Entrance Examinations Model Questions
Model Paper - 5 : Bioinformatics

51.A viral disease of potato is
- a. Early blight
- b. Late blight
- c. Leaf roll
- d. None of the above

52.A stage, in replication of virus during which, the virus particle cannot be detected in infected cell is
- a. Adsorption
- b. Lysis
- c. Maturation
- d. Eclipse

53.In bacteria which one is most resistant stage?
- a. Capsulated Vegetative cell
- b. Newly divided cell
- c. Merozygote
- d. Endospore stage

54.A free living nitrogen fixing bacteria is
- a. Rhizobium
- b. Rhodospirillum
- c. Nitrosomonas
- d. Azotobacter

55.Azetobacter is useful in
- a. Nitrogen fixation
- b. Souring the milk
- c. Curing of tobacco
- d. Vinegar industry

56.The main difference between photosynthesis and chemosynthetic bacteria is
- a. The former is parasitic and the latter is saprophytic
- b. H_2O is used in the former and rejected in latter
- c. Former is found on green plants and the latter on the chemical substances
- d. Energy of light is used in the former and energy of oxidation of inorganic compounds is used in the latter.

57.Sea weed is the common name of-
- a. Red algae
- b. Brown algae
- c. Green algae
- d. Diatoms

58.Which one of the following helps in the preparation of 'fire-proof lining'-
- a. Diatoms
- b. Stone worts
- c. Unicellular blue-green algae
- d. Filamentous red algae

59. Slime mould is a type of
- a. Algae
- b. Fungi
- c. Bacteria
- d. Lichens

60.Part of life-cycle formed after meiosis and end in fertilization is called
- a. Sporophyte
- b. Gametophyte
- c. Gametes
- d. Spores

61.Ultimate source of energy in ecosystem is
   a. Sunlight
   b. Glucose
   c. ATP
   d. Protein
62.A food chain starts with a green plant because
   a. They are maximum in nature
   b. They are easily available
   c. They can utilize the raw material of nature
   d. All plants produce food for animals
63.What is bionomial nomenclature
   a. Indication of name by its order and family
   b. Indication of name by family and genus
   c. Indication of name by genus and species
   d. Indication of name by species and variety
64.Largest family of the flowering plant is
   a. Gramineae
   b. Leguminosae
   c. Rananculaeeae
   d. Compositae
65.Who is father of taxonomy
   a. Linnaeus
   b. Brunfels
   c. Engler
   d. Hutchinson
66.Paleontology is the study of
   a. Structure of living fossils
   b. Distribution of living organisms
   c. Fossils
   d. Influence of environment on animals
67.Which one initiates evolution
   a. Mutation
   b. Migration
   c. Heredity
   d. Natural selection
68.Mutation is a change
   a. That is inherited
   b. That is not inherited
   c. Which occur slowly
   d. None of the above
69.Law of inheritance was formulated by
   a. Strasbrger
   b. Mendel
   c. Watson and crick
   d. Darwin
70.Which of the following depicts dihybrid ratio
   a. 3:1
   b. 9:3:3:1
   c. 9:7
   d. 15:1

71.Function of mRNA is to carry

a. Codon
b. Anticodon
c. Amino acids
d. None of the above

72.Which base is not found in RNA

a. Adenine
b. Guanine
c. Thymine
d. Uracil

73.What is chargaff's law

a. G+C = A+T
b. A+T=G+C
c. A+G=C+Ts
d. None

74.A group of ribosomes bound together by the help of mRNA is called

a. Polysomes
b. Poly-deoxiribonucleotide
c. Poly- ribonucleotide
d. Protein

75.Which one is commonly known as Kornberg enzyme?

a. DNA polymerase
b. RNA polymerase
c. RNA dependent DNA polymerase
d. None

76.Translation of nucleotide language to amino acid language takes place

a. In cytoplasm
b. In nucleus
c. In cytoplasm upon polyssome
d. In chromosome

77.Amount of DNA is measured by

a. Chromatography
b. Using radioactive atoms
c. Autoradiography
d. Quantitative Cytophotometer

