A

19735 **120 MINUTES**

1. An attempt to classify organisms based on overall similarity, usually in morphology or other observable traits, regardless of their phylogeny or evolutionary relationship is called:
   A) Taximetrics B) Monotypic phylogeny
   C) Numerical taxonomy D) Polytypic phylogeny

2. A set of species descended from a common ancestral species is known as:
   A) Phylogenetic relationship
   B) Clade
   C) Geographic gradient in the frequency of a gene
   D) Arrangement of organisms into hierarchical groups

3. Match the following

	Column 1		Column 2
a	Ctenidium.	1	Termite.
b	Social insect.	2	Monopectinate gill.
c	Trochophore larva.	3	*Taenia solium.*
d	Mehlis gland.	4	Sea mouse.

   A) a-1, b-2, c- 4, d-3 B) a-1, b-2, c-3, d-4
   C) a-2, b-1, c-3, d- 4 D) a-4, b-3, c-2, d-1

4. Kingdom protista contains
   A) Prokaryotic unicellular autotrophic organism
   B) Eukaryotic multicellular heterotrophic organism
   C) Prokaryotic multicellular heterotrophic organism
   D) Eukaryotic unicellular photosynthetic organism

5. Connecting link between Amphibia and Reptiles is
   A) Seymouria B) Salamander C) Testudo D) Ichthyophis

6. **Assertion (A)** – Morgan's cross between white eyed male fruit flies and wild type females is an example of a test-cross.
   Reason (R) – The standard test cross between a homozygous recessive organism and the one displaying the dominant phenotype.
   A) Both A and R are individually true and R is not the correct explanation of A.
   B) Both A and R are individually true and R is the correct explanation of A.
   C) A is true and R is false.
   D) A is false and R is true.

7. Which of the following is the correct chronological order of periods?
   A) Permian, Cretaceous, Triassic, Cambrian
   B) Cambrian, Permian, Triassic, Cretaceous
   C) Cambrian, Permian, Cretaceous, Triassic
   D) Triassic, Permian, Cretaceous, Cambrian

8. Singer and Nicolsons' fluid mosaic model biomembrane different from Robertson's membrane in:

A) Arrangement of lipids B) Absence of proteins
C) Number of lipids layer D) Arrangement of proteins

9. **Assertion (A)** – Oxytocin is called as ' Birth hormone'.
Reason (R) – It stimulates the contraction of smooth muscles and blood vessels of uterus during child birth.

A) Both A and R are individually true and R is the correct explanation of A
B) Both A and R are individually true and R is not the correct explanation of A
C) A is false and R is true
D) A is true and R is false

10. Match the following:

	Column 1		Column 2
a	Amoebiasis	1	*Treponema pallidum*
b	Diphtheria	2	Use only sterilized food and water
c	Cholera	3	DPT vaccine
d	Syphilis	4	Use oral rehydration therapy

A) a-2, b-1, c-3, d- 4 B) a-2, b-3, c- 4, d-1
C) a-1, b-2, c-3, d-4 D) a-4, b-3, c-2, d-1

11. Animals live temporarily inside the cave is known as

A) Periphyton B) Nekton
C) Troglophiles. D) Troglobites

12. Match the following:

	Column 1		Column 2
a	Meridional	1	Cleavage furrow passes through axis other than median axis
b	Vertical	2	Median axis runs between centre of animal and vegetal pole
c	Equatorial	3	Cleavage furrow
d	Longitudinal	4	Line of division runs at right angle to median axis

A) a-1, b-2, c-3, d-4 B) a-1, b-2, c-4, d-3
C) a-2, b-1, c-3, d-4 D) a-2, b-1, c-4, d-3

13. Glycophorin is a:

A) Transmembrane protein B) Peripheral protein
C) Cystolic protein D) Triple α – helix

14. Which of the following protein attached to the microtubules provides the force for sperm propulsion?

A) Myosin B) Dynein C) Actin D) Flagellum

15. Balbiani rings is a site of:

A) Gene amplification B) Active protein synthesis
C) Active m RNA synthesis D) Ribosomal RNA genes

16. Interrelated chemical reactions involved in metabolic activities of every living cell for the maintenance of life catalysed by specific proteinaceous substances are called :
A) Phytohormones B) Regulators
C) Co-factors D) Enzymes

17. Vitamin K has been implicated in:
A) Oxidative phosphorylation in mitochondria.
B) Photosynthetic phosphorylation in a variety of plants
C) Electron transport
D) All the above

18. The first step of β oxidation involves the activation of fatty acid in the presence of
A) ATP and thiokinase enzyme
B) Ca^{++} and thiokinase enzyme.
C) ATP and β ketoacyl thiolase
D) ATP and aldehyde dehydrogenase .

