

A

23735

120 MINUTES

- In Cephalochordata, what is the function of the myomeres?
A) To aid in respiration B) To facilitate locomotion
C) To filter feed D) To assist in reproduction
- In bioinformatics BLAST search is used to:
A) Search for homologous sequences in a data base.
B) Analyze RNA structure
C) Determine protein function
D) Identify mutations in DNA
- In which of the following snake third supra labial shield touches eye and nasal shield?
A) *Naja naja* B) *Vipera russelli*
C) *Bangours coeruleus* D) *Ptyas mucosus*
- Baleen plates are found in:
A) Blue whale B) Dolphins
C) Whale sharks D) Cephalopods
- DNA replication occurs in ---- phase.
A) G1 B) G2 C) Synthetic D) Mitotic
- Fluid mosaic model of plasma membrane was proposed by:
A) S. J. Singer and G. I. Nicolson
B) Robert Brown
C) Camillo Golgi
D) George Emil Palade
- Which of the following glands is **not** considered a male accessory gland?
A) Prostate gland B) Seminal vesicle
C) Bulbourethral gland D) Bartholin gland
- Highest concentration of urea is found in:
A) Renal artery B) Renal vein
C) Hepatic artery D) Hepatic vein
- Depending upon the size and position of centromere, the 46 human chromosomes has been divided into ---groups.
A) 6 B) 7 C) 10 D) 5

10. Who among the following is known as the father of genetic engineering?
 A) Paul Berg B) Hamilton Smith
 C) Werner Arber D) Kary Mullis
11. In hybridoma technology:
 A) B-cells are fused with T-cells
 B) B- cells are fused with myeloma cells.
 C) T- cells are fused with myeloma cells.
 D) None of these
12. Match the following:
 a. Parotid gland 1. Hepatic duct
 b. Submandibular gland 2. Wharton duct
 c. Sublingual gland 3. Stensen duct
 d. Liver 4. Duct of Bartholin
- A) a-3, b-2, c-4, d-1 B) a-4, b-3, c-1, d-2
 C) a-2, b-3, c-1, d-4 D) a-3, b-2, c-1, d-4
13. Rabbit belongs to the order:
 A) Lagomorpha B) Rodentia C) Hyracoidea D) Procavia
14. Which of the following is **not** an alien species in the water bodies of Kerala?
 A) *Arapaima gigas* B) *Attractosteus spatula*
 C) *Cyprinus carpio* D) *Plotosus canius*
15. Assertion (A): The use of chemical pesticides for controlling insect pests can lead to the development of resistance in pest populations.
 Reason(R): Exposure to sublethal doses of pesticides can select for individuals with genetic traits that confer resistance.
- A) Both A and R are true and R is the correct explanation of A
 B) Both A and R are true, but R is not the correct explanation of A
 C) A is true, but R is false
 D) A is false, but R is true
16. The protein database which contains information about protein structures:
 A) UniProtKB B) PDB
 C) NCBI GenBank D) Pfam
17. cAMP was discovered by:
 A) Funk B) E. W. Sutherland
 C) Robert Brown D) Karl Lohmann

18. The physiological fuel value of protein is---- kcal/g.
 A) 5.65 B) 4 C) 9.45 D) 4.45
19. Assertion (A): In bioinformatics, homology modeling is used to predict the three-dimensional structure of a protein.
 Reason(R): Homology modeling relies on the assumption that proteins with similar amino acid sequences have similar three-dimensional structures.
- A) Both A and R are true and R is the correct explanation of A
 B) Both A and R are true, but R is not the correct explanation of A
 C) A is true, but R is false
 D) A is false, but R is true
20. In eukaryotes heterogenous nuclear RNA is transcribed by:
 A) RNA polymerase I B) RNA polymerase II
 C) RNA polymerase III D) None of these.
21. Assertion (A): Coelenterates posses very primitive nervous system
 Reason(R): Neurons occur for first time in coelenterates.
- A) Both A and R are true and R is the correct explanation of A
 B) Both A and R are true but R is not the correct explanation of A
 C) A is true and R is false
 D) A is false and R is true
22. A male exhibit renewed sexual interest whenever a new female is introduced is called ----- effect.
 A) Whitten B) Vanderbergh C) Haldane D) Coolidge
23. Minamata disease is caused by ----- poisoning.
 A) Cadmium B) Mercury C) Lead D) Fruits
24. *Spodoptera mauritia* is a pest of:
 A) Paddy B) Stored grains
 C) Coconut D) Sugar cane
25. The variant form of enzymes which differ structurally but not functionally and encoded by different alleles of the same locus:
 A) Alloenzyme B) Apoenzyme
 C) Co-enzyme D) Prosthetic group
26. Which one of the following animal is a pseudocoelomate?
 A) *Taenia solium* B) *Fasciola hepatica*
 C) *Ascaris lumbricoides* D) *Pheretima posthuma*

