

## PU M Sc Bioinformatics

### 1 of 100

120 PU\_2015\_378

Turgor pressure is also referred to as:-

- pressure potential
- osmotic potential
- water potential
- solute potential

### 2 of 100

183 PU\_2015\_378

A class contains 10 male and 20 female students, of which half the male and half the female students have brown-eyes. What is the probability (p) that a student chosen at random is a male or has brown-eyes?

- 2/3
- 1/3
- 5/6
- 1/6

### 3 of 100

164 PU\_2015\_378

Water stored in a dam possesses:-

- kinetic energy
- potential energy
- electrical energy
- no energy

### 4 of 100

184 PU\_2015\_378

If the straight line  $y = mx+c$  passes through the point (2,4) and (-3,6) then the values of m and c are:-

- 2/5, 24/5
- 2/5, 24/5
- 2/5, -24/5
- 2/5, -24/5

### 5 of 100

101 PU\_2015\_378

Nitrogen fixation is the conversion of atmospheric nitrogen into:-

- carbon dioxide
- urea

- ammonia
- protein

### 6 of 100

128 PU\_2015\_378

The urea cycle occurs in cell compartments:-

- mitochondrion and lysosome
- endoplasmic reticulum and Golgi complex
- mitochondrion and cytoplasm
- peroxisome and Golgi complex

### 7 of 100

203 PU\_2015\_378

A car starts from rest with a constant acceleration of  $5 \text{ ms}^{-2}$ . The velocity of that car after traveling for 1 km will be:-

- $\sqrt{10} \text{ ms}^{-1}$
- $50 \text{ ms}^{-1}$
- $5 \text{ ms}^{-1}$
- $100 \text{ ms}^{-1}$

### 8 of 100

181 PU\_2015\_378

Three unbiased coins are tossed. What is the probability of getting at most two heads?

- $1/4$
- $7/8$
- $3/8$
- $3/4$

### 9 of 100

146 PU\_2015\_378

The orbital angular momentum of an electron in a 2S orbital is:-

- $\sqrt{2} h/2 \pi$
- $h/2\pi$
- $1/2 \times h/2\pi$
- zero

### 10 of 100

185 PU\_2015\_378

If  $\log a/(b-c) = \log b/(c-a) = \log c/(a-b)$  then the value of abc is:-

- 1

- 1
- 2
- 2

### 11 of 100

123 PU\_2015\_378

While studying the plant *Arabidopsis*, a botanist finds that an RNA probe produces colored spots in the sepals of the plant. From this information, what can be inferred?

- The colored regions were caused by mutations that took place in the sepals
- The RNA probe is specific to a gene active in sepals
- The RNA probe is transported only to certain tissues
- More research needs to be done on the sepals of *Arabidopsis*

### 12 of 100

149 PU\_2015\_378

Following are given chemical elements found in the human body in decreasing concentration:-

- H<O<C<N
- O<C<N<H
- C<H<O<N
- C<O<H<N

### 13 of 100

209 PU\_2015\_378

With increasing focal length of the objective lens, the resolution of a telescope:-

- depends on the distance of the object
- remains same
- decreases
- increases

### 14 of 100

147 PU\_2015\_378

What is the unit for momentum?

- $\text{kg m s}^{-1}$
- $\text{kg m}^{-3}$
- $\text{kg m s}^{-2}$
- $\text{m s}^{-2}$

### 15 of 100

140 PU\_2015\_378

Which is not a characteristic of plant cell walls?

- Found only in the sporophyte phase of life cycle
- Among other compounds contains compounds built of simple sugars
- May contain enzymes that are biologically active
- Often contains strengthening polymers

#### 16 of 100

127 PU\_2015\_378

What is the largest organelle in most mature living plant cells?

- mitochondrion
- central vacuole
- dictyosome (Golgi apparatus)
- nucleus

#### 17 of 100

121 PU\_2015\_378

How does the H<sup>+</sup> concentration of a solution with a pH of 5 compare to a solution with a pH of 3?

- Its H<sup>+</sup> concentration is 100 times less
- Its H<sup>+</sup> concentration is 100 times greater
- Its H<sup>+</sup> concentration is 20 times greater
- Its H<sup>+</sup> concentration is 1,000 times less

#### 18 of 100

129 PU\_2015\_378

The promoter in the *lac* operon is:-

- a structural gene
- the region that binds RNA polymerase
- the region that binds the repressor
- the gene that codes for the repressor

#### 19 of 100

108 PU\_2015\_378

Which of the following is NOT true for enzymes?

