   (C) lowering and fanning out the rectrices
   (D) pronation and forward movements of wings

99. Ecdysone is produced by which of the following?
   (A) Neuro secretory cells       (B) Protocerebrum
   (C) Prothoracic gland           (D) Corpora allata

100. Which one of the following is a characteristic of adult ascidian?
    (A) Elongated tail              (B) Large notochord
    (C) Enlarged pharynx            (D) Well developed statocyst