MSc(2Yr)(Bioinformatics/System Bio. & Bio.Informatics)

1. **The inherited human disorders were caused by Garrod as**
   A) Sex-linked inheritance B) Sex-influenced inheritance
   C) Genetic disorders D) Inborn errors of metabolism

2. **Proflavin and acridine orange induce**
   A) Transitions B) Transversions
   C) Inversions D) Frameshift mutations

3. **The techniques of transfer of DNA molecules separated by gel electrophoresis to the nitrocellulose or nylon membrane is called**
   A) Northern blot B) Southern blot
   C) Western blot D) None of these

4. **In DNA double helix, nitrogenous bases that connects the two strands are joined by**
   A) Hydrogen bond B) Phosphodiester bond
   C) Glycosidic bond D) Ionic bond

5. **The number of peptide bonds in a tri-peptide is**
   A) 1 B) 2
   C) 3 D) 4

6. **Which of the following statements are true regarding tertiary structure of proteins**
   A) Three dimensional structure of a protein
   B) It is the biologically active conformation
   C) Primary structure of protein determines the tertiary structure
   D) All of these

7. **The amyloid protein deposition associated with Alzheimer's disease is composed of**
   A) Alpha helix B) Beta pleated sheets
   C) Beta bends D) Tertiary structure

8. **The secondary structure of proteins is primarily maintained by**
   A) Van der walls force B) Hydrogen bond
   C) Ionic Bond D) Hydrophobic bonds

9. **Which of the following is a derived lipid**
   A) Fats B) Oils
   C) Steroids D) Waxes

10. **Carbohydrates naturally occur in**
    A) D-form B) L-form
    C) Both A and B D) None of these

11. **CpG islands and codon bias are tools used in eukaryotic genomics to _____.**

A) Identify open reading frames
B) Differentiate between eukaryotic and prokaryotic DNA sequences
C) Find regulatory sequences
D) Look for DNA-binding domains

12. How are so many different antibodies produced from fewer than 300 major genes?

A) Alternative splicing mechanisms
B) The formation of polyproteins
C) The formation of nonspecific B cells
D) Recombination, deletions, and random assortment of DNA segments

13. As the complexity of an organism increases, all of the following characteristics emerge except _____.

A) The gene density decreases
B) The number of introns increases
C) The gene size increases
D) An increase in the number of chromosomes

14. Enzyme (carbonic anhydrase) is used in

A) Aerobic respiration
B) Anaerobic respiration
C) Transpiration
D) Photosynthesis

15. Ornithine and citrulline for urea synthesis are derivatives of

A) Cysteine
B) Arginine
C) Histidine
D) Methionine

16. Which of the following is an imino acid

A) Glycine
B) Proline
C) Lysine
D) Histidine

17. ADH or vasopression is

A) Enzyme that hydrolyses peptides
B) Hormone secreted by pituitary that promotes reabsorption of water from glomerular filterate
C) Hormone that promotes glycogenolyis
D) Energy rich compound connected with muscular contraction.

18. Which one of the following is not a secondary messenger in hormone action

A) cAMP
B) cGMP
C) Sodium
D) Calcium

19. Introns are removed by a process of

A) Transcription
B) Translation
C) Transition
D) Splicing

20. The length of the DNA associated with a protein is determined using the technique

A) DNA replication B) DNA fingerprinting
C) DNA printing D) DNA footprinting

21. The year of launching of Human Genome Project and completion of rough draft of the sequence in

A) 1992-2000 B) 1990-2000
C) 1990-2001 D) 1991-2001

22. pH can be kept constant with help of

A) Saturated solution B) Unsaturated solution
C) Buffer solution D) Super saturated solution

23. The first bioinformatics database was created by

A) Richard Durbin B) Dayhoff
C) Michael J.Dunn D) Pearson

24. Which of the following nuclei will have a magnetic moment?

A) ${}^{2}_{1}D$ B) ${}^{16}_{8}O$ C) ${}^{12}_{6}C$ D) ${}^{32}_{16}S$

25. Proteomics is the study of

A) Set of proteins
B) Set of proteins in a specific region of the cell
C) Entire set of expressed proteins in a cell
D) None of these

