

1. Dideoxy method of chain termination is used in:
 - A) Sanger's method of DNA sequencing
 - B) Maxam and Gilbert method of DNA sequencing
 - C) Automatic DNA sequencing method developed by Scharifet. al.
 - D) RT- PCR for disease diagnosis
2. Identify the statement associated with Southern blotting:
 - A) Used for the attachment of probes to single stranded DNA molecule
 - B) Helping in the comparison of DNA extracted from different sources
 - C) Transfer of DNA fragments from the gel to the nitrocellulose membrane
 - D) Transfer of DNA fragments from the nitrocellulose membrane to buffer
3. Which of the following is wrong about International Human Genome Project?
 - A) It was launched in 1990 and completed in 2003
 - B) Maxam Gilbert chemical degradation technique alone is used for DNA sequencing
 - C) It gives new avenues for advances in medicine and biotechnology
 - D) Both Maxam- Gilbert and Sangers methods are used for DNA sequencing
4. The phospholipid mainly associated with signal transduction:
 - A) Phosphatidylcholine
 - B) Phosphatidylethanolamine
 - C) Phosphatidyl inositol 4,5 bis phosphate
 - D) cardiolipin
5. According to the Michaelis- Menten equation, the K_m value denote the:
 - A) Rate of activity of the enzyme
 - B) Turnover number of the enzyme
 - C) The velocity of the enzyme action
 - D) The substrate concentration
6. Replication of DNA takes place during:

A) M phase of cell cycle	B) G1 phase of cell cycle
C) G2 phase of cell cycle	D) S phase of cell cycle
7. Synaptonemal complex formation is the characteristic feature of :

A) Leptonema	B) Zygonema
C) Pachynema	D) Diplonema
8. The peculiar kind of chromosome re-duplication results in the formation of giant chromosomes is called:

A) Endometriosis	B) Heterochromatinization
C) Gene amplification	D) Cell duplication

9. Find the wrong statement among the following:
- A) Bacterial endosymbionts are included in the Volume I of Bergey's manual
 - B) Volume II of Bergey's manual excluded actinomycetes
 - C) All Gram-positive bacteria are included in the Volume III of Bergey's manual
 - D) Actinomycetes are included in the Volume IV of Bergey's manual
10. Match the following:
- | | |
|----------------|-----------------------|
| a. Alkaloids | 1. Aspergillusniger |
| b. Steroids | 2. Clostridium sp. |
| c. Citric acid | 3. Clavicepespurpurea |
| d. Acetone | 4. Rhizopus |
- A) a-3, b-4, c-2, d-1 B) a-2, b-3, c-1, d-4
 C) a-3, b-4, c-1, d-2 D) a-4, b-3, c-2, d-1
11. The role of Class II MHC genes
- A) It encodes glycoproteins expressed on the surface of all nucleated cells
 - B) It encodes glycoproteins express primarily on antigen presenting cells
 - C) It encodes secretory products associated with complement system
 - D) It is associated with the proteins involved in inflammation
12. Match the following:
- | | |
|-------------|--------------------|
| a. Plague | 1. Clostridium |
| b. Tetanus | 2. Salmonella sp. |
| c. Typhoid | 3. Treponema |
| d. Syphilis | 4. Yersinia pestis |
- A) a-3, b-1, c-2, d-4 B) a-4, b-1, c-2, d-3
 C) a-1, b-4, c-2, d-3 D) a-4, b-1, c-3, d-2
13. The cis elements that control transcription by increasing the rate of transcription and that may present in the upstream or downstream of a gene are called :
- A) Enhancers
 - B) Promoters
 - C) Co-factors
 - D) Coactivators
14. The Pribnow Box is:
- A) AT rich in nature
 - B) Present in prokaryotic promoter
 - C) Placed at -35 position upstream of start point
 - D) Both A and B are correct
15. The key event in the development of eye during embryogenesis:
- A) Formation of optic vesicle
 - B) Thickening of the head surface ectoderm to form the lens placodes
 - C) The physical contact between optical vesicle and the surface ectoderm
 - D) Morphogenesis of lens

