# **National Testing Agency**

Question Paner Name :	Biomolecules Structure Function in Health
Question Paper Name :	and Disease 29th August 2021 Shift 2
Subject Name :	Biomolecules Structure Function in Health
	and Disease
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## **Biomolecules Structure Function in Health and Disease -1**

No

0

100

No

**Section Id:** 940918118

Section Number:

**Edit Attended Group?:** 

Is this Group for Examiner?:

**Break time:** 

**Group Marks:** 

Section type: Online

Mandatory or Optional: Mandatory

Number of Questions: 50

Number of Questions to be attempted: 50

Section Marks: 100

**Enable Mark as Answered Mark for Review and** 

Clear Response :

**Sub-Section Number**: 1

**Sub-Section Id:** 940918164

**Question Shuffling Allowed :** Yes

Question Number: 1 Question Id: 9409185358 Question Type: MCQ Option Shuffling: No Is

Yes

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Complete transfer of one or more electrons from one atom to different atom forms.

- 1. Ionic bond
- 2. Covalent bond
- 3. Metallic bond
- 4. Co-ordinate bond

#### **Options:**

94091820045.1

94091820046.2

94091820047.3

94091820048.4

Question Number: 2 Question Id: 9409185359 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Atoms bond primarily \_\_\_\_.

- 1. reduce their potential energy of molecules and gain stability
- 2. share electrons with other molecules
- 3. help organisms to combat oxidative radicals
- 4. increase the atomic mass of the molecule

#### **Options:**

94091820049.1

94091820050.2

94091820051.3

94091820052.4

Question Number: 3 Question Id: 9409185360 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following statements about water is NOT true:

- 1. Water has a Dipole Moment of 1.85
- 2. Ice is less dense than liquid water
- 3. Ice has a rigid lattice structure.
- 4. Water structure is Triangular

## **Options:**

94091820053.1

94091820054. 2

94091820055, 3

94091820056.4

Question Number: 4 Question Id: 9409185361 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

## pH of a 0.01M NaoH solution is:

- 1.3
- 2.11
- 3.10
- 4.12

## **Options:**

94091820057.1

94091820058.2

94091820059.3

94091820060.4

Question Number: 5 Question Id: 9409185362 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Which of the following is NOT an amino acid?

- 1. Histidine
- 2. Cytidine
- 3. Threonine
- 4. Lycine

## **Options:**

94091820061.1

94091820062.2

94091820063.3

94091820064.4

Question Number: 6 Question Id: 9409185363 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

To adapt to high altitude, one of the strategies is to increase the concentration of BPG in red blood cells. What is the effect of such increase in BPG concentration on the oxygen binding curve of hemoglobin and why?

- The binding curve is shifted to the left, because hemoglobin binds oxygen more tightly in presence of BPG
- 2. The curve is shifted to the left, because hemoglobin has a lower dissociation constant in presence of BPG.
- The curve is shifted to the right, because hemoglobin has a lower affinity for oxygen in presence of BPG.
- The curve is shifted to the right, because hemoglobin has tighter oxygen binding in presence of BPG.

## **Options:**

94091820065.1

94091820066.2

94091820067.3

94091820068.4

Question Number: 7 Question Id: 9409185364 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following procedures is NOT utilized in the study of proteins?

- 1. Mass spectrometry
- 2. PCR
- 3. Isotope analysis
- 4. Reverse phase columns

#### **Options:**

94091820069.1

94091820070.2

94091820071.3

94091820072.4

Question Number: 8 Question Id: 9409185365 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Western blot assay used to test serum samples for the presence of antibodies to infectious agents, such as HIV, is particularly useful as diagnostic assay because:

- 1. It is more sensitive than FLISA
- 2. Multiple antigenic epitopes can be detected.
- 3. It provides qualitative data for sample analysis.
- 4. It is less expensive and takes less time to perform as compared with ELISA.

## **Options:**

94091820073.1

94091820074.2

94091820075.3

94091820076.4

Question Number: 9 Question Id: 9409185366 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following enzymes has specific cleavage site at