78.To be evolutionary successful mutation must takes place in

a. Somatic cell
b. Gametic cells
c. Plasma protein
d. Endoplasmic reticulum

79.Which one is undeveloped female

a. XY
b. XX
c. XXY
d. OX

80.Phrmacogenetics is the science which deals the study about the effect of variation in

a. Genome
b. Proteome
c. Single gene
d. Multiple gene

81.With respect to wobble hypothesis all of the following are correct except:

a. The anticodon show both standard and nonstandard base pairing with the codon at wobble position
b. An inosine nucleotide in the tRNA molecule can base-pair with A, C and U in the mRNA
c. An inosine nucleotide in the mRNA molecule can base-pair with A, C and U in the t RNA
d. Guanine can base-pair with uracil

82.Which of the following species of denatured DNA will renature most rapidly in a solution, under appropriate conditions of ionic strength, pH and temperature

a. Human liver nuclear DNA
b. Vaccinia virus DNA
c. E. coli DNA
d. Yeast nuclear DNA

83.Transport of mRNA from the nucleus to the cytoplasm:

a. Invoves passage through nuclear pores
b. Is linked to translation of the protein encoded by the mRNA
c. Is in the 3'-5' direction
d. Occurs with the spliceosomes bound to mRNA

84.Eukaryotic DNA :

a. Takes part in protein synthesis by coming out of the nucleus
b. Takes part indirectly in protein synthesis, the DNA itself stays in the nucleus
c. Has nothing to do with protein synthesis but involves in replication
d. Is involved in protein synthesis that takes place in nucleus

85.Which of the following is essential for bacteria for DNA repair and recombination

a. DNA protein
b. Rec A protein
c. Thymidine kinase
d. Chaperone proteins

86.The lac repressor :

a. Is a DNA binding protein
b. Is induced by exposure of a bacterial cell to lactose
c. Uses the same promoter as the lac Z gene
d. Can form alternative stem-loop structures

87.DNA synthesis begins at a:

a. Single location in the adenovirus genome
b. Single location in E. coli
c. Single location in yeast
d. Site that is G-C rich in E.coli

88.The central dogma specifies that:

a. DNA sequence encodes RNA sequence which encodes protein
b. RNA sequence encodes protein which encodes DNA
c. DNA at centromeres plays the major role in gene expression
d. Reverse transcriptase converts RNA to DNA

89.RNA can be converted to complementary DNA by

a. RNA polymerase II
b. Reverse transcriptase
c. terminal transferase
d. Poly A polymerase

90.Which form of DNA has a left handed helix?

a. A form of DNA
b. B form of DNA
c. C form of DNA
d. Z form of DNA

91. The dimension of gravitational constant G is
    a. $[MLT^{-2}]$
    b. $[ML^3T^{-2}]$
    c. $[M^{-1}L^3T^{-2}]$
    d. $[M^{-1}LT^{-2}]$

92. The distance X covered in time t by a body having initial velocity V_0 and having a constant acceleration is given by $X= V_0t+1/2at^2$. The result follows from
    a. Newton's first law
    b. Newton's second law
    c. Newton's third law
    d. None

93. It is easier to pull a body than to push, because
    a. The coefficient of friction is more in pushing than in Pulling
    b. The friction force is more in pushing than in pulling
    c. The body does not move forward when pushed
    d. None of the above

94. The work done by the external forces on a system equal s the change in
    a. Total energy
    b. Kinetic energy
    c. Potential energy
    d. None of the above

95. Two bodies of masses m_1 and m_2 have equal kinetic energies. If P_1 and P_2 are respective momenta. The ratio of $P_1:P_2$ is equal to
    a. $m_1:m_2$
    b. m_1/m_2
    c. $\sqrt{m_1}:\sqrt{m_2}$
    d. $m_1^2:m_2^2$

96. The escape velocity from a planet is V. If its mass and radius becomes four and two times respectively, then the escape velocity will become
    a. V
    b. 2V
    c. 0.5V
    d. $\sqrt{2}V$

97. Which of the following waves cannot travel through a vacuum
    a. Light waves
    b. X-rays
    c. Heat waves
    d. Sound waves

98. Two bodies are made up of same material but one is rough and another is smooth. They are at the same temperature then which body will emit more heat
    a. Rough
    b. Smooth
    c. Both will emit equal amount of heat
    d. Cannot be said

