

1. The retention of ancestral juvenile characters by descendant adults is known as
A) Reverse recapitulation B) Paedomorphosis
C) Atruism D) None of these
2. Cephalopod molluscs exhibits
A) Spiral cleavage B) Bilateral cleavage
C) Rotational cleavage D) Radial cleavage
3. An irreducible grouping of organisms diagnosably distinct from other such groupings and within which there is a parental pattern of ancestry and descent
A) Phylogenetic species concept B) Evolutionary species concept
C) Biological species concept D) Topological species concept
4. Which bond generates a C-O-C linkage between two sugar molecules?
A) Peptide bond B) Diester bond
C) Glycosidic bond D) Both A & C
5. Glycosaminoglycans are
A) Nutritional polysaccharides B) Structural polysaccharides
C) Synthetic polysaccharides D) Not a polysaccharide
6. The amino acid Arginine is found in which category?
A) Polar, charged B) Polar, uncharged
C) Non polar D) None of these
7. Which of the following DNA sequence form the basis for the technique of DNA fingerprinting?
A) Satellite DNA B) Minisatellite DNA
C) Microsatellite DNA D) None of these
8. Polyploidization is a condition in which the offsprings are produced that have
A) Twice the number of chromosomes in each cell as their diploid parents
B) Thrice the number of chromosomes in each cell as their diploid parents
C) Multiple numbers of chromosomes in each cell as their diploid parents
D) All of the above
9. Regulatory T lymphocytes are characterized by possession of surface markers
A) CD4 CD8 B) CD4 CD28
C) CD4 CD25 D) CD 4 CD40
10. Liquid scintillation spectrophotometry is used to measure
A) The mass of molecule
B) Chemical structure of molecule
C) Unknown substances in a sample
D) Amount of radioactivity in a sample

11. The sequential order of different steps in the process of fertilization in sea urchin
- I. Sperm-egg adhesion
 - II. Acrosomal reaction
 - III. Gamete fusion
 - IV. Chemotaxis
 - V. Plasma membrane contact
- A) IV-I-II-V-III B) II-IV-I-V-III
 C) IV-V-II-I-III D) IV-II-I-V-III
12. Sickle cell hemoglobin is a mutation that alters the identity of a single amino acid at the corner of the β subunit from
- A) Polar valine to non-polar glutamate
 - B) Non-polar valine to polar glutamate
 - C) Polar glutamate to non-polar valine
 - D) Non-polar glutamate to polar valine
13. Rancidity is the term used to represent
- A) Hydrolysis of tri-acylglycerols by alkali to produce glycerol and soaps
 - B) Deterioration of fats and oils resulting in an unpleasant taste
 - C) Hydrolysis of tri-acylglycerols to liberate free fatty acids and glycerols
 - D) None of the above
14. Which of the following is an example of defense protein?
- A) Viruses B) Glutelin
 - C) Ovalbumin D) Snake venoms
15. The rate limiting enzyme in cholesterol biosynthesis
- A) HMG Co A synthase B) HMG Co A reductase
 - C) Thiolase D) Mevalonate kinase
16. The nitrogenous base present in lecithin
- A) Choline B) Ethanolamine
 - C) Phosphatidic acid D) Plasmalogen
17. Hairs in mammals are developed from
- A) Stratum compactum B) Stratum corneum
 - C) Stratum spongiosum D) Stratum germinativum
18. Botulism caused by *Clostridium botulinum* affects the
- A) Spleen B) Intestine
 - C) Lymph glands D) Neuromuscular junction

