310 PU M.Tech Computational Biology

113 PU_2016_M.Tech_310_Computational Biology_E
With a normal diet, the percentage of daily calories that come from proteins is about:-

○ 30 percent

○ 10 percent

○ 20 percent

○ 40 percent

140 PU_2016_M.Tech_310_Computational Biology_E
A compound that has a desirable properties to become a drug is called:-

○ Lead

○ Fit Compound

○ Fit Drug

○ Hit

129 PU_2016_M.Tech_310_Computational Biology_E
Which of the following colors of visible light has the longest wavelength?

○ Red

○ Green

○ Yellow

○ Violet

204 PU_2016_M.Tech_310_Computational Biology_E
Naturally occurring polymers are:-

○ starch and nylon

○ protein and plastic

○ starch and cellulose

○ protein and nylon

185 PU_2016_M.Tech_310_Computational Biology_E
If a material is heated and annealed, then its elasticity:-

○ Will not change

○ Becomes zero

○ Decreases

O
Increases

193 PU_2016_M.Tech_310_Computational Biology_E
If an electron and a proton have the same de-Broglie wavelength, then the kinetic energy of the electron is:-
O
less than that of the proton
O
zero
O
equal to that of the proton
O
more than that of the proton

109 PU_2016_M.Tech_310_Computational Biology_E
Pulmonary artery differs from pulmonary vein in having:-
O
a) Thick wall
O
b) Thin wall
O
c) Valves
O
d) Both (b) and (c)

209 PU_2016_M.Tech_310_Computational Biology_E
The main difference between an acid and a base is that:-
O
acids donate hydrogen ions in water while bases accept hydrogen ions
O
acids are polar molecules and bases are not
O
bases donate hydrogen ions in water while acids accept hydrogen ions
O
bases are polar molecules and acids are not

177 PU_2016_M.Tech_310_Computational Biology_E
If $\Phi = x^2 - xyz$, then $\nabla\Phi$ at (4, 3, 2) is:-
O
2 i - 3 j + 2 k
O
4 i - 3 j + 2 k
O
16 i - 3 j + 2 k
O
2 i - 8 j + 12 k

161 PU_2016_M.Tech_310_Computational Biology_E
Mention which one of the following is IR active?
O
$CH_2 = CH_2$, CH Stretching
O
$CH_2 = CHCl$

○ CH$_3$ - CH$_3$

○ CH$_2$ = CH$_2$, CH$_2$ twist

11 of 100
120 PU_2016_M.Tech_310_Computational Biology_E
One joule is the energy required to:-

○ Move a mass of 1 gm by 1 cm distance by a force of 1 Newton

○ Raise the temperature of 1 gm of water by 1°C

○ Move a mass of 1 kg by 1 m distance by a force of 1 Newton

○ Raise the temperature of 1 kg of water by 1°C

12 of 100
181 PU_2016_M.Tech_310_Computational Biology_E
When a source is going away from a stationary observer, with a velocity equal to that of sound in air, then the frequency heard by the observer will be:-

○ Half

○ Double

○ Same

○ One third

13 of 100
153 PU_2016_M.Tech_310_Computational Biology_E
Natural amino acids found in following conformation:-

○ L and D

○ L

○ D and S

○ D and R

14 of 100
196 PU_2016_M.Tech_310_Computational Biology_E
Two charges repel each other with a force of 10^{-4} N when they are 10 cm apart. When they are brought to 5 cm apart, the force will be:-

○ 0.5 x 10^{-4} N

○ 0.25 x 10^{-4} N

○ 2 x 10^{-4} N

○ 4 x 10^{-4} N

15 of 100
125 PU_2016_M.Tech_310_Computational Biology_E
The value of 1KWH is:-

○ 3.6 X 10^6 J

○ 3.6 X 10^{5}J

○ 3.6 X 10^9 J

○ 3.6 X 10^7 J

124 PU_2016_M.Tech_310_Computational Biology_E
A mixture of single strand circular DNA, supercoiled DNA, linear DNA and relaxed DNA were separated on agarose gel, which one of them migrates fast?