26. Applications of Bioinformatics include

A) Data storage and management
B) Drug designing
C) Understand relationships between organisms
D) All of the above

27. GenBank, the nucleic acid sequence database is maintained by

A) Brookhaven laboratory B) DDBJ
C) EMBL D) NCBI

28. The alignment procedure that tries to align regions with high level of matches without considering the alignment of rest of the sequence is

A) Multiple sequence alignment B) Pair wise alignment
C) Global alignment D) Local alignment

29. All are sequence alignment tools except

A) Rasmol B) ClustalW
C) BLAST D) FASTA

30. Which of the following is a nucleotide sequence data base?

A) EMBL B) SWISS PROT

C) PROSITE D) TREMBL

31. Which of the following bonds would show the strongest absorption in the IR?

A) Carbon-hydrogen B) Oxygen-hydrogen
C) Nitrogen-hydrogen D) Sulfur-hydrogen

32. The principle of Sanger method relies on

A) Use of chemicals for base specific cleavage
B) Use of dNTPs for chain termination
C) Use of ddNTPs for chain termination
D) Use of ^{32}P for chain termination.

33. The computational methodology that tries to find the best matching between two molecules, a receptor and a ligand is called

A) Molecular matching B) Molecular docking
C) Molecular fitting D) Molecule affinity check

34. Submissions to GenBank are made using

A) Bankit and Sequin B) Bankit and Bankin
C) Sequin and Bankin D) Entrez

35. Sequence alignment helps scientists

A) To trace our evolutionary relationships
B) To infer the functions of newly synthesized genes
C) To predict new members of a gene family
D) All of the above

36. The alignment method suitable for finding out conserved patterns in DNA or protein sequences is

A) Multiple sequence alignment B) Pair wise alignment
C) Global alignment D) Local alignment

37. You do a BLAST search on a DNA sequence and it identifies it as 'Exon 1′ of a certain gene. An exon is

A) A section of a eukaryotic gene that is translated into protein
B) A section of a eukaryotic gene that is NOT translated into protein
C) A regulatory sequence that turns genes on and off
D) DNA that has no genetic role, but does maintain the physical structure of a chromosome

38. All the following are storage polysaccharides except

A) Cellulose B) Glycogen
C) Starch D) Dextran

39. Which of the following groups would you select for cDNA synthesis?

A) Reverse transcriptase, ribonuclease H and DNA polymerase

B) DNA polymerase, Reverse transcriptase and methyl transferase
C) DNA polymerase, Reverse transcriptase and alkaline phosphatase
D) Ribonuclease H, Reverse transcriptase and methyl transferase

40. All the following are components of a compound microscope except

A) Stage Clips
B) Fine adjustment
C) Electron gun
D) Binocular eye piece

41. The charge of a polypeptide is

A) Positive
B) Negative
C) Depends on the constituent amino acids
D) Neutral

42. In nucleotides, sugar is attached to the nitrogenous bases by

A) Hydrogen bond
B) Phosphodiester bond
C) Glycosidic bond
D) Ionic bond

43. In alpha helix, the bonding is between the

A) Adjacent amino acids
B) Carbonyl oxygen of one peptide bond to the NH group of the 4^{th} amino acid away
C) Carbonyl oxygen of one peptide bond to the NH group of the 3^{rd} amino acid away
D) Carbonyl oxygen of one peptide bond to the NH group of the 5^{th} amino acid away

44. Which of the following is the most common and stable conformation for a polypeptide chain

A) Alpha helix
B) Beta pleated sheets
C) Anti-parallel beta pleated sheet
D) Tertiary structure

45. Fats consist of

A) Alcohol linked by ester bonds to 3 fatty acids
B) Glycerol molecule linked by ester bonds to 3 fatty acids
C) Glycerol molecule linked by ester bonds to a fatty acid
D) Glycerol molecule linked by ester bonds to 4 fatty acids