27. Which following honey bee is known as rock bee?
 A) *Apis dorsata* B) *Apis indica*
 C) *Apis mellifera* D) *Apis florae*
28. When a single gene pool splits into several gene pool and leads to increasing number of species, it is called:
 A) Cladogenesis B) Anagenesis
 C) Sibling species D) Cryptic species.
29. Organisms that can tolerate wide range of temperature:
 A) Stenothermal B) Ectotherms
 C) Endothermal D) Eurythermal
30. Environmental protection act was passed in:
 A) 1988 B) 1986 C) 1984 D) 1977
31. Which one of the following egg membrane is acellular?
 A) Zona pellucida B) Corona radiata
 C) Theca interna D) Theca externa
32. Identify the **wrongly** matched pair:
 A) Poison distribution - Variance is less than Mean
 B) Binomial distribution - Mean is greater than variance
 C) Normal distribution - Mean, median and mode are equal
 D) Standard normal distribution - Mean zero and variance 1
33. The mean of absolute deviations from an average is called:
 A) Range B) Standard deviation
 C) Quartile deviation D) Mean deviation
34. Which one of the following is a deuterostome?
 A) Sycon B) Asterias C) Limulus D) Ascaris
35. The principle which was **not** included in Darwin's theory of evolution:
 A) Struggle for existence B) Variation
 C) Survival of the fittest D) Saltation
36. Assertion (A): Random mating is essential for maintaining Hardy-Weinberg equilibrium.
 Reason (R): Random mating keeps the constant allelic frequency.
- A) Both A and R are true and R is the correct explanation of A
 B) Both A and R are true but R is not the correct explanation of A
 C) A is true and R is false.
 D) A is false and R is true.

37. Alpha diversity refers to:
A) Overall diversity of a region
B) Diversity within a community
C) Geographical diversity
D) None of these
38. ACTH is secreted by:
A) Adrenal gland B) Thyroid gland
C) Pituitary gland D) Hypothalamus
39. The behavior of young ducks following their mother is:
A) Habituation B) Imprinting
C) Classical conditioning D) None of these
40. Biological species concept was given by:
A) Simpson B) Mayr
C) Charles Darwin D) Lamarck
41. The phenomenon by which a harmless species has evolved to imitate the warning signals of a harmful species:
A) Batesian mimicry B) Mullerian mimicry
C) Aggressive mimicry D) None of these
42. Which of the following statements is true about linkage?
A) Linked genes are located on different chromosomes
B) Linked genes segregate independently during meiosis
C) Linked genes are always located close to each other on the same chromosome
D) Linkage results from crossing over between homologous chromosomes
43. When one gene masks or modifies the expression of a non-allelic gene, it is called:
A) Epistasis B) Pleiotropy
C) Incomplete dominance D) Co-dominance
44. Which of the following is an example of a single stranded DNA (ssDNA) virus?
A) Herpes simplex virus B) Influenza virus
C) Human papilloma virus D) Hepatitis-B virus.
45. What is diastema?
A) The space between incisors and canines
B) The space between incisors and premolars
C) A type of skin cancer
D) A type of heart condition.