19. Ribozymes are:
A) Groups of enzymes located in ribosomes.
B) RNA molecules having enzyme activity
C) Enzymes for clearing ribosomal subunits
D) RNP particles dissociating enzymes

20. Match list 1 with list 2 and select the correct answer using codes given below:

	Column1		Column 2
a	DNA structure	1	Muller and Stadler
b	Semi-conservative replication of DNA	2	Beadle and Tautum.
c	One gene one enzyme theory	3	Watson and Crick
d	Induction of mutation	4	Meselson and Stahl

A) a-1, b-2, c- 3, d- 4 B) a-3, b-2, c- 4, d- 1
C) a-3, b-4, c- 2, d- 1 D) a-4, b-3, c- 2, d- 1

21. When males are produced from unfertilized eggs, it is termed as:
A) Thelytoky B) Polyembryony
C) Traumatic parthenogenesis D) Arrhenotoky

22. Polymerase chain reaction technique is used for:
A) DNA amplification. B) Screening gene libraries
C) Synthesis of polymerases D) DNA micro array

23. An association of individuals of different species living in the same habitat and having functional interactions is
A) Population B) Biotic community
C) Ecological niche D) Ecosystem

24. Courtship behaviour is a form of
A) Taxis B) Fixed action pattern
C) Imprinting D) Kinesis

25. Wallace's line passes between
A) Sumatra and Java B) Borneo and Celebes
C) Bali and Lembok D) Timor and New Guinea

26. The cranial capacity was largest in
A) African man B) Peking man
C) Java and ape man D) Neanderthal man

27. Hassall's corpuscles are found in
A) Thymus gland B) Pineal gland
C) Kidneys D) Skin

28. Temperature based sex determination is found in:
A) Birds B) Turtles C) Mammals D) Fishes

29. Desmotubule is an extension of:
A) Golgi bodies B) Endoplasmic reticulum
C) Desmosomes D) Plasmodesmata

30. Match the following

	Column1		Column 2
a	Allen's rule	1	Pigmentation
b	Gloger's rule	2	Number of vertebrae
c	Bergman's rule	3	Size of animals
d	Jordan's rule	4	Length of extremities

A) a-1, b-2, c- 4, d- 3 B) a-2, b-3, c- 1, d- 4
C) a-3, b-4, c - 2, d-1 D) a-4, b-1, c- 3, d- 2

31. Super males having XYY sex chromosomes show
A) Jacob's syndrome B) Klinefelter's syndrome
C) Turner's syndrome D) Down's syndrome

32. Match the following:

	Column1		Column 2
a	Graserie	1	Viral
b	Muscardine	2	Fungi
c	Pebrine	3	Parasitic protozoa
d	Maggot	4	Tricholyga sorbillas

A) a-3, b- 2, c- 4, d - 1 B) a-1, b- 2, c- 3, d- 4
C) a-3, b- 4, c- 1, d - 2 D) a-4, b- 3 , c- 1,d - 2

33. The phosphagen that provides an immediate source of energy for vertebrate muscular contraction is:
A) Arginine phosphate B) Adenosine triphosphate
C) Creatine phosphate D) Uridine diphosphoglucose

34. The term alpha diversity refers to
A) Genetic diversity B) Species diversity
C) Diversity among plants D) Community and ecosystem diversity

35. Which one of the following statements is correct?
A) All animal require a medium for respiration.
B) In all animals oxygen is transported by blood.
C) In all animals oxygen is taken in from water or air through gills or lungs.
D) All animals breathe through skin.