- enzymes change the rate at which biochemical reactions proceed
- enzymes often require the presence of cofactors to become active
- an enzyme activity is affected by changes in temperature
- enzymes are assembled from vitamin subunits

#### 20 of 100

167 PU\_2015\_378

The time period of a simple pendulum in a spacecraft orbiting the earth is:-

- Infinity
- One second
- Two seconds
- Zero

**21 of 100**

204 PU\_2015\_378

Which of the following represents the relationship between magnetic, electric and optical wave propagation quantities?

- $c = 1/\sqrt{\mu_0\epsilon_0}$
- $c = (\mu_0\epsilon_0)^2$
- $c = (\mu_0\epsilon_0)$
- $c = \sqrt{(\mu_0\epsilon_0)}$

**22 of 100**

105 PU\_2015\_378

The chromosome having centromere at the tip are called as:-

- Telocentric
- Acrocentric
- Meta centric
- Sub meta-centric

**23 of 100**

165 PU\_2015\_378

Sound waves are:-

- Transverse in nature
- Longitudinal in nature
- Electromagnetic in nature
- Magnetic in nature

**24 of 100**

166 PU\_2015\_378

SI unit of frequency is:-

- Hertz
- m/s<sup>2</sup>
- Meter
- m/s

**25 of 100**

103 PU\_2015\_378

A function of transfer RNA is to:-

- transfer the genetic information from the nucleus to the cytoplasm
- store the genetic information in the nucleus
- position amino acids for protein synthesis by pairing with codons in messenger RNA
- receive the genetic information from nuclear DNA

### 26 of 100

206 PU\_2015\_378

The gradient of a scalar function is:-

- vector function
- undefined
- zero
- scalar function

### 27 of 100

169 PU\_2015\_378

In gases a sound wave is:-

- Transverse only
- Both Transverse and Longitudinal
- Longitudinal only
- Neither Transverse Nor Longitudinal

### 28 of 100

208 PU\_2015\_378

Materials with negative magnetic susceptibility are known as:-

- paramagnetic
- ferromagnetic
- non-magnetic
- diamagnetic

### 29 of 100

148 PU\_2015\_378

The time –independent Schrodinger equation is given by:-

- $\psi = E\psi$
- $H = E\psi$
- $H\psi = E\psi$
- $E = H\psi$

### 30 of 100

124 PU\_2015\_378

Which of the following is an example of a steroid?

- cholesterol
- phospholipid
- insulin
- unsaturated fats

**31 of 100**

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In a moderately asymmetrical distribution, the mode and mean are 32.1 and 35.4, respectively. Then median is:-

- 31.3
- 34.3
- 32.3
- 30

**32 of 100**

107 PU\_2015\_378

The waste product in the urine of man is:-

- Ammonia
- Uric acid
- Uraemia
- Urea

**33 of 100**

109 PU\_2015\_378

In the classical model of transcriptional control described by Jacob and Monod, a repressor protein binds to:-

- an enhancer
- TATA box
- an AUG sequence
- an operator

**34 of 100**

162 PU\_2015\_378

The potential energy of a person is maximum:-

- sleeping on the ground
- sitting on the ground
- standing
- sitting on the chair

**35 of 100**

144 PU\_2015\_378

What was the first human genetic disease that was successfully treated with gene therapy?

- cystic fibrosis
- SCID (ADA deficiency)
- Down syndrome
- sickle-cell anemia

**36 of 100**

187 PU\_2015\_378

If  $\tan A + \tan B = a$  and  $\cot A + \cot B = b$  then  $\cot(A+B)$ .

- $1/a - 1/b$
- $a-b$
- $1/a + 1/b$
- $a+b$

**37 of 100**

104 PU\_2015\_378

The cells that survived exposure to penicillin were most likely able to do so because they:-

- lacked cell walls
- had a more rapid metabolism than the other cells
- mutated as a result of the exposure
- already possessed penicillin resistance

**38 of 100**

106 PU\_2015\_378

In higher plant cells, a pigment important in the manufacture of carbohydrates from  $\text{CO}_2$  and  $\text{H}_2\text{O}$  is contained in the:-

- chloroplast
- vacuole
- cytoplasm
- nucleus

**39 of 100**

205 PU\_2015\_378

The reflection coefficient R for a total internal reflection is:-

- $|R| = 2$
- $|R| = \infty$
- $|R| = 0$
- $|R| = 1$



**40 of 100**

200 PU\_2015\_378

A stationary charge can produce:-

- electric field only
- magnetic field only
- both electric and magnetic fields
- neither electric field nor magnetic field

**41 of 100**

186 PU\_2015\_378

If 20% of  $a = b$ , then  $b\%$  of 20 is the same as:-

- 5% of a
- 4% of a
- 20% of a
- none of these

**42 of 100**

126 PU\_2015\_378

Which of the following is not a macronutrient?