○ Super coiled DNA

○ Relaxed DNA

○ Single stranded circular DNA

○ Linear double stranded DNA

173 PU_2016_M.Tech_310_Computational Biology_E
L and D form are described based on the structure of:-

○ Silver

○ Glyceraldehyde

○ Alanine

○ Methanol

189 PU_2016_M.Tech_310_Computational Biology_E
A convex and a concave lens separated by distance d are put in contact. The focal length of the combination:-

○ becomes 0

○ increases

○ decreases

○ remains the same

132 PU_2016_M.Tech_310_Computational Biology_E
Which of the following best completes the statement: The calorie is the amount of heat needed to raise?

○ 1 gram of water 1 degree Celsius

○ 1 kilogram of water 1 degree Kelvin

○ 1 gram of water 1 degree Rankin

○ 1 kilogram of water 1 degree Celsius

184 PU_2016_M.Tech_310_Computational Biology_E
Which of the following phenomenon cannot take place with sound wave?

○ Interference

○ Polarization

○ Diffraction

○ Reflection

21 of 100
217 PU_2016_M.Tech_310_Computational Biology_E
The property of a substance to absorb moisture from the air on exposure is called:-

○ osmosis

○ efflorescence

○ deliquescence

○ desiccation

22 of 100
180 PU_2016_M.Tech_310_Computational Biology_E
Speed of three molecules of a gas are 3 ms^{-1}, 4 ms^{-1} and 5 ms^{-1}. The r.m.s. speed of these molecule is:-

○ 4 ms^{-1}

○ 7.1 ms^{-1}

○ 4.08 ms^{-1}

○ 5 ms^{-1}

23 of 100
200 PU_2016_M.Tech_310_Computational Biology_E
The pH of a solution is determined by:-

○ environmental effect

○ relative concentration of acids and bases

○ dielectric constant of the medium

○ concentration of salt

24 of 100
144 PU_2016_M.Tech_310_Computational Biology_E
The tool for identification of motifs:-

○ PROSPECT

○ COPIA

○ BLAST

○ Pattern hunter

25 of 100
201 PU_2016_M.Tech_310_Computational Biology_E
Among the following, the compound that contains ionic, covalent and coordinate linkage is:-

○ NH$_4$Cl

○ CaO

○ NaCl

○ NH$_3$

26 of 100
100 PU_2016_M.Tech_310_Computational Biology_E
Movement of solute against concentration gradient is called:-

○ Diffusion

○ Osmosis

○ Active transport

○ Passive transport

27 of 100
116 PU_2016_M.Tech_310_Computational Biology_E
Retinol and retinal are interconverted requiring dehydrogenase or reductase in the presence of:-

○ FAD

○ NAD or NADP

○ NADPH

○ NADH + H+

28 of 100
149 PU_2016_M.Tech_310_Computational Biology_E
Shotgun cloning differs from the clone-by-clone method in which of the following ways?

○ Genetic markers are used to identify clones in shotgun cloning

○ Computer software assembles the clones in the clone-by-clone method

○ The location of the clone being sequenced is known relative to other clones within the genomic library in shotgun cloning

○ The entire genome is sequenced in the clone-by-clone method, but not in shotgun sequencing

29 of 100
105 PU_2016_M.Tech_310_Computational Biology_E
Which one is the cofactor of carbonic anhydrase?

○ Fe

○ Cu

○ Zn

○ Mg

30 of 100
141 PU_2016_M.Tech_310_Computational Biology_E

Identify which of the following terms refers to the arrangement of different protein subunits in a multiprotein complex.

○ Secondary structure

○ Quaternary structure

○ Tertiary structure

○ Primary structure

128 PU_2016_M.Tech_310_Computational Biology_E
Induced electric currents can be explained using which of the following laws?