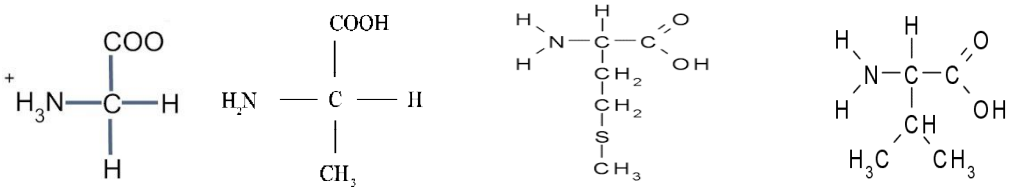
36. Which one of the following is the vector for pappataci fever in man?
A) Scorpion fly B) Phlebotomus
C) Culex D) Aedes

37. The term r selection and k selection are used in
A) Aforestation B) Pollution
C) Succession D) Habitat

38. Stanley Miller conducted an experiment to demonstrate that simple organic molecules like amino acids could be produced if an electric discharge is passed through a mixture of such gases as might have been present in the atmosphere of early earth. The gaseous mixture used in the experiment comprised of:
A) Methane, ammonia, hydrogen, water vapour
B) Methane , carbon dioxide, nitrogen, water vapour
C) Ammonia, carbon dioxide, nitrogen, water vapour
D) Methane, ammonia, nitrogen, water vapour

39. A fragment of DNA cut by restriction enzymes, forms bonds with other DNA molecules that have
A) been fragmented by the same restriction enzymes
B) Sticky ends
C) Plasmid component
D) Poly A Tail

40.



(a) (b) (c) (d)

Identify the amino acids
A) Valine, methionine, glycine, alanine
B) Glycine, alanine, valine, methionine
C) Alanine, glycine, methionine, valine
D) Glycine, alanine, methionine, valine

41. Antibody diversity is generated by:
A) Protein splicing B) Somatic mutation
C) Allelic exclusion D) Inter-chromosomal recombination

42. Match the following

	Column 1		Column 2
a	Gene libraries	1	Production of food
b	Single cell protein	2	Nif genes
c	Agriculture cereal crop	3	Chromosome mapping
d	c- DNA	4	Gen bank

A) a-2, b-3, c- 1, d- 4 B) a-4, b-1, c- 2, d- 3
C) a-4, b-2, c- 1, d- 3 D) a-3, b-2, c- 1, d- 4

43. Which law of thermodynamics introduces the concept of entropy?
A) 1^{st} law B) 2^{nd} law
C) 3^{rd} law D) None of the above

44. Match the following

	Column 1		Column 2
a	Colloidal theory of protoplasm	1	Schleiden and Schwann
b	Cell theory	2	Waldeyer
c	Chromosome	3	Park and Biggins
d	Quantasome	4	Fischer

A) a-3, b-2, c- 1, d- 4 B) a-4, b-1, c- 2, d- 3
C) a-2, b-3, c- 1, d-4 D) a-3, b-2, c- 4, d- 1

45. Which of the following is the name for the behavior found in organism which induced them to learn something without any inducements?
A) Latent learning B) Cognitive learning
C) Conditioned response D) Insight learning

46. Decompression sickness is caused due to
A) CO_2 B) CO C) Zn D) N_2

47. Grey crescent is associated with the egg of
A) Frog B) Chick
C) Chick and frog D) Branchiostoma and frog

48. Fatty acid not synthesized in man is
A) Oleic acid B) Linoleic acid
C) Palmetoleic acid D) Stearic acid

49. A group of aerobic, gram positive bacteria that forms branching filaments (hyphae) and asexual pores.
A) Clostridium B) Actinomycetes
C) Firmicutes D) Proteobacteria

50. Restriction Fragment Length Polymorphism (RFLP) study is a technique for:
A) Identifying genetic (DNA) homologies
B) Transferring genes from unrelated species
C) Isolating single gene products
D) Isolating single genes

51. Species having wide geographical ranges often develop locally adapted populations are called
A) Paratypes B) Prototypes C) Ecotypes D) Syntypes

52. Alignment of one or more mRNA sequences in a single genomic sequence is
A) SAGEmap B) Model marker
C) Spidey D) Splign

53. Which of the following is not a requirement for PCR reaction?
A) $MgCl_2$ B) Taq polymerase
C) d NTPs D) RNA template

54. Which of the following is **NOT** a water soluble vitamin?
A) Thiamin B) Niacin C) Vitamin C D) Vitamin K

55. Human eggs are-----.
A) Mesolecithal B) Microlecithal
C) Macrolecithal D) Alecithal

56. Which one of the following is the national aquatic animal of India?
A) Gharial B) Gangetic dolphin
C) Salt water crocodile D) Olive ridley turtle.