46. Lipids are important constituents of

A) Nucleus
B) Ribosomes
C) Both A and B
D) Biological membranes

47. All the following are reducing sugars except

A) Glucose
B) Sucrose
C) Maltose
D) Lactose

48. Which of the following enzymes would you select for cutting a DNA strand with recognition sequence GAATTC?

A) T4 Ligase
B) Taq Polymerase
C) EcoRI
D) Alu I

49. Which of the following can visualize live cells

A) TEM B) SEM
C) Phase contrast microscope D) All of these

50. The first transgenic plant to be produced was

A) Rice B) Maize
C) Cotton D) Tobacco

51. Which of the following is considered as the 21st amino acid

A) Hyroxylysine B) Ornithine
C) Cirtulline D) Selenocysteine

52. Tryptophan is the precursor of plant hormone

A) Auxin B) Cytokinin
C) Kinetin D) Gibberellin

53. According to the accepted concept of hormone action, if receptor molecules are removed from the target organs, then the target organ will

A) Not respond to the hormone
B) Continue to respond to the hormone but will require higher concentration
C) Continue to respond to the hormone but in the opposite way
D) Continue to respond to the hormone without any difference.

54. A person is having problems with calcium and phosphorus in his body. Which one of the following glands may not be functioning properly?

A) Parotid B) Pancreas
C) Thyroid D) Parathyroid

55. Sickle cell anemia is due to

A) Change in beta chain of hemoglobin
B) Change in gamma chain of hemoglobin
C) Change in alpha chain of hemoglobin
D) None of these

56. 60 S subunit of eukaryotic ribosome consists of

A) 28S rRNA B) 5S rRNA
C) 5.8S rRNA D) All of these

57. The steps involved in synthesis of proteins are

A) Transcription and Transformation
B) Transcription and Translation
C) Transformation and Translation
D) Transition and Transversion

58. Okasaki fragments are sealed by the enzymes

A) Ligase B) Nuclease

C) Primase D) Topoisomerase

59. Frequency of mutation

A) Varies with character and organism
B) Can be increased by X-rays
C) Is greatly affected by environmental factors
D) All of above

60. Techniques used for the study of gene expression

A) DNA microarrays B) DNA hybridization
C) Both A & B D) None of these

61. Who is father of C Language?

A) Bjarne Stroustrup B) James A. Gosling
C) Dennis Ritchie D) Dr. E.F. Codd

62. Select data type in Perl which stores associative arrays.

A) Resource B) Scalar
C) Hash D) Array

63. Arrays are denoted by _____in Perl.

A) @ B) %
C) $ D) #

64. What is the primary requisite a good computer programmer?

A) Mathematical mind B) Artistic mind
C) Logical mind D) Scientific knowledge

65. ISDN stands for

A) Integrated service digital network
B) Integrated system digital network
C) Integrated standard digital network
D) Integrated subscriber dialing network

66. Which of the following divided a group of data into four subgroups?

A) Percentiles B) Median
C) Quartiles D) Standard deviation

67. The middle value of an ordered array of numbers is the

A) Mode B) Mean
C) Median D) Mid point

68. If standard deviation of a population is 9, the population variance is

A) 9 B) 3
C) 21 D) 81

69. Which of the following is not a measure of central tendency?

A) Percentile B) Quartile
C) Standard deviation D) Mode

70. The sum of deviations about the mean is always

A) Negative B) Zero
C) Total standard deviation D) Positive

71. Which of the following is an example of non volatile memory?

A) VLSI B) ROM
C) RAM D) LSI

72. C was primarily developed as

A) System programming language
B) General purpose language
C) Data processing language
D) None of the above

73. What will display the list of warning messages regarding the code in Perl?

A) Strict pragma
B) The ω Command-line argument
C) Using the built-in debugger
D) Using online debugger

74. C programs are converted into machine language with the help of

A) An Editor B) A compiler
C) An operating system D) None of these

75. Which of the following is not an operating system?

A) Window NT B) DOS
C) Java D) UNIX

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