- nitrogen
- calcium
- manganese
- sulfur

**43 of 100**

168 PU\_2015\_378

The product of time-period and frequency is:-

- zero
- unity
- infinity
- none of these

**44 of 100**

189 PU\_2015\_378

If  $x = \log_{2a} a$ ,  $y = \log_{3a} 2a$  and  $z = \log_{4a} 3a$  then  $xyz + 1$  is:-

- $2yz$
- $yz$
- $2xz$
- $2xy$

**45 of 100**

125 PU\_2015\_378

The specialized structures located at the end of eukaryotic chromosomes and act as a marker of cellular ageing are called:-

- Centromeres
- Terminators
- Telomeres
- Kinetochores

**46 of 100**

160 PU\_2015\_378

Work done by a body from Force-distance curve is:-

- Slope of the curve
- Area under the curve
- Line parallel to the Force axis
- Line parallel to the distance axis

**47 of 100**

145 PU\_2015\_378

Electric field intensity is  $400 \text{ V m}^{-1}$  at a distance of 2 m from a point charge. It will be  $100 \text{ Vm}^{-1}$  at a distance?

- 4 cm
- 50 cm
- 4 m
- 1.5 m

**48 of 100**

182 PU\_2015\_378

If A and B are two independent events such that  $P(A) = 0.5$  and  $P(A \cup B) = 0.8$  then  $P(B)$  is:-

- 0.6
- 0.3
- 0.2
- 0.4

**49 of 100**

207 PU\_2015\_378

If E and B represent the electric and magnetic vectors, then the direction of propagation of a light wave is along:-

- along the direction of  $E \times B$
- The direction of E
- the direction of B

$E \times (E \times B)$

**50 of 100**

163 PU\_2015\_378

Power of a person is equal to:-

- work /time
- work x time
- time/work
- work /time x work

**51 of 100**

201 PU\_2015\_378

If a capacitor of capacity C is charged with charge Q at a potential of V, then the potential energy stored in the capacitor is:-

- CV
- $\frac{1}{2} CV$
- QV
- $\frac{1}{2} QV$

**52 of 100**

122 PU\_2015\_378

The plant hormone \_\_\_\_\_ plays a role in closing of stomata.

- gibberellin
- auxin
- cytochrome
- abscissic acid

**53 of 100**

161 PU\_2015\_378

When a spring is compressed work is done on it. Its elastic potential energy:-

- Disappears
- Decreases
- Increases
- Does not change

**54 of 100**

102 PU\_2015\_378

Which of the following organs secretes the hormone responsible for the fight or flight reaction in mammals?

- kidney
- pancreas

- adrenal gland
- liver

**55 of 100**

143 PU\_2015\_378

Capillary forces will lift water \_\_\_\_\_ in a glass tube equal to the diameter of a xylem element.

- 5.6 meters
- 8.3 meters
- 10.4 meters
- less than 1 meter

**56 of 100**

202 PU\_2015\_378

A gas is taken in a sealed container at 300 K. If it is heated at constant volume to a temperature of 900 K, the mean kinetic energy of its molecules is:-

- Increases by 9 times
- Decreases by 9 times
- Decreases by 3 times
- Increases by 3 times

**57 of 100**

180 PU\_2015\_378

The value of  $\int \frac{\cos x}{\sqrt{\sin x}} dx$  is:-

- $2\sqrt{\cos x} + c$
- $\sqrt{\sin x} + c$
- $2\sqrt{\sin x} + c$
- $\sqrt{\cos x} + c$

**58 of 100**

141 PU\_2015\_378

Which might best be a chromophoric group?

- SO<sub>4</sub>
- NH<sub>3</sub>
- N=N-
- CHO

**59 of 100**

142 PU\_2015\_378

Which of the following is a coagulant?