57. The insulin hormone is a -----.
A) Glycolipid B) Fatty acid C) Peptide D) Steroid

58. In large randomly mating populations, no change occur in the gene frequencies in the absence of mutation and selection. This is called:
A) Adaptive radiation B) Genetic drift
C) Gene flow D) Hardy-Weinberg law

59. Animals distributed in restricted areas are known as:
A) Stenotopic B) Eurytopic
C) Discontinuous D) Cosmopolitan

60. Lorenz's psycho-hydraulic model explains-----.
A) Imprinting B) Motivation C) Learning D) Habituation

61. During muscle contraction, Ca^+ combines to which of the following regulatory proteins to cause activation of Myosin kinase and phosphorylation of the Myosin head.
A) Troponin B) Actin C) Calmodulin D) Calreticulin

62. The correct order for the abundance of the greenhouse gases is:
A) $N_2O>CH_4>CO_2>$Ozone B) $CO_2>CH_4>N_2O>$Ozone
C) $CO_2>N_2O>CH_4>$Ozone D) $N_2O>CO_2>CH_4>$Ozone

63. Which is the correct sequence of stages in prophase I of meiosis?
A) Leptotene, Zygotene, Pachytene, Diplotene, Diakinesis
B) Leptotene, Pachytene, Zygotene , Diplotene, Diakinesis
C) Zygotene, Leptotene, Pachytene, Diplotene, Diakinesis
D) Zygotene, Pachytene, Leptotene, Diplotene, Diakinesis

64. A few statements are given. Find out the one which is false?
A) In aquatic environments, annual changes in temperature are more marked in temperate fresh water climate than in other climates
B) At global level, human activities contribute nine times more particulate matter or aerosols into the air than do natural processes
C) Temperature is the major factor in the creation of ocean currents and air currents
D) In the troposphere, photo oxidation of hydrocarbons in the presence of nitrogen oxides produce ozone

65. The transfer of genetic material from one bacterium to another via virus is called -----.
A) Transformation B) Conjugation
C) Recombination D) Transduction

66. 'Superbug' a biotechnological feat is useful in -----.
A) Treatment of cancer B) Espionage
C) Biodegradation of plastic D) Cleaning oil spillage

67. Match the following

	Column 1		Column 2
a	Vitamin A	1	Tocopherol.
b	Vitamin E	2	Thiamine.
c	Vitamin B6	3	Pyridoxine.
d	Vitamin B1	4	Calciferol.

A) a-4, b- 1, c- 3, d- 2 B) a-1, b- 2, c- 4, d- 3
C) a-2, b- 1, c- 3, d- 4 D) a-1, b- 2, c- 3, d- 4

68. Eutrophication causes decrease in -----.
A) Dissolved hydrogen B) Dissolved oxygen
C) Dissolved salts D) All of these

69. Glucose is excreted in the urine in excess quantities when the function of which one of the following is impaired?
A) Bowman's capsule B) Loop of Henle
C) Proximal convoluted tubule D) Distal convoluted tubule

70. The Michaelis constant is a measure of which one of the following?
A) Concentration of enzyme
B) Thermo-stability of enzyme
C) Catalytic efficiency of enzyme
D) Affinity of enzyme for its substrate

71. Lactate produced by glycolysis in hypoxic muscle cells is transported via blood cells to the liver. This lactose is converted to glucose and then released into the blood. This process is called
A) Cori cycle B) HMP Shunt
C) Ornithine cycle D) Glucose- alanine cycle

72. Who among the following developed the concept of niche as an abstract n-dimensional hyper volume?
A) A. G. Tansley B) G. Evelyn Hutchinson
C) Eugene. P. Odum D) Victor Shelford

73. The first conversion of glucose during glycolysis is catalyzed by the enzyme:
A) Glucose-6-phosphatase B) Phosphofructokinase-1
C) Hexokinase D) Aldolase