○ Faraday's Law

○ Gauss's Law

○ Ohm's Law

○ Ampere's Law

101 PU_2016_M.Tech_310_Computational Biology_E
Synapsis occurs between:-

○ A male and a female gamete

○ mRNA and Ribosomes

○ Two homologous chromosomes

○ Spindle fibres and centromere

148 PU_2016_M.Tech_310_Computational Biology_E
The dipole moments of BF_3, H_2S and H_2O can be arranged as:-

○ $BF_3 < H_2S > H_2O$

○ $BF_3 > H_2S > H_2O$

○ $BF_3 < H_2S < H_2O$

○ $BF_3 > H_2O < H_2S$

112 PU_2016_M.Tech_310_Computational Biology_E
An example of a transamination process is:-

○ Glutamate = α-ketoglutarate + NH3

○ Aspartate + hexanoic acid = glutamate + oxaloacetate

○ Glutamate = hexanoic acid + NH3

○ Aspartate + α ketoglutarate = glutamate + oxaloacetate

197 PU_2016_M.Tech_310_Computational Biology_E
Solar spectrum is an example for:-

○ line emission spectrum

○ continuous emission spectrum

○ line absorption spectrum

○ band absorption spectrum

160 PU_2016_M.Tech_310_Computational Biology_E
The basic difference between eukaryote and prokaryote is:-

○ Presence of nucleus in prokaryote

○ Presence of plasma membrane in eukaryote

○ Presence of DNA in prokaryote

○ Presence of nucleus in eukaryote

165 PU_2016_M.Tech_310_Computational Biology_E
Which element is most likely to form a covalent compound?

○ Cesium

○ Magnesium

○ Sodium

○ Carbon

164 PU_2016_M.Tech_310_Computational Biology_E
Ramachandran plot discusses about:-

○ Phi-Psi correlation diagram

○ Phi-Psi energy diagram

○ Phi-Psi scatter diagram

○ Phi-Psi steric contour diagram

212 PU_2016_M.Tech_310_Computational Biology_E
D-Alanine and L-Alanine are technically known as:-

○ enantiomers

○ polymer

○ epimers

○ anomers

137 PU_2016_M.Tech_310_Computational Biology_E
A 10 kilogram mass rests on a horizontal frictionless surface. A horizontal force of 5 Newtons is applied to the mass. After the force has been applied for 1 second, the velocity of the mass is:-

○ 0.5 meters per second

○ 0 meters per second

○ 50 meters per second

○ 5 meters per second

104 PU_2016_M.Tech_310_Computational Biology_E
The exchange of gases between inhaled air and blood is referred as _____.

○ External respiration

○ Cellular respiration

○ Internal respiration

○ Circulatory respiration

172 PU_2016_M.Tech_310_Computational Biology_E
Glucose can have following conformation:-

○ Boat

○ Boat and chair

○ Staggered

○ Eclipse

152 PU_2016_M.Tech_310_Computational Biology_E
Which of the following is a balanced equation?

○ $C_2H_6 + 3O_2 \rightarrow CO_2 + 3H_2O$

○ $Na_2CO_3 + HCl \rightarrow 2NaCl + CO_2 + H_2O$

○ $CH_3OH + HCl \rightarrow CH_3Cl + H_2O$

○ $C_3H8 + 4O_2 \rightarrow 4H_2O + 3CO_2$

136 PU_2016_M.Tech_310_Computational Biology_E
The Millikan experiment showed that electric charge was:-

○ quantized

○ positive

○ negative

○ unmeasurable

213 PU_2016_M.Tech_310_Computational Biology_E
Bromine is a:-

○ red liquid

○ highly inflammable gas

○ black solid

○ colourless gas

121 PU_2016_M.Tech_310_Computational Biology_E
Bohr effect is:-

○ Shifting of oxyhemoglobin dissociation curve to the right

○ Shifting of oxyhemoglobin dissociation curve to the left

○ Ability of hemoglobin to combine with O2

○ Exchange of chloride with carbonate

108 PU_2016_M.Tech_310_Computational Biology_E
'Dup' sound is produced during closure of:-

○ a) Semilunar valves

○ b) Bicuspid valve

○ c) Tricuspid valve

○ d) Both (b) and (c)

117 PU_2016_M.Tech_310_Computational Biology_E
Template/lock and key theory of enzyme action is supported by:-

○ Compounds similar to substrate inhibit enzyme activity

○ Enzymes speed up reaction

○ Enzymes determine the direction of reaction

○ Enzymes occur in living beings and speed up certain reactions

188 PU_2016_M.Tech_310_Computational Biology_E
A body of mass 4 kg is accelerated upon by a constant force, travels a distance of 5 m in the first second and a distance of 2 m in the third second. The force acting on the body is:-

○ 2 N

○ 8 N

○ 12 N

○ 4 N

208 PU_2016_M.Tech_310_Computational Biology_E
In methane, the hydrogen atoms are spatially oriented toward the centers of a regular:-

○ hexagon

○ tetrahedron

○ square

○ pentagon

169 PU_2016_M.Tech_310_Computational Biology_E
Beryllium atom has 4 protons, 5 neutrons and 4 electrons. What is the mass number of this atom?