99. Which of the following relation id true
    a. $\Delta Q=\Delta U$ for isothermal process
    b. $\Delta Q=\Delta U$ for adiabatic process
    c. $\Delta W=\Delta U$ for isothermal process
    d. $\Delta W=\Delta U$ for adiabatic process

100. An ideal gas is expanded adiabatically then
   a. Temperature of gas will increase
   b. Pressure of the gas will increase
   c. Temperature of gas will decrease
   d. Temperature of gas remains same
101. On reflection from plane surface following will change
   a. Wavelength
   b. Frequency
   c. Speed
   d. Amplitude
102. Energy in a capacitor is store in
   a. Plates
   b. Electric field between plates
   c. Battery
   d. None of these
103. A conductor of resistance R is stretched and its new length is double of original length. Its new resistance is
   a. R
   b. 2R
   c. 4R
   d. 8R
104. Which of the following terms does not represent power in circuit?
   a. I^2R
   b. IR^2
   c. VI
   d. V^2/R
105. Mass of 1 mole of any substance will be its
   a. Molar mass
   b. Atomic mass
   c. Total mas
   d. None
106. Neutrons are present in all atoms except
   a. He
   b. C
   c. H
   d. Ne
107. Which one of the following will have maximum magnetic moment
   a. Mn^{2+}
   b. Fe^{2+}
   c. Ti^{2+}
   d. Cr^{2+}
108. Which of the following species contains a coordinate covalent bond
   a. NH_4^+
   b. NH_3
   c. CH_3
   d. BF_3
109. When NaCl is dissolved in water, sodium ion is
   a. Oxidized
   b. Reduced
   c. Hydrolysed
   d. Hydratred

110. The number of stereoisomers possible for 2-bromo-3-chlorobutane is
   a. 1
   b. 2
   c. 3
   d. 4
111. The first calculating machine was invented by
   a. Hermon holleritth
   b. Charles Babbage
   c. Blaise Pascal
   d. John Von Neuman
112. Fifth generation computer are likely to exhibit
   a. artificial intelligence
   b. Heuristic behavior
   c. advanced parallel processing
   d. all of the above
113. Which part is the brain of the computer?
   a. CPU
   b. monitor
   c. RAM
   d. ROM
114. Firewall is used in PC for
   a. `security
   b. authentication
   c. data transfer
   d. all of the above
115. Which of the following cannot be a wireless network
   a. LAN
   b. WAN
   c. MAN
   d. none of the above
116. Which of the following layers of an ISO-OSI reference model is for networking support?
   a. network layer
   b. application layer
   c. session layer
   d. physical layer
117. High level language uses
   a. compiler
   b.interpreter
   c. both a and b
   d. either a and b
118. Most common channel used by networks today is
   a. internet
   b. telephone lines
   c. satellite
   d. mail
119. Which one of the following can be used for internet protocol?
   a. http
   b. html
   c. visual basic
   d. none of these

120. The network connecting several computers all over the world is
    a. intranet
    b.internet
    c. ARPnet
    d. network
121. Telnet helps in
    a. remote login
    b. connecting to television
    c. transferring files across net
    d. all of the above
122. COBOL, BASIC, FORTRAN and Pascal come under the category of
    a. assembly language program
    b. machine language program
    c high-level language program
    d. none of the above
123. Which one of the following is not a multi user operating system?
    a. windows XP
    b. linux
    c. unix
    d. DOS
124. Language which has both compiler and interpreter is
    a. java
    b.perl
    c. C++
    d. VB
125.Which of the following is most suitable for network programming
    a. C++
    b. java
    c. XML
    d. HTML
126. Floating point representation is used to store
    a. Boolean values
    b. whole numbers
    c. real integers
    d.integers
127. Cache memory acts between
    a. CPU and RAM
    b. RAM and ROM
    c. CPU and Hard Disk
    d. None of these
128. Which one of the following is the name of a supercomputer?
    a. UNIVAC
    b. Pentium
    c. CRAY.X.MP
    d. COSMOS
129. Which of the following architecture is essential for a super computer
    a. Single user
    b. bus architecture
    c. multiple channel
    d. vector processing