74. Electrical impulses in the heart originate in the -----.
A) Sinoventricle node B) Hippocampus
C) Node of Ranvier D) Sinoatrial node

75. Phenetics is:
A) Numerical taxonomy B) Natural classification
C) Artificial taxonomy D) None of these

76. The term 'hot spot' for high diversity ecological regions was coined by:
A) Odum B) Myers C) IUCN D) Stanley

77. Which one of the following does not belong to quantitative characters?
A) Density B) Abundance C) Phenology D) Frequency

78. Match the following

	Column 1		Column 2
a	Sigma factor	1	Termination of transcription
b	Rho factor	2	Removal of RNA primer from newly synthesized DNA
c	DNA polymerase	3	Correct initiation of transcription
d	Amino –acyl synthetase	4	Correct initiation of DNA replication
		5	Attachment of amino acid to tRNA

A) a-2, b-5, c- 4, d- 1 B) a-3, b-5, c- 2, d- 1
C) a-2, b-1, c- 4, d- 5 D) a-3, b-1, c- 2, d- 5

79. As per Lyon hypothesis, one of the two chromosomes undergoes heterochromatinisation and is called-----.
A) Barr body B) Genotypic body
C) Karyotypic body D) Phenotypic body

80. Which of the following is a unit of inheritance located in a fixed place on the chromosome?
A) Recon B) Gene C) Muton D) Cistron

81. Which of the following is a Conventional Energy Resource?
A) Hydroelectricity B) Solar Power
C) Wind Power D) Biogas

82. Microscope where the specimen is illuminated with light of a specific wavelength (or wavelengths) which is absorbed by the photons, causing them to emit light of longer wavelengths (i.e of a different colour than the absorbed light):

A) Phase contrast B) Fluorescence
C) Compound D) Light

83. Human chorionic gonadotropin (hcG) hormone is produced by:

A) Placenta B) Thymus gland
C) Pineal gland D) Pituitary gland

84. Match the following

	Column 1		Column 2
a	Laminar flow	1	Frozen state
b	Genetic engineering	2	Tissue culture
c	PEG	3	Protoplast fusion
d	Cryopreservation	4	rDNA

A) a-3, b- 4, c- 2, d- 1 B) a-2, b- 4, c- 3, d- 1
C) a-1, b- 3, c- 4, d- 2 D) a-1, b- 3, c- 2, d- 4

85. Messenger molecules, secreted by helper T cells that recruit other white blood cells are called -----.

A) Interferons B) Antibodies
C) Lymphokines D) Cytotoxins

86. The enzyme *aminoacyl t RNA synthetase* for activation of amino acid requires:

A) Cl B) OH C) Mg^{2+} D) Zn

87. Colchicine, an alkaloid results in doubling of chromosome number because of :

A) Non- formation of spindle
B) Splitting of chromosome
C) Double replication of chromosome
D) Non- pairing of chromosomes

88. X- ray crystallography is used to study:

A) Carbohydrate analysis
B) Three dimensional structure of protein
C) Composition of structure of protein and lipid
D) All the above

89. IgM are ----.

A) Dimers B) Trimers C) Pentamers D) Monomers

90. Polyacrylamide gels are prepared by cross-linking acrylamide with -----.

A) 3,6 anhydro-1-galactose B) Guanidine chloride
C) TEMED D) N-N' methylene bisacrylamide

91. The sertoli cells:

A) Nourish the young sperms B) Produce spermatids
C) Secrete male hormone D) Produce antifertilizin

92. 'Stone leprosy' is due to:
A) Lichens B) Acid rain C) PAN D) Smoke

93. Channeling of molecules in plasma membrane is carried out by:
A) Glycolipids B) Phospholipids
C) Proteins D) Carbohydrates

94. Okazaki strands are synthesized ------.
A) On the leading strand during DNA replication
B) Silent strand during transcription
C) Introns during transcription
D) On the lagging strand during DNA replication

95. The larva of Star fish is:
A) Radially symmetrical B) Bilaterally symmetrical
C) Biradially symmetrical D) Asymmetrical

96. Anadromous fishes migrate from -----.
A) Marine to estuarine water B) Fresh water to marine water
C) Marine to fresh water D) Estuarine to fresh water