○ 9

○ 8

○ 5

○ 4

145 PU_2016_M.Tech_310_Computational Biology_E
Which one of the following is the correct expression?

○ Weight of an atom = one gm/6.023 10^{23}

○ Absolute mass of an atom in gm = Atomic wt. in a.m.u x 1.66 x 10^{-24}gm

○ Atomic wt. = Mass of an atom/Mass of C^{12} atom

○ 1 a.m.u. = Mass of one C^{12} atom

156 PU_2016_M.Tech_310_Computational Biology_E
Zwitter ions are the one:-

○ Having positive ion and free radicals

○ Having positive and negative ions

○ Having Neutral and free radicals

○ Having Negative ions and free radicals

133 PU_2016_M.Tech_310_Computational Biology_E
If the resultant force acting on a body of constant mass is zero, the body's momentum is:-

○ always zero

○ Increasing

○ decreasing

○ constant

176 PU_2016_M.Tech_310_Computational Biology_E
In the case of uniform circular motion, the physical quantity that does not remains constant is:-

○ linear momentum

○ kinetic energy

○ speed

○ mass

168 PU_2016_M.Tech_310_Computational Biology_E
The word Alkali came from:-

○ Greek

○ Arabic

○ Sanskrit

○ Italy

205 PU_2016_M.Tech_310_Computational Biology_E
A solution with pH = 5 is _____ than a solution with pH = 7.

○ 2 times more basic

○ 1000 times more basic

○ 10 times more basic

○ 100 times more basic

216 PU_2016_M.Tech_310_Computational Biology_E
Pubchem has information regarding:-

○ DNA

○ Bio-activity

○ Chemical structure & Bio-activity

○ Chemical structure

157 PU_2016_M.Tech_310_Computational Biology_E
Benzene is most stable due to:-

○ The sigma bonding system hybridized to create a flat shape which gives benzene its symmetry

○ The resonance of Pi electrons

○ S-orbitals have created a hybridized system that has become delocalized

○ Its chemical nature

192 PU_2016_M.Tech_310_Computational Biology_E
Hydrogen atom does not emit X-rays because:-

○ Energy levels in it are very close to each other

○ Energy levels in it are far apart

○ It contains only a single electron

○ Its size is very small

222 PU_2016_M.Tech_310_Computational Biology_M
Which of the following is not an IR vibrational mode?

○ Rocking

○ Rolling

○ Stretching

○ Scissoring

221 PU_2016_M.Tech_310_Computational Biology_M
The sequence of letters 'WYQN' will represent:-

○ Tryptophan, glutamine, tryptophan, asparagine

○ Tryptophan, tyrosine, glutamic acid, asparagine

○ Tryptophan, tyrosine, glutamine, asparagine

○ Glutamine, tyrosine, tryptophan, aspartic acid

237 PU_2016_M.Tech_310_Computational Biology_M
A radioisotope used to label protein differentially from nucleic acids is:-

○ ^{35}S

○ ^{14}C

○ ^{15}N

○ ^{32}P

239 PU_2016_M.Tech_310_Computational Biology_M
The hyperchromic effect refers to:-

○ a maximum rate of denaturation versus temperature for duplex DNA

○ an increase in the absorbance of light at 260 nm upon denaturation of DNA

○ a change in the optical rotator dispersion of a DNA solution upon heating

○ An increase in absorbance of light at 260 nm when DNA-RNA hybrids are annealed

246 PU_2016_M.Tech_310_Computational Biology_M
Actin filaments found in all of the following *except* the:-

○ flagella of bacteria

○ contractile ring of dividing animal cells

○ sarcomeres of skeletal muscle cells

○ microvilli of the intestinal brush border

238 PU_2016_M.Tech_310_Computational Biology_M
A non-supercoiled B-DNA molecule is composed of 4800 bps. How many helical turn are present?