19. Which of the following technique is used to measure cerebral blood volume?
 A) PET scanning B) CT scanning
 C) ECG D) EEG
20. Total number of chromosomes found in the body cell of mosquito
 A) 4 B) 6
 C) 8 D) 10
21. If an XX gamete combines with a Y gamete, the resulting XXY zygote develops into
 A) Sterile female but usually normal in other aspects
 B) Sterile male but usually normal in other aspects
 C) Sterile female with male body characteristics
 D) Sterile male with female body characteristics
22. Corals are cnidarians belonging to the class
 A) Hydrozoa B) Scyphozoa
 C) Cubozoa D) Anthozoa
23. The phenomenon in plants in which the growth of the plant is due to the contact with other object, but the direction of growth response is independent of the direction of the contact
 A) Thigmotropism B) Thigmonasty
 C) Skototropism D) Traumotropism
24. The sensory receptor Ampulla of Lorenzini found within the skin of fishes detects which of the following stimulus?
 A) Motion B) Smell
 C) Magnetism D) Electricity
25. Hair cells in the inner ear of terrestrial vertebrates detect
 A) Angular acceleration B) Gravity
 C) Balance D) None of these
26. The function of prolactin hormones include
 A) Stimulation of the mammary glands to produce milk in mammals
 B) Regulation of kidney function in vertebrates
 C) Action on the gills of fishes that travel from salt to freshwater to promote sodium retention
 D) All of the above
27. Zonula adherence is a kind of
 A) Desmosome B) Mesosome
 C) Filament D) Membrane

28. If an animal species has a particularly large home range then it can be argued that conservation of a viable population of such species will inevitably protect many other species which need smaller areas and which occur at higher densities. Such species are termed as
 A) Keystone species B) Umbrella species
 C) Flagship species D) Engineer species
29. Heat of wetting is the energy released in the form of heat during
 A) Photosynthesis B) Imbibition
 C) Plasmolysis D) None of these
30. The disease Whiptail in cabbage is caused by the deficiency of
 A) Mo B) Cu
 C) Mg D) K
31. World Forest Day
 A) October 3 B) March 21
 C) December 2 D) September 16
32. In a monohybrid cross, heterozygous F1 individual is selfed, phenotypic ratio comes out to be 2:1 is due to
 A) Recessive epistasis B) Dominant epistasis
 C) Dominant lethal gene D) Recessive lethal gene
33. NANB virus is associated with
 A) SCID B) ARC
 C) Botulism D) Hepatitis
34. Name the protease used for fragmenting polypeptide chain at the cleavage point Lys, Arg (C)
 A) Trypsin B) Pepsin
 C) Endoprotease D) Lysc
35. Name the type of reaction carried out by succinate thiokinase in citric acid cycle
 A) Condensation B) Hydrolysis/ phosphorylation
 C) Oxidative decarboxylation D) Dehydrogenation/ phosphorylation
36. Bursa fabricii in birds is functionally
 A) Lymphoid B) Digestive
 C) Endocrine D) Excretory
37. Site of action of rotenone in ETS
 A) FeS- CoQ B) Cyt b - FeS
 C) FeS - Cyt C₁ D) Cyt a- Cyt a₃

38. Hassall's corpuscles are found in
 A) Liver B) Spleen
 C) Thymus gland D) Heart
39. In photorespiration serine is converted to glycerate at
 A) Chloroplast B) Peroxisome
 C) Mitochondrion D) Mesophyll
40. In fishes, which of the following fins act as balancers and brakes?
 A) Pectoral and caudal B) Pelvic and caudal
 C) Pectoral and pelvic D) Dorsal and caudal
41. Chyme is
 A) An alkaline semi-liquid food present in intestine
 B) A substance that stimulates gall bladder
 C) An acidic semi-liquid food which comes from stomach to duodenum
 D) None of the above
42. Mark the cells secreting digestive enzymes in the stomach
 A) Chief cells B) Paneth cells
 C) Goblet cells D) All of these
43. Which of the following forms the myelin sheath around central axon producing the white matter of CNS?
 A) Oligo-dendrocytes B) Microglia
 C) Astrocytes D) Ependymal cells
44. Which of the following blocks the regeneration of tetrahydrofolate by competitively inhibiting dihydrofolate reductase?
 A) Aminopterin B) Flurouracil
 C) Formamino imidazole D) Fumaryl acetoacetate
45. How many equivalents are present in 2L of 3N solutions?
 A) 2.5 B) 5
 C) 6 D) 1
46. One type of bond generally involved in stabilizing the quaternary structure of proteins is
 A) Disulphide B) Ester
 C) Hydrophobic D) Peptide
47. What is the genotype of Turner Syndrome?
 A) Trisomy 21 B) XO
 C) XXY D) XYY