46. Assertion (A): Meiosis is a type of cell division that results in the production of haploid cells from diploid cells.
Reason(R): Meiosis involves two rounds of cell division, resulting in the separation of homologous chromosomes during first division and sister chromatids during second division.
- A) Both A and R are true and R is the correct explanation of A
 - B) Both A and R are true but R is not the correct explanation of A
 - C) A is true and R is false.
 - D) A is false and R is true.
47. Which of the following is **not** a product of Krebs cycle?
- A) cAMP B) NADH
 - C) FADH₂ D) Acetyl- CoA
48. The temperate grass lands found in South America:
- A) Steppes B) Prairie C) Pampas D) Ecotone
49. Biopiracy is:
- A) The illegal hunting and poaching of endangered species.
 - B) The unauthorized use of biological resources or knowledge from indigenous communities or countries.
 - C) The use of genetically modified organisms in agriculture
 - D) The theft of intellectual property from scientific research.
50. Which of the following best describes the theory of punctuated equilibrium?
- A) Evolutionary change occurs gradually and continuously over long period of time
 - B) Evolutionary change occurs rapidly in response to sudden environmental changes
 - C) Evolutionary change occurs in small, incremental steps over short periods of time
 - D) Evolutionary change occurs through the inheritance of acquired traits
51. Which of the following is **not** a hominid species?
- A) *Australopithecus afarensis*
 - B) *Homo erectus*
 - C) *Paranthropus boisei*
 - D) *Pan troglodytes*.
52. The term ecosystem was coined by:
- A) A. G. Tansley B) Eugene Odum
 - C) Reymond Lindeman D) None of these

53. The vitamin required for blood clotting:
 A) Vitamin A B) Vitamin C C) Vitamin K D) Vitamin B₁₂
54. How many pairs of somites are seen in 24 hour chick embryo?
 A) 2 B) 4 C) 6 D) 8
55. ZW-ZZ type sex determination is found in:
 A) Birds B) Moths
 C) Grass hoppers D) Drosophila
56. Extinct mammal like reptiles are included in the subclass:
 A) Synapsida B) Diapsida C) Parapsida D) Anapsida
57. Match the following:
 a. Tidal volume 1. 4500ml
 b. Inspiratory Reserve volume 2. 500ml
 c. Vital capacity 3. 2500-3000ml
 d. Residual volume 4. 1100-1200ml
- A) a- 2, b-3,c-1,d-4 B) a- 1, b-3,c-2,d-4
 C) a- 2, b-3,c-4,d-1 D) a-1, b-2, c-3, d-4
58. Find the median of the following data set {8, 9, 7, 3, 3, 6, 1}
 A) 3 B) 6 C) 4.5 D) 5
59. The amino acids which are coded by a single codon:
 A) Proline and methionine B) Tryptophan and methionine
 C) Proline and serine D) Methionine and serine.
60. Horse belongs to the order:
 A) Perissodactyla B) Artiodactyla
 C) Cetacea D) Chiroptera
61. Which of the following belongs to the Order Rhynchocephalia?
 A) Sphenodon B) Hemidactylus
 C) Crocodillus D) Lycodon
62. Which of the following is **not** a secondary messenger?
 A) cAMP B) Inositol triphosphate
 C) Ca⁺⁺ D) Na⁺
63. Polytene chromosome is found in:
 A) Liver cells
 B) Salivary gland of Drosophila
 C) Primary oocyte of Amphibians
 D) None of these

64. Germplasm theory was proposed by:
A) Charles Darwin B) Hugo de Vries
C) August Weismann D) R. A. Fisher
65. C- value paradox refers to:
A) Total RNA content
B) Total DNA content of haploid genome
C) Total DNA content of diploid genome
D) Sum of DNA and RNA content of a haploid cell
66. Which of the following is a pair of viral disease?
A) Common cold and Cholera
B) Common cold and AIDS
C) AIDS and Typhoid
D) Cholera and Typhoid
67. The permissible noise level for commercial zone in day time in India:
A) 75 dB B) 70 dB C) 100 dB D) 50 dB
68. The sexual reproduction of *Plasmodium vivax* occurs in:
A) Liver cells of man B) RBC of man
C) Intestine of mosquito D) Salivary gland of mosquito.
69. The frequency of a dominant allele in a Mendelian population is 0.6. Calculate the frequency of heterozygous individuals in a population.
A) 0.48 B) 0.16 C) 0.24 D) 0.36
70. In a batch of 15 students 3 have failed. The marks of the successful candidates were 76, 49, 52, 61, 44, 54, 89, 74, 55, 64, 59 and 57. Find the median marks
A) 55 B) 61 C) 54 D) 64
71. The national park where one horned rhino is found:
A) Jim Corbett National park
B) Gir national park
C) Kazinranga national park
D) Ranthambore national park.
72. Which of the following can undergo beta oxidation?
A) Monosaturated fattyacid B) Polysaturated fattyacid
C) Saturated fattyacid D) All of these
73. tRNA was discovered by:
A) Paul Zamecnik
B) George E Palade
C) Sydney Brenner and Francois Jacob
D) Jim Watson