○ 380

○ 480

○ 10

○ not possible to find

252 PU_2016_M.Tech_310_Computational Biology_M
For what values of 'a' the three straight lines $3x + y + 2 = 0$, $2x - y + 3 = 0$ and $x + ay - 3 = 0$ are concurrent?

○ -2

○ 2

○ -4

○ 4

228 PU_2016_M.Tech_310_Computational Biology_M
Which of the following is common to both *E.coli* and eukaryotic chromosomes?

○ DNA is contained in the nucleus

○ DNA is packaged into nucleosomes

○ DNA is negatively supercoiled

○ DNA is circular

231 PU_2016_M.Tech_310_Computational Biology_M
Microsatellites are used more commonly than minisatellites as DNA markers because:-

○ minisatellites are present in too many location within the genomes

○ restriction enzymes can be used to type microsatellites but not minisatellites

○ there are very few microsatellites in eukaryotic genomes so they are easily identified and analyzed

○ microsatellites are present throughout eukaryotic genomes and are easily amplified using PCR

233 PU_2016_M.Tech_310_Computational Biology_M
The Z- DNA helix:-

○ is the most common conformation of DNA

○ tends to be found at the 3'end of genes

○ is favoured by an alternating GC sequence

○ has fewer base pair peer turn than the B-DNA

223 PU_2016_M.Tech_310_Computational Biology_M
Melting of DNA results in:-

○ decrease in optical density

○ no change in optical density

○ increase in optical density

○ none

244 PU_2016_M.Tech_310_Computational Biology_M
If the ratio (A+G)/(T+C) in one strand of DNA is 0.7, what will be the ration of(A+G)/(T+ C) in the complementary strand?

○ 0.7

○ 0.35

○ 1.43

○ 0.25

225 PU_2016_M.Tech_310_Computational Biology_M
Sugar- phosphate backbone is:-

○ hydrophilic in nature

○ hydrophobic in nature

○ none covalent in nature

○ none

242 PU_2016_M.Tech_310_Computational Biology_M
Which of the following reagents and conditions will denature ds DNA?

○ urea

○ heat

○ heat, urea and extreme pH

○ extreme pH

245 PU_2016_M.Tech_310_Computational Biology_M
Which of the following is a *false* statement about myosin?

○ it is involved in muscle contraction

○ it does not act as a molecular motor

○ it has a long alpha-helical tail through which it forms homodimers

○ it links the actin bundles to the plasma membrane in the microvilli of intestinal cells

220 PU_2016_M.Tech_310_Computational Biology_M
Protein fluorescence arises primarily from which residue?

○ Phenylalanine

○ Arginine

○ Tryptophan

○ Tyrosine

224 PU_2016_M.Tech_310_Computational Biology_M
Eukaryotes differ from prokaryotes in DNA replication:-

○ discontinuous rather than semi-discontinuous replication

○ unidirectional rather than bidirectional replication

○ use of DNA primer instead of RNA primer

○ different enzymes for leading and lagging strands

254 PU_2016_M.Tech_310_Computational Biology_M
Two circles of radii 5 cm and 3 cm intersect at two points and the distance between their centres is 4 cm. What will be the length of the common chord?

○ 12

○ 6

○ 8

○ 3

250 PU_2016_M.Tech_310_Computational Biology_M
The family of straight lines passing through the origin is represented by the differential equation:-

○ ydy - xdx = 0

○ xdy - ydx = 0

○ xdx + ydy = 0

○ xdy + ydx = 0

259 PU_2016_M.Tech_310_Computational Biology_M
Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

○ 9/20

○ 2/5

○ 1/2

○ 8/15

288 PU_2016_M.Tech_310_Computational Biology_D
A computer program that converts assembly language to machine language is:-

○ Compiler

○ Assembler

○ Interpreter

○ Comparator

269 PU_2016_M.Tech_310_Computational Biology_D
A rectangular reservoir is 120 m long and 75 m wide. At what speed per hour water should flow into it through a square pipe of 20 cm wide so that the water rises 2.4 m in 18 hours?