48. Which of the following is not a component of second messenger signaling system?
A) cAMP B) Diacylglycerol
C) Glucuronidation D) Calcium
49. Signet ring stage in the life cycle of plasmodium is found in the
A) Plasma of human blood
B) RBC
C) Salivary gland of Anopheles mosquito
D) Human liver cell
50. siRNA is synthesized by
A) RNA Polymerase I B) RNA Polymerase II
C) RNA Polymerase III D) RNA Polymerase IV
51. Which of the following is a histone variant of H3 that functions in the kinetochore assembly?
A) CEMP-A B) H3.3
C) H3AZ D) H3AX
52. The notch signaling mechanism is an example of
A) Juxtacrine signaling B) Ectacrine signaling
C) Epicrine signaling D) Both B & C
53. Glomerular filtrate becomes increasingly hypertonic in
A) Proximal convolution B) Distal convolution
C) Ascending limb D) Descending limb
54. An animal having unsegmented coelomated and radially symmetrical body with distinct oral and aboral surfaces, is a member of
A) Echinodermata B) Mollusca
C) Annelid D) Arthropoda
55. National Environment Engineering Research Institute (NEERI) is in
A) New Delhi B) Nagpur
C) Kolkata D) Chennai
56. In lampbrush chromosomes, the loops are made up of
A) Protein only B) DNA only
C) DNA and protein D) None of these
57. Burkitt's lymphoma is a type of cancer of
A) Erythrocytes B) WBC
C) RBC D) None of these

58. Bar Body is associated with
 A) X chromosomes B) Y chromosomes
 C) Autosomes D) All of these
59. In the conversion of pyruvic acid to acetyl CoA, pyruvic acid is
 A) Oxidized B) Reduced
 C) Isomerized D) Broken into one-carbon fragments
60. The half life period of a radioactive isotope is 4.5 days. The fraction left behind after 13.5 days is
 A) $\frac{1}{2}$ B) $\frac{1}{4}$
 C) $\frac{1}{8}$ D) $\frac{1}{16}$
61. Which of the following is an example of transient polymorphism?
 A) ABO blood group in man B) Sickle cell gene in humans
 C) Industrial melanism D) None of these
62. Organisms having comparable niche in the same ecosystem is known as
 A) Ecological equivalence B) Ecological guild
 C) Ecological dominance D) Character displacement
63. Which of the following groups of cranial nerves are purely sensory in function?
 A) I,II & VIII B) I,V & IX
 C) I,VII & XI D) I, II & IV
64. Identify autoimmune disease(s) from the following?
 A) Multiple sclerosis
 B) Rheumatoid arthritis
 C) Insulin dependent diabetes mellitus
 D) All of the above
65. After following the stimulation by an antigen, the first antibodies secreted by B- cells is
 A) Ig A B) Ig D
 C) Ig E D) Ig M
66. The law which states that when monochromatic light passes through a transparent medium, intensity of transmitted light decreases exponentially as the thickness of absorbing materials increases
 A) Lambert's Law B) Beer's Law
 C) Graham's Law D) Gibb's Law

67. Metagenomics is the
- Analysis of all expressed genes in the cell or tissue
 - Analysis of interactions between diet and genes
 - Analysis of genomes of organisms collected from the environment
 - Analysis of proteins and enzymatic pathways involved in the cell metabolism
68. In Western Hybridization
- Protein bands are separated by polyacrylamide gel electrophoresis
 - The protein bands are transferred onto a nitrocellulose membrane or nylon membrane
 - Lectins are used as probes for the identification of glycoproteins
 - All of the above
69. Of the 64 codons, 61 code for amino acids while three are termination codons which do not specify any amino acid. The three termination codons are
- UAA, AAA,GGU
 - UAA,UAG, AAU
 - UAA,UUU, UAG
 - UAA,UAG, UGA
70. Okazaki fragments are
- Short DNA fragments on the lagging strand
 - Short DNA fragments on the leading strand
 - The DNA fragments produced due to radiation
 - The DNA fragments resulted from dimerization
71. If a boy's father has hemophilia and mother has one gene for hemophilia, then what is the chance that the boy will inherit the disease?
- | | |
|--------|--------|
| A) 25% | B) 30% |
| C) 50% | D) 75% |
72. Liver and pancreas are derived from
- | | |
|----------------------|-----------------------|
| A) Embryonic foregut | B) Embryonic midgut |
| C) Embryonic hindgut | D) Embryonic mesoderm |
73. The part of the brain with centres for conditioned reflex
- | | |
|----------------------|----------------|
| A) Medulla oblongata | B) Cerebrum |
| C) Cerebellum | D) Ponsvarolli |
74. Eunuchoidism is due to the lack of
- | | |
|-------------|---------------------------|
| A) GH | B) Sex corticoid hormones |
| C) Secretin | D) None of these |