74. Centrolecithal eggs are found in:
 A) Rat B) Frog C) Amphioxus D) Drosophila
75. Polyspermy is found in:
 A) Birds B) Cartilaginous fishes
 C) Reptiles D) All of these.
76. What is the difference between bottleneck effect and founder effect?
 A) The bottleneck effect is caused by a catastrophic event, while the founder effect is caused by a group of individuals establishing a new population
 B) The bottleneck effect leads to an increase in genetic diversity, while the founder effect leads to a decrease in genetic diversity
 C) The bottleneck effect leads to a decrease in genetic diversity, while the founder effect leads to an increase in genetic diversity
 D) The bottleneck effect and founder effect are the same thing
77. Which of the following statements is/are **not** true about *Sphenodon* ?
 1. It is the only living member of the order Rhynchocephalia
 2. It has a parietal eye
 3. It is only found in New Zealand
 4. It shows cosmopolitan distribution
 A) 2 & 4 only B) 4 only
 C) 1, 2, 3 and 4 D) 1, 2 and 3 only
78. Lateral ventricles are connected to third ventricle by:
 A) Foramen of Monro B) Foramen of Magnum
 C) Iter D) Central canal
79. Which of the following are sedimentary cycles?
 1. Sulphur cycle 2. Phosphorus cycle
 3. Nitrogen cycle 4. Carbon cycle
 A) 1 only B) 1 & 2 only C) 2 & 3 only D) 1, 2, 3 & 4
80. The international agreement which aims to protect the ozone layer by phasing out the production and consumption of ozone-depleting substances:
 A) Paris Agreement B) Kyoto protocol
 C) Montreal protocol D) Rio declaration
81. The international organization which works to protect and restore the world's wetlands:
 A) World Wildlife Fund (WWF)
 B) International Union for Conservation of Nature (IUCN)
 C) Ramsar Convention Secretariat
 D) The Nature Conservancy

82. Which type of learning involves sudden problem solving without prior experience, trial and error or explicit reinforcement?
 A) Insight learning B) Cognitive learning
 C) Latent learning D) Instrumental conditioning.
83. Match the following:
 a. Euplectella 1. Portuguese man of war
 b. Physalia 2. Venus flower basket
 c. Meandrina 3. Sea anemone
 d. Adamsia 4. Brain coral
- A) a-4, b-2, c-3, d-1 B) a-2, b-1, c-4, d-3
 C) a-2, b-4, c-3, d-1 D) a-1, b-2, c-4, d-3
84. The statistical tool used to compare the means of three or more independent samples?
 A) One-way ANOVA B) Student's t- test
 C) Chi-square test D) Regression analysis
85. Which of the following act as peptidyl transferase enzyme?
 A) 23S rRNA in Prokaryotes B) 5.8S rRNA in Prokaryotes
 C) 28S rRNA in Eukaryotes D) Both A and B
86. During meiosis, reduction in the chromosome number occurs during :
 A) Anaphase I B) Telophase I C) Anaphase II D) Telophase II
87. The most commonly mutated tumor suppressor gene in human:
 A) p53 B) BRCA2 C) APC D) BRCA1
88. Which of the following is an autosomal dominant disorder?
 A) Cystic fibrosis B) Phenylketonuria
 C) Sickle cell anaemia D) Myasthenia gravis
89. Which of the following acts as the best indicator of pollution in streams?
 A) Nekton B) Benthos
 C) Plankton D) Submerged plants
90. Assertion (A) : Pyramid of energy is always upright
 Reason (R) : Energy is constantly lost as heat when it travels from one trophic level to the next.
- A) Both A and R are true and R is the correct explanation of A
 B) Both A and R are true but R is not the correct explanation of A
 C) A is true and R is false.
 D) A is false and R is true.