24. Genetically and phylogenetically unrelated species of organisms under the same environmental conditions evolve and acquire similar morphological features is called:
- A) Adaptive radiation B) Convergent evolution
C) Divergent evolution D) speciation
25. “The presence and success of organism depends on the qualitative and quantitative completeness of a complex of conditions and their absence or abundance is controlled by the qualitative or quantitative deficiency or excessiveness of one or more of such conditions” is termed as:
- A) Shelford’s law of tolerance
B) Blackmans law of limiting factors
C) Liebig’s law of minimum
D) Abiotic chemical factors
26. Match the following:
- | | |
|------------------------|-------------------------|
| a. Nitrogen fixers | 1. Psudomonas |
| b. Mineralisation | 2. Ammonifying bacteria |
| c. Nitrifying bacteria | 3. Nostoc |
| d. Denitrification | 4. Nnitrosomonas |
- A) a-3, b-2, c-1, d-4 B) a-2, b-3, c-4, d-1
C) a-3, b-2, c-4, d-1 D) a-1, b-2, c-4, d-3
27. Match the following:
- | | |
|-----------------|--------|
| a. Mutualism | 1. – 0 |
| b. Commensalism | 2. + – |
| c. Predation | 3. + 0 |
| d. Amensalism | 4. + + |
- A) a-1, b-3, c-2, d-4 B) a-4, b-3, c-2, d-1
C) a-3, b-4, c-2, d-1 D) a-4, b-3, c-1, d-2
28. The process which takes place in a resting membrane:
- A) Transmembranecation pump will not get operated
B) Na⁺ ions are actively transported outward and K⁺ ion inward across the membrane
C) The ionic mobility and membrane permeability of K⁺ ions are lesser than that of Na⁺ ions
D) The positive ions become more numerous inside the membrane
29. Which of the following is **not** a character of Gram Positive Bacteria?
- A) The peptidoglycan layer is thicker than gram negative bacteria
B) The outer layer contains teichoic acid
C) The outer layer has an inner thin peptidoglycan, a middle lipoptorin and an outer peptidoglycan layer
D) All the above

30. Two highly inbred strains of guinea pigs with black fur and the other with greyfur, were crossed. The resulting offspring had black fur. Predict the outcome of intercrossing the offspring:
 A) All with grey fur
 B) Black, Grey and White in 1:2:1 ratio
 C) 3 Black and 1 Grey
 D) All will be with black fur
31. One gene One enzyme hypothesis was put forward by:
 A) George Beedle and Edward Tatum
 B) Temin and Baltimore
 C) Boveri and Sutton
 D) Thomas Hunt Morgan
32. Multicellular, diploid and heterotrophic eukaryotes which pass through a blastula stage in their embryonic development constitutes the Kingdom:
 A) Protista B) Monera C) Animalia D) Fungi
33. Rhabditiform larva is the larval stage of:
 A) Fresh water muscle B) Arenicola
 C) Turbenella D) Ascaris
34. The specialised excretory cells of cephalochordates is:
 A) Renette cells B) Solenocytes
 C) Nephridia D) Ctinidia
35. Apposition vision is the mode of vision by:
 A) Ocelli B) Simple eyes
 C) Compound eyes D) human eye
36. Amoeba proteus is comes under the Phylum:
 A) Opalinata B) Actinopoda
 C) Foraminifera D) Rhizopoda
37. Assertion (A): ETS transfer electrons through cytochromes and finally to molecular oxygen
 Reason (R): The pumping of protons generate an current to generate ATP
- A) Both A and R are true and R is correct explanation of A
 B) Both A and R are true but R is not correct explanation of A
 C) A is true but R is false
 D) A is false but R is true
38. Maximum number of individuals of a species, that a particular environment can support indefinitely with its available resources is called:
 A) Population B) Density
 C) Carrying capacity D) Deme