- Ethanol

- Glutaraldehyde
- Osmium tetroxide
- Formaldehyde

**60 of 100**

100 PU\_2015\_378

Behavior that remains unaffected by environmental changes is most likely:-

- stereotyped
- innate
- territorial
- learned

**61 of 100**

259 PU\_2015\_378

In eukaryotes, translation is initiated by binding of ribosome to the:-

- 5'cap
- Pribnows box
- Hogness box
- poly A tail

**62 of 100**

241 PU\_2015\_378

Stereo-isomers:-

- are non-superimposable mirror images
- are mirror images
- have different chemical formula
- all the above

**63 of 100**

255 PU\_2015\_378

Which one of the following methods may infer more than one tree:-

- Maximum parsimony
- Maximum likelihood
- Neighbour joining
- UPGMA

**64 of 100**

233 PU\_2015\_378

Sugar is a:-

- Monosaccharide

- Nonsaccharide
- Disaccharide
- Polysaccharide

**65 of 100**

243 PU\_2015\_378

What is the nature of glucose-glucose linkage in starch that makes it so susceptible to acid hydrolysis?

- Starch is polymer
- Starch is acetal
- Starch is hemiacetal
- Starch contains only few molecules of glucose

**66 of 100**

244 PU\_2015\_378

The combination of pressure potential and solute potential is:-

- transpiration potential
- field potential
- water potential
- stem potential

**67 of 100**

256 PU\_2015\_378

The pathway of water from the soil through the plant to the atmosphere is best represented by which of the following sequences?

- epidermis - cortex - casparian strip - endodermis - sieve cells - intercellular spaces in the mesophyll - stomata
- casparian strip - root hairs - epidermis - cortex - xylem - endodermis - intercellular spaces in mesophyll - stomata
- endodermis- cortex - epidermis - vessel elements - intercellular spaces in mesophyll - stomata
- root hairs - cortex - endodermis - vessel elements - intercellular spaces in mesophyll - stomata

**68 of 100**

230 PU\_2015\_378

R – H represents which class of organic compounds?

- alcohols
- alkanes
- acids
- ethers

**69 of 100**

223 PU\_2015\_378

Which compounds are isomers?

- methanol and methanal
- n-propanol and iso-propanol
- ethane and ethanol
- ethanol and methanol

**70 of 100**

242 PU\_2015\_378

There are 20 naturally occurring amino acids. The maximum number of tripeptides that can be obtained is:-

- 5360
- 8000
- 6410
- 7465

**71 of 100**

220 PU\_2015\_378

Which one of the following is a covalent crystal?

- Ice
- Rock salt
- Quartz
- Dry ice

**72 of 100**

222 PU\_2015\_378

Among the following, the compound that contains ionic, covalent and coordinate linkage is:-

- NaCl
- NH<sub>3</sub>
- CaO
- NH<sub>4</sub>Cl

**73 of 100**

231 PU\_2015\_378

Carbohydrates are:-

- made up of amino acids
- source of energy
- hereditary molecules
- made up of pyrimidines

**74 of 100**

257 PU\_2015\_378

Wobble hypothesis is related to:-

- Fourth position of codon
- Third position of codon
- First position of codon
- Second position of codon

**75 of 100**

240 PU\_2015\_378

RNA contains:-

- peptide bond
- a deoxyribose sugar
- a ribose sugar
- all the above

**76 of 100**

221 PU\_2015\_378

How many atoms are there in benzene?

- 6
- 10
- 12
- 14

**77 of 100**

258 PU\_2015\_378

eRF1 is the release factor in eukaryotes that requires:-

- ATP and GTP for its binding to ribosome
- ATP for its binding to ribosome
- GTP for its binding to ribosome
- Mn<sup>2+</sup> for its binding to ribosome

**78 of 100**

232 PU\_2015\_378

Which atom pairs can form a polar covalent bond?

- H and Br
- N and N
- Na and Br
- H and H

**79 of 100**



224 PU\_2015\_378

Which property is generally characteristic of an organic compound?

- low melting point
- soluble in polar solvents
- insoluble in nonpolar solvents
- high melting point

80 of 100

234 PU\_2015\_378

Which is a peptide bond?

- $-\text{CO}-\text{NH}-$
- $-\text{CH}_2-\text{O}-\text{CH}_2-$
- $-\text{CH}_2-\text{NH}_2$
- $-\text{CH}_2-\text{CH}_2-$

81 of 100

285 PU\_2015\_378

In  $\text{H}_2\text{SO}_4$  there are:-

- Both ionic and covalent bonds
- Covalent bond
- Ionic bond
- Ionic, covalent and coordinate bonds

82 of 100

280 PU\_2015\_378

In bacteria, double stranded circular DNA present and bacterial chromosomes are:-

- positively super coiled
- plasmids carry genes which are essential for normal cellular activities
- no super coiling is observed in bacterial chromosome
- negatively super coiled

83 of 100

286 PU\_2015\_378

Which of the following halogens has the highest bond energy?