91. Extinction of key stone species in a community will results in:
- Decline in species diversity
 - Increased secondary productivity
 - Increased nutrient cyling
 - Decrease in primary productivity.
92. In SDS- PAGE , protein sample is treated with SDS for:
- Denaturing protein
 - Making the protein negatively charged
 - Making protein positively charged
 - None of these.
93. 'Carbonic anhydrase' is present in:
- Plasma
 - RBC
 - Platelets
 - WBC
94. Mermaid's purse is found in:
- Ground shark
 - Skates
 - Chimaeras
 - Cybium
- 1 & 4 only
 - 2 & 4 only
 - 1,2 & 3 only
 - 1, 2, 3 & 4
95. Raw egg white contains a protein called avidin, which may block the absorption of:
- Biotin
 - Ascorbic acid
 - Cynocobalamin
 - Ergocalciferol
96. Cyanide is a non-competitive inhibitor of the enzyme:
- Cytochrome C oxidase
 - Hexokinase
 - Topoisomerase
 - Isocitrate dehydrogenase.
97. Human placenta belongs to:
- Epitheliochorial
 - Haemochorial
 - Metadiscoidal
 - Syndesmochorial
- 1 & 2 only
 - 2 & 3 only
 - 1,2 & 3 only
 - 4 only
98. The pore in gastrula is known as:
- Blastopore
 - Gastropore
 - Gonopore
 - None of these
99. Which of the following disorder is caused due to chromosomal aberration?
- Congenital night blindness
 - Cri-du-chat syndrome
 - CML
 - Duchenne's muscular dystrophy
- 1 & 2 only
 - 2 & 3 only
 - 2 & 4 only
 - 3 only

100. The phase of meiosis in which homologous chromosomes exchange genetic information:
 A) Prophase I B) Metaphase I C) Anaphase I D) Prophase II
101. Protein rich regions of chromosome can be highlighted by:
 A) C-banding B) G- banding C) Q- banding D) R-banding
102. Extinction of dinosaurs was during ----- period.
 A) Cretaceous B) Triassic C) Jurassic D) Permian
103. A plant is heterozygous for albinism which is a recessive character. This plant is self crossed and 300 seeds were obtained. How many of them would be homozygous for the dominant character green?
 A) 75 B) 150 C) 100 D) 80
104. The codon known as 'Opal':
 A) UAA B) UGA C) UAG D) AUG
105. The prosthetic group of NADH dehydrogenase:
 A) NADP B) FAD C) FMN D) NADH
106. An essential fatty acid:
 A) Linolenic acid B) Linoleic acid
 C) Palmitic acid D) Both A and B
107. Cyclomorphosis is exhibited by:
 A) Daphnia B) Paramecium C) Planaria D) None of these
108. Radula is seen in:
 A) Mollusca B) Arthropoda C) Annelida D) None of these
109. Alpha oxidation of fattyacid mainly occurs in:
 A) Adipose in skin B) Liver
 C) Muscle tissue D) Brain
110. Neurogenic heart is found in:
 A) Mollusc B) Crustaceans C) Rodents D) Both A and B
111. Which part of the brain translates thought into speech?
 A) Broca's area B) Amygdala
 C) Hippocampus D) Brain stem
112. Antibodies are:
 A) Glycoproteins B) Steroids
 C) Lipoproteins D) None of these

113. An evolutionary change of a single lineage where one taxon is replaced by another without ratching:
A) Anagenesis B) Cladogenesis
C) Allopatric speciation D) Clade
114. Which of the following is an omega-3 fatty acid?
A) Arachidonic acid B) Palmitic acid
C) Lecithin D) Eicosapentaenoic acid
115. Which lipoprotein is responsible for transporting dietary lipids from the intestine to liver cells?
A) HDL B) LDL
C) VLDL D) Chylomicrons
116. Which of the following is most commonly used in molecular systematic?
A) Mitochondrial DNA B) Nuclear DNA
C) Chloroplast DNA D) Ribosomal DNA
117. Allozyme polymorphism is most useful for studying:
A) Proteins with a high degree of sequence divergence
B) Proteins that are highly expressed
C) Highly conserved proteins
D) Proteins with low molecular weight.
118. In DNA barcoding, the term “cryptic species” refers to species that -----.
A) Are only found in very specific geographic locations
B) Have been recently discovered
C) Have not yet been classified by taxonomists
D) Are difficult to identify based on their morphological characters.
119. Purse seine nets are typically used to catch:
A) Shellfish
B) Bottom-dwelling fish
C) Tuna and other pelagic fish
D) Squids and other Cephalopods.
120. Which of the following BLAST programs is used to compare a nucleotide query sequence to a protein database?
A) BLASTN B) BLASTP C) TBLASTN D) TBLASTX
-