○ 12km/hr

○ 16 km/hr

○ 30 km/hr

○ 36 km/hr

273 PU_2016_M.Tech_310_Computational Biology_D
Choanocytes are present in:-

○ Ctenophora

○ Cnidaria

○ Arthropoda

○ Porifera

284 PU_2016_M.Tech_310_Computational Biology_D
When a cell is infected by virus, it releases antimicrobial proteins known as:-

○ Cytokines

○ Interleukins

○ Interferons

○ Pheromones

85 of 100

277 PU_2016_M.Tech_310_Computational Biology_D

Coelom is a body cavity lined by:-

○ Endoderm

○ Echinoderm

○ Ectoderm

○ Mesoderm

86 of 100

261 PU_2016_M.Tech_310_Computational Biology_D

When rectangles are drawn with the areas proportional to the frequencies of respective class intervals, what is the diagram called?

○ Histogram

○ Bar graph

○ Pie graph

○ Frequency polygon

87 of 100

268 PU_2016_M.Tech_310_Computational Biology_D

There are one brown and seven white eggs in an egg box. John decides to make a two-egg omelette. He takes out each egg from the box without looking at its colour. What is the probability that John gets an omelette made from two brown eggs?

○ 3/4

○ 1/4

○ 1/8

○ 0

88 of 100

272 PU_2016_M.Tech_310_Computational Biology_D

If the mean of x, y and z is 'a'. If $xy + yz + zx = 0$, what is the mean of x^2, y^2 and z^2?

○ $3a^2$

○ $a^2/3$

○ $9a^2$

○ a^2

285 PU_2016_M.Tech_310_Computational Biology_D
ASCII stands for:-

○ All purpose Scientific Code for Information Interchange

○ American Standard Code for Information Interchange

○ American Security Code for Information Interchange

○ American Scientific Code for Information Interchange

280 PU_2016_M.Tech_310_Computational Biology_D
The aquatic sister group of modern land vertebrate is:-

○ Ray finned fish

○ Dipnoans

○ Lobed finned fish

○ *Amphioxus*

297 PU_2016_M.Tech_310_Computational Biology_D
'.MOV' extension refers usually to what kind of file?

○ Audio file

○ Image file

○ MS Office document

○ Animation/movie file

260 PU_2016_M.Tech_310_Computational Biology_D
Three ships p, q and r sail from England to India. Odds in favour of their arrival safety are 2:5, 3:7 and 6:11 respectively. Find the probability that they all arrive safely.

○ 0.01

○ 0.04

○ 0.02

○ 0.03

296 PU_2016_M.Tech_310_Computational Biology_D
What is part of a database that holds only one type of information?

○ Record

○ Field

○ Report

○ File

276 PU_2016_M.Tech_310_Computational Biology_D
Retrogressive metamorphosis is observed in:-

○ *Amphioxus*

○ Hagfish

○ Ascidia

○ *Balanoglossus*

292 PU_2016_M.Tech_310_Computational Biology_D
What do we call a collection of two or more computers that are located within a limited distance of each other and that are connected to each other directly or indirectly?

○ Wide Area Network

○ Inernet

○ Interanet

○ Local Area Network

293 PU_2016_M.Tech_310_Computational Biology_D
.INI' extension refers usually to what kind of file?

○ System file

○ Image file

○ Image Color Matching Profile file

○ Hypertext related file

289 PU_2016_M.Tech_310_Computational Biology_D
Which of the following computer language is used for artificial intelligence?

○ C

○ FORTRAN

○ PROLOG

○ COBOL

264 PU_2016_M.Tech_310_Computational Biology_D
If p and q are whole numbers such that $p^q = 121$, the value of $(p - 1)^q + 1$ is:-

○ 1

○ 100

○ 121

○ 1000

99 of 100

265 PU_2016_M.Tech_310_Computational Biology_D
If sin A =cos A and A is an acute angle, then tan A - cot A is equal to:-

○ 0

○ 1/2

○ 1

○ 2

100 of 100

281 PU_2016_M.Tech_310_Computational Biology_D
Neoteny is present in:-

○ Turtle

○ Axolotl larva

○ Toad

○ Frog