39. The antigenic determinants on the surface of antigens that an antibody can identify
 A) Paratop B) Epitop C) Antigen D) Hepens
40. The first immunoglobulin molecule produced following immunisation:
 A) IgA B) IgD C) IgM D) IgG
41. Identify the vitamin precursor of Coenzyme A:
 A) Pyridoxine B) Niacin
 C) Pantothenic acid D) Biotin
42. In pentose phosphate pathway, the conversion of Ribulose 5- phosphate into Xylulose 5- phosphate is done by the enzyme:
 A) Isomerase B) Epimerase
 C) Transketolase D) Transaldolase
43. The disease called macrocytic anemia is due to the deficiency of:
 A) Pantothenic acid B) Niacin
 C) Pyridoxine D) Folic acid
44. The tertiary structure of a protein is stabilized by:
 A) Peptide bond B) Disulphide bond
 C) Hydrogen bond D) All the baove
45. Which of the following is wrong about Ramachandran Plot?
 A) The degree of freedom in peptide bond of a polypeptide chain is indicated by the dihedral angles named ϕ and ψ
 B) Ramachandran plot shows the possible conformations of ϕ and ψ angles of a polypeptide
 C) The value of ψ and ϕ is 0 to 90°
 D) Ramachandran plot provides valuable information on the structure, amino acid sequence and quality of protein
46. The amino acid present in the catalytic center of glutathione peroxidase and formate dehydrogenase:
 A) Lysine B) Aspartic acid
 C) Arginine D) Selenocysteine
47. Inheritance pattern of sickle cell anaemia:
 A) Autosomal recessive B) Autosomal dominant
 C) Sex linked recessive D) Sex linked dominant
48. Beriberi occurs by the deficiency of:
 A) Riboflavin B) Thiamine
 C) Niacin D) Folic acid
49. Which of the following is not a reducing sugar?
 A) Glucose B) Sucrose
 C) Trehalose D) Both B and C

50. Cell – cell adhesion molecules are:
 A) Collagen B) Integrins C) Laminin D) Cadherins
51. Lipofuscin granules present in neurons, liver cells, heart cells and muscle cells of aged animals are:
 A) telolysosomes B) cytolysosomes
 C) protolysosomes D) heterolysosomes
52. Compounds that are antigenic, but **not** immunogenic:
 A) Haptens B) Antigens
 C) Adjuvants D) Immunogens
53. SI unit, which is used to measure the absorbed dose of ionizing radiation:
 A) Gray B) Curie C) Coulomb D) Becquerel
54. Antibody independent complement activation pathway is:
 A) Classical B) Alternate
 C) Terminal pathway D) None of these
55. A binomial name in which name of the genus and of the species are identical:
 A) Homonym B) Tautonym
 C) Synonym D) None of these
56. Presence of ‘mutable connective tissue’ or ‘catch tissue’ is a salient feature of:
 A) Phylum Nematoda B) Phylum Arthropoda
 C) Phylum Mollusca D) Phylum Echinodermata
57. An example for tumor suppressor gene:
 A) EGFR B) SRC C) BRCA2 D) MYC
58. Larva of hemichordate is:
 A) Tornaria B) Trochophore C) Veliger D) Tadpole
59. Statin, a bioactive compound is extracted from:
 A) *Monascuspurpureus* B) *Penicilliumnotatum*
 C) *Streptococcus viridians* D) *Candida albicans*
60. Amino acid, which acts as the precursor of porphyrins in heme:
 A) Arginine B) Glycine C) Tryptophan D) Tyrosine
61. One horned rhinoceros is conserved in:
 A) Desert national park, Rajasthan
 B) Kaziranga national park, Assam
 C) Sunderbans national park, West Bengal
 D) Kanha national park, Madhya Pradesh
62. South American lung fish:
 A) Protopterus B) Lepidosiren
 C) Neoceratodus D) None of the above