97. Diastema is found in ------.
A) Cat B) Dog C) Cetaceans D) Rabbit

98. Catecholamines are derivatives of:
A) Tyrosine B) Tryptophan C) Glycine D) Glycerol

99. The enzyme released by sperm to dissolve egg membrane:
A) Ligase B) Hyaluronidase
C) Lipase D) Acromidase

100. Symport is:
A) Co-transport of two different substances in the opposite direction simultaneously
B) Passive transport of substances along the gradient
C) Co-transport of two different substances in the same direction by the same carrier molecule at the same time
D) Transport of two different substances in the opposite direction at the same time by the same carrier molecule

101. Hensen's node in development of chick is formed of:
A) Notochord, somatic mesoderm
B) Lateral plate mesoderm.
C) Neural plate, splanchnic mesoderm
D) Notochord, neural plate

102. A powerful statistical procedure for determining if differences in means are significant and for dividing variance into components is called:
A) ANOVA B) Correlation C) Regression D) Mean

103. If an agglutinogen is present in the red blood cells of the blood, the corresponding agglutinin must be absent in the plasma; if an agglutinogen is absent, corresponding agglutinin must be present in the plasma. This is known as:
A) Chargaff's law B) Landsteiner law
C) Wolffian law D) All the above

104. Vision capable of discriminating different colours, occurs in bright light in which cones are optimally functioning is ------.
A) Photopic vision B) Accommodation
C) Scotopic vision D) All the above

105. Which of the following is a Vitamin deficiency disease that was most common among sailors, mostly due to lack of fresh fruits among them?
A) Rickets B) Scurvy
C) Night Blindness D) None of these

106. Oscillation of muscle jerks under appropriate condition is called:
A) Clonus B) Hypotonia
C) Stretch reflex D) Muscle spindle

107. Ecdysone is produced by:
A) Nuerosecretory cells B) Protocerebrum
C) Prothoracic gland D) Corpora allata

108. An algorithm for comparing primary biological sequence information, such as amino acid sequences of different proteins or nucleotides of DNA sequences is known as:
A) Open reading frame finder B) Gene finding
C) BLAST D) PDB

109. Motif is a -----.
A) Secondary structure B) Super secondary structure
C) Quaternary structure D) Tertiary structure

110. What does SPSS stands for?
A) Statistical Package for Social Services
B) Statistical Package for Special Services
C) Special Package for Social Services
D) Special Package for Special Services

111. Conservation of elements of biodiversity out of the context of their natural habitat is referred to as ex situ conservation. The best example of it is:
A) National parks B) Zoos
C) Gene bank D) Botanical garden

112. Convergent evolution is best described as:
A) Mutations that introduce same polymorphism into two species after they diverged from a common ancestor
B) There are parallel gene duplications in two unrelated species
C) Evolution of similar phenotypes in distantly related species
D) Having only synonymous substitution in their genes

113. El Nino and La Nina -----.
A) Both decrease water temperatures in the eastern Pacific Ocean
B) Both increase water temperatures in the eastern Pacific Ocean
C) Both increase water temperatures in the Gulf of Mexico
D) Produce opposite changes in global temperatures and precipitation pattern

114. Cell surface receptor proteins belongs to:
A) G protein coupled receptors B) Signal molecules
C) Exportin D) Hormones

115. A structural protein that wraps around the entire length of each thin filament, helps anchor thin filaments to the Z- discs and regulates the length of thin filaments during development:
A) Actin B) Nebulin
C) Myosin D) Tropomodulin

116. Which one of the following techniques is used to study the weaker magnetic fields from the brain?
A) EEG B) MET C) NMR D) PET

117. Choose the correct one from among the following:
A) Glossoplegia - A protein
B) Hydrops - Excess water in blood plasma
C) Kinematics - Skin pigmentation
D) Haemangioma- Malformation of blood vessels

118. When a population is small, there is a greater chance of -----.
A) Genetic drift B) Gene flow
C) Occurrence of mutation D) Natural selection

119. The first global conference on the depletion of ozone layer was held in---
A) San Francisco in 1985 B) Vienna in 1985
C) Brazil in 1985 D) Washington in 1985

120. The disorder of protein deficiency in infants is known as
A) Scurvy B) Mycoses
C) Kwashiorkor D) Osteomalacia

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