130. Third generation of computer have
a. high-level procedural language
b. an operating system for first time
c. distributed data processing
d. on-line real time systems

131. Matrices describe the property that one base or amino acid has changed during course of evolution
a. Position specific scoring matrix
b. block substitution matrix
c. Point accepted mutation matrix
d. mutation data matrix

132. Threading
a. protein structure prediction
b. genome annotation
c. sequence alignment
d. sequence analysis

133. The identification of drugs through genomics study
a. genomics
b. chemoinformatics
c. pharmacogenomics
d. pharmacogenetics

134. What programming technique is used in the Needleman-Wunsch algorithm to allow it to efficiently carry out global alignment?
a heuristic
b. list comprehension
c. dynamic programming
d. matrix algebra

135. The order in which ClustalW adds sequences to a multiple alignment is determined by:
a.phylogenetic tree
b. the order they are entered into the program
c. the percent identity
d. the organisms they come from

136. Which of the following is sequence alignment tool
a. BLAST
b. PRINT
c. PROSITE
d. PIR

137. All of the following are protein database except
a. PIR
b. PSD
c. SWISS PROT
d. EMBL

138. The two main feature of phylogenetic tree is
a. the clades and nodes
b. the topology and the branch length
c. the clades and the root
d. the alignment and the bootstrap

139. Which of the following binding interactions is likely to be the most important initial interaction when a drug enters a binding site?
a) van der Waals interactions
b) hydrogen bond
c) ionic
d) induced dipole-dipole interactions

140. Which of the following statements best describes pharmacodynamics?
   a. The study of how drugs reach their target in the body and how the levels of a drug in the blood are affected by absorption, distribution, metabolism and excretion.
   b. The study of how drugs can be designed using molecular modelling based on a drug's pharmacophore.
   c. The study of how a drug interacts with its target binding site at the molecular level.
   d. The study of which functional groups are important in binding a drug to its target binding site and the identification of a pharmacophore
141. Which of the following statements is false regarding the blood-brain barrier?
   a. The walls of the capillaries supplying the brain have tight fitting cells making it difficult for polar drugs to leave the capillaries.
   b. The capillaries in the brain have a fatty coating making it more difficult for drugs to enter the brain.
   c. The walls of the capillaries supplying the brain are made up of several layers of cells, which act as a barrier to the release of drugs.
   d. Hydrophobic drugs pass through the blood brain barrier more easily than hydrophilic drugs.
142. Which of the following could be used to run MD simulations of DNA:
   a. Diamond
   b. GOLD
   c. AMBER
   d. GRID
143. Pharmacophore constraints speed up docking because:
   a. The number of ligand conformations processed is reduced
   b. The number of docked orientations (or poses) is reduced
   c. The time for geometry refinement is reduced
   d. The number of ligand conformations and docked orientations is reduced
144. To generate an optimal global pairwise alignment of two DNA sequences, you might use:
   a. BLAST-N
   b.megaBLAST
   c.ClustalW
   d.EMBOSS in Needle mode
145. A key difference between DNA alignment and protein alignment is:
   a. amino acid pairs can be scored based on similarity as well as identity
   b. there can be no internal gaps in a protein alignment
   c. the protein alignment demonstrates the locations of the introns and exons
   d. matches and mismatches get the same score in a protein alignment
146. If you are looking at a human gene using the UCSC Genome Browser and want to know what parts of the sequence are introns and which exons are, you might look at:
   a. the SNP track
   b.the RefSeq track
   c. the alignment track
   d. the OMIM track
147. A semi-global alignment penalizes:
   a. all gaps
   b. terminal gaps only
   c. internal gaps only
   d. extending a gap more than initiating one
148. Which genomics studies the transcripts and proteins expressed by genomes?
   a. comparative genomics
   b. structural genomics
   c. functional genomics
   d. substractive genomics
149. Which type of genomic analysis provides information about microbial evolution?
   a.structural genomics
   b. functional genomics
   c. comparative genomics
   d. none of the above
150. Translated amino acid sequences can be analyzed for motifs. What do these represent?
   a.functional units
   b. transcriptional controls
   c.paralogues
   d.orthologues