76. "Matsyasetu" app is developed by:
 A) CIFA B) CIFT C) CMFRI D) CIFRI
77. Assertion (A): A codon is a sequence of three nucleotides present on mRNA, which encodes for a specific protein during the time of translation
 Reason (R): Codon UUU encodes for phenylalanine
 A) Both A and R are true and R is correct explanation of A
 B) Both A and R are true but R is not correct explanation of A
 C) Both A and R are false
 D) A is false but R is true
78. Progesterone is secreted by:
 A) Corpus albicans B) Corpus luteum
 C) Rete testis D) Ovarian follicles
79. Chemicals made by body to relieve stress and pain that mimic opioids:
 A) Endorphins B) Corticoids C) Cortisol D) Adrenalin
80. Schlemm's canal is present in:
 A) Eye B) Lymph C) Heart D) Cochlea
81. Lophodont teeth are found in:
 A) Elephas maximus B) Oryctolagus cuniculus
 C) Equus caballus D) All the above
82. Enzyme that catalyses non-reversible reaction in glycolysis:
 A) Phosphofructokinase B) Enolase
 C) Phosphohexose isomerases D) Triose phosphate isomerases
83. Cofactor, which is needed to convert succinate to fumarate:
 A) B1 B) B2 C) B9 D) B6
84. Enzyme involved in conversion of hydrogen peroxide to water:
 A) Dioxygenase B) Dismutase
 C) Catalase D) Hydratase
85. Bowfin fish is:
 A) Amia calva B) Acipenser sturio
 C) Protopterus annectens D) Hippocampus kuda
86. An international environment protocol to prevent the emission of greenhouse gases:
 A) Kyoto B) Cartagena C) Montreal D) Nagoya
87. Effect of a single gene on more than one character or trait:
 A) Pleiotropy B) Interference C) Coincidence D) Epistasis
88. Deutan type colour blindness is the insensitivity to-----light.
 A) Green B) Red C) Blue D) Yellow

99. Evolutionary event when a population drastically reduces to a significantly smaller size over a short period of time:
- A) Founder effect B) Mutation
C) Genetic drift D) Bottlenecks
100. Decline in responding to a repeated stimuli:
- A) Habituation B) Latent learning
C) Imprinting D) Conditioned reflex
101. Bacteria having flagella on both sides:
- A) Amphitrichous B) Peritrichous
C) Atrichous D) Lophotrichous
102. Reverse transcription was invented by:
- A) George Wells Beadle B) Jacob and Monad
C) Francis Crick D) Temin and Baltimore
103. Recognition sequence of BamHI:
- A) 5'-AGGTCC-3' B) 5'-TTATGG-3'
C) 5'-CGATCG-3' D) 5'-GGATCC-3'
104. Raft culture is followed for:
- A) *Penaeusindicus* B) *Scylla serrata*
C) *Labeorohita* D) *Pernaviridis*
105. Protecting ----- species indirectly protects the many other species that make up the ecological community of its habitat.
- A) Keystone B) Umbrella C) Flagship D) Indicator
106. A nucleotide sequence database is:
- A) EMBL B) SWISS PROT
C) TREMBLE D) PROSITE
107. A Motif identification tool is:
- A) BLAST B) COPIA C) FASTA D) PROSPECT
108. A reversible process by which most bacteria can quickly use a preferred carbon and energy source in comparison with a poorer substrate is called
- A) Anabolic repression B) Catabolite repression
C) Catabolic pathway D) Anabolic pathway
109. Lungs and liver in mammals are derived from:
- A) Endoderm B) Ectoderm
C) Mesoderm D) None of these
110. Clotting of menstrual blood inside uterus is prevented by:
- A) Heparin B) Plasmin C) Warfarin D) Citrate salt

111. International day for biological diversity:
A) May 22 B) June 5 C) April 22 D) December 1
112. Who among the following is considered as father of Ethology?
A) Niko Tinbergen B) Konard Lorenz
C) Ivan Pavlov D) Karl Von Frisch
113. Nanda Devi and Valley of Flowers National Park is located in:
A) Bihar B) Kerala
C) Uttarakhand D) Uttar Pradesh
114. Number of Ramsar site in Kerala:
A) 1 B) 2 C) 3 D) 4
115. An example for computer aided drug designing and molecular modelling software package:
A) OpenEye B) Off-spotter C) ImageJ D) Melanie
116. Which of the following is the vestigial organ?
A) Coccyx B) Wisdom tooth
C) Nictitating membrane D) All the above
117. If sum of 20 values is 500, then its mean will be:
A) 15 B) 25 C) 35 D) 10
118. Equity of population mean is calculated by:
A) t- test B) Chi square test
C) ANOVA D) None of these
119. Which of the following is the most selective gear?
A) Trawl net B) Gill net
C) Hooks and lines D) Cast net
120. Silk gland of silk moth is the modification of:
A) Labial gland B) Antennary gland
C) Antennules D) Hypophysis
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