- $\text{Cl}_2$
- $\text{F}_2$
- $\text{I}_2$
- $\text{Br}_2$

84 of 100

265 PU\_2015\_378

The reason that a column of water in a tall tree does not sink because of its weight is:-

- the tensile strength of a column of water
- the presence of strong ion concentrations near the top of the tree
- bubbles form that are too large to be transported
- the formation of hydrogen bonds with the plants vessels

**85 of 100**

282 PU\_2015\_378

A glass rod rubbed with silk acquires a charge of  $+8 \times 10^{-12} \text{C}$ . The Number of electrons it has gained or lost.

- $5 \times 10^{-7}$  (gained)
- $5 \times 10^7$  (lost)
- $2 \times 10^{-8}$  (lost)
- $-8 \times 10^{-12}$  (lost)

**86 of 100**

263 PU\_2015\_378

In most plants, as  $\text{K}^+$  moves in or out of the guard cell to regulate the stomatal opening, there is movement in the opposite direction by:-

- $\text{Cl}^-$
- $\text{OH}^-$
- $\text{H}^+$
- $\text{Na}^+$

**87 of 100**

260 PU\_2015\_378

Hsp 60 and 70 are proteins involved in:-

- initiation of translation
- termination of translation
- protein folding
- elongation of translation

**88 of 100**

288 PU\_2015\_378

The term protein domain refers to:-

- The region on a protein that determines how it folds into a three dimensional structure
- A region in the cell where a protein can be found
- A segment of a protein that can fold independently into its own compact three-dimensional structure
- The functional activity of a protein

**89 of 100**

289 PU\_2015\_378

A car and lorry are moving with same momentum. If same brake force is applied then:-

- insufficient data to draw any conclusion
- car comes to rest in shorter distance
- lorry comes to rest in shorter distance
- both travels the same distance before coming to rest

**90 of 100**

268 PU\_2015\_378

Why is it more difficult to create transgenic animals than transgenic plants?

- It is more difficult to introduce foreign DNA into animal cells
- Animal cells cannot replicate foreign DNA
- Plants and animals use a different genetic code
- Animal cells cannot transcribe and translate foreign DNA.

**91 of 100**

262 PU\_2015\_378

One of the genes present exclusively on the X-chromosome in humans is concerned with:-

- Facial hair/moustache in males
- Baldness
- Red-green colour blindness
- Night blindness

**92 of 100**

287 PU\_2015\_378

What provides the necessary information to specify the 3-dimensional shape of a protein?

- The protein's interaction with molecular chaperones
- The protein's peptide bonds
- The protein's interactions with other polypeptides
- The protein's amino acid sequence

**93 of 100**

267 PU\_2015\_378

What is one result of an organism having meristems?

- production of a fixed number of segments during growth
- a rapid change from a vegetative state to a reproductive state
- a seasonal change in leaf morphology
- indeterminate, life-long growth

**94 of 100**

284 PU\_2015\_378

X- rays region lies between:-

- Short radio waves and visible light
- Visible light and ultraviolet regions
- Short radio waves and long radio waves
- Gamma rays and ultraviolet rays

**95 of 100**

261 PU\_2015\_378

Tetracycline blocks protein synthesis by:-

- inhibiting translocase enzyme
- inhibiting binding of aminoacyl tRNA to ribosome
- inhibiting initiation of translation
- inhibiting peptidyl transferase

**96 of 100**

269 PU\_2015\_378

Which hormone is commonly expressed in transgenic livestock to increase their growth and productivity?

- clotting factor VIII
- erythropoietin
- insulin
- bovine growth hormone

**97 of 100**

283 PU\_2015\_378

The Gauss unit is a measure of:-

- magnetic flux
- electric current
- magnetic field strength
- conductance

**98 of 100**

264 PU\_2015\_378

When a plant is flooded it often increases its:-

- cytokines
- Auxins
- ethylene
- gibberellins

**99 of 100**

266 PU\_2015\_378

The micronutrient, \_\_\_\_\_ is involved in carbohydrate transport and nucleic acid synthesis.



zinc



molybdenum



boron



copper

**100 of 100**

281 PU\_2015\_378

DNA replication and synthesis of histone proteins occur in:-



G1 phase



G2 phase



M phase



S phase