75. A gene for eye color may be the ultimate cause of eye color, yet at the same time it may be responsible for influencing the development of other characters as well. This is an example of the phenomenon
- A) Epistasis B) Pleiotropy
C) Polygenic inheritance D) Quantitative inheritance
76. In normal human males, the male determining genes on the Y chromosomes which organizes the developing gonad into a testis instead of ovary
- A) DDS B) SRVX
C) SRY D) None of these
77. The kind of learning in which the imposition of a stable behavior in a young animal by exposure to particular stimuli during a critical period in the animal's development
- A) Habitual learning B) Imprinting
C) Operant learning D) Latent learning
78. The structural gene Lac A in the Lac operon encodes the enzyme
- A) - galactosidase B) Lactose permease
C) Lactose transacetylase D) Both B & C
79. C-value paradox refers to the presence of
- A) more DNA than needed for coding
B) less number of t-RNA than needed for polypeptide formation
C) larger number of ribosomes than needed for polypeptide synthesis
D) less number of RNA polymerase than needed for RNA synthesis
80. A short length of DNA molecule has 80 thymine and 80 guanine bases. The total number of nucleotide in the DNA fragment is
- A) 160 B) 40
C) 320 D) 640
81. The method widely used for transforming *invitro* animal cell culture that uses vesicles or liposomes
- A) Lipotransformation B) Liposome mediated transformation
C) Lipofection D) Lipid mediated DNA transfer
82. RFLP is used to identify
- A) A specific protein
B) A specific DNA
C) A specific RNA
D) Both DNA and RNA
83. The role and function of AQP4 involves
- A) Water permeability in renal collecting duct
B) Reabsorption of cerebrospinal fluid in CNS
C) Fluid secretion by salivary gland
D) Water uptake by plant vacuole

84. ABO blood grouping is determined by the alleles located on
 A) Chromosome number 8 B) Chromosome number 9
 C) Chromosome number 21 D) Chromosome number 16
85. Which of the following is/are the characteristic feature(s) of neutral fat?
 A) Neutral fat is soluble as a food
 B) Neutral fat does not occur in cellular membrane
 C) Neutral fat can never produce a lipid bilayer
 D) All of the above
86. What would happen to a human red blood cell if it is placed in distilled water?
 A) It would shrivel B) It would plasmolyze
 C) It would lyse D) It would not be affected
87. A polymer is formed by
 A) Hydrolysis B) Hydration
 C) Dehydration D) Methylation
88. All alleles originate from
 A) Mutation B) Crossovers
 C) Gene flow D) Non-disjunctions
89. The condition in which there are more than two complete set of chromosomes is called
 A) Aneuploidy B) Polytene
 C) Polyploidy D) Monoploidy
90. The unique properties of each amino acid are determined by its particular
 A) R group
 B) Amino group
 C) Kind of peptide bonds
 D) Number of bonds to other amino acids
91. Dolly sheep was genetically similar to
 A) The mother from which nucleated fertilized egg was taken
 B) The mother from which nuclear DNA of udder cell was taken
 C) The surrogate mother
 D) Both surrogate mother and nuclear donor mother
92. When the blood contains a high percentage of CO₂ and a very low percentage of O₂, the breathing stops and the person becomes unconscious. This condition is known as?
 A) Suffocation B) Asphyxia
 C) Emphysema D) Eupnoea
93. Bio-piracy means
 A) Use of bio-patents
 B) Thefts of plants and animals
 C) Stealing of bio-resources
 D) Exploitation of bio-resources without authentic permission

94. Which one of the following is not a second messenger in hormone action?
 A) Calcium B) Sodium
 C) cAMP D) cGMP
95. Which one of the following is NOT the function of insulin?
 A) Increases the oxidation of glucose in the cells.
 B) Increases the permeability of cell membrane to glucose.
 C) Initiates the formation of hepatic glycogen from excess of glucose.
 D) Initiates the conversion of glycogen to glucose.
96. Which one of the following cells is not a phagocytic cell?
 A) Macrophage B) Monocyte
 C) Neutrophil D) Basophil
97. Which of the following hormones does not contain a polypeptide?
 A) Oxytocin B) Insulin
 C) Antidiuretic hormone D) Prostaglandin
98. The cause of cretinism is
 A) Hypothyroidism B) Hypoparathyroidism
 C) Hyperthyroidism D) Hyperparathyroidism
99. A large quantity of fluid is filtered every day by the nephrons in the kidneys. Only about 1% of it is excreted as urine. The remaining 99% of the filtrate
 A) Is lost as sweat B) Is stored in the urinary bladder
 C) Is reabsorbed into the blood D) Gets collected in the renal pelvis
100. If a cross between two individuals produces offsprings with 50% dominant character (A) and 50% recessive character (a) the genotype of parents are:
 A) $Aa \times Aa$ B) $Aa \times aa$
 C) $AA \times aa$ D) $AA \times Aa$
101. Glucose and amino acids are reabsorbed in the
 A) Proximal tubule B) Distal tubule
 C) Collecting duct D) Loop of Henle
102. In genetic code, 61 codons code for 20 different types of amino acids. This is called
 A) Co-linearity B) Commaless
 C) Degeneracy D) Non-ambiguity
103. Electrons used in Electron Microscope are of the wavelength
 A) 0.05 \AA B) 0.15 \AA
 C) 0.25 \AA D) 0.30 \AA

104. More men suffer from color blindness than women because
- Women are more resistant to disease than men
 - The male sex hormone testosterone causes the disease
 - The color blind gene is carried on the -Y chromosome
 - Men are hemi-zygous and one defective gene is enough to make them color blind
105. DNA gyrase, the enzyme that participates in the process of DNA replication is a type of
- Reverse Transcriptase
 - DNA Topoisomerase
 - DNA Polymerase
 - DNA Ligase
106. Cellular proteins that are destined for secretion are sorted and packaged in
- Lysosomes
 - Endosomes
 - Endoplasmic reticulum
 - Trans-golgi network
107. In human brain, thermoregulatory center is located at
- Cerebral cortex
 - Hypothalamus
 - Medulla
 - Basal ganglia
108. Which of the following molecule is released from mitochondria in the process leading to apoptosis?
- Cytochrome P450
 - Cytochrome C
 - Alpha karyopherin
 - Albumin
109. Which is an esterolytic enzyme that hydrolyzes glycerophospholipids at the *sn-2* position of the glycerol back bone?
- PLA2
 - ADH
 - Estrogen
 - Hyaluronidase
110. Meissner's corpuscles occur in
- Brain
 - Nerve cells
 - Skin
 - Tongue
111. The species, though insignificant in number, determine the existence of many other species in a given ecosystem. Such species is known as
- Keystone species
 - Sacred species
 - Endemic species
 - Valuable species
112. The name of the pacemaker of the heart is
- Lymph node
 - S.A. node
 - Juxtaglomerular apparatus
 - Semilunar valve
113. LSD (Lysergic Acid Diethylamide) is derived from
- Bacteria
 - Plant
 - Yeast
 - Fungus
114. A blood group has both A and B antigens but no antibodies, It is
- A
 - O
 - AB
 - B

115. Which is the most abundant immunoglobulin
A) Ig A B) Ig D
C) Ig G D) Ig M
116. Child death may occur in the marriage of
A) Rh+ man and Rh+ woman B) Rh+ man and Rh- woman
C) Rh- man and Rh+ woman D) Rh- man and Rh- woman
117. A population with natality equal to mortality is
A) Increasing B) Decreasing
C) Stable D) Growing
118. A species restricted to a given area is
A) Endemic species B) Allopatric species
C) Sympatric species D) Sibling species
119. Unrestricted reproductive capacity is called
A) Carrying capacity B) Birth rate
C) Fertility D) Biotic potential
120. In India, human population has higher number of younger age group because of
A) Long life span and low birth rate
B) Short life span and high birth rate
C) Short life span and low birth rate
D) Birth rate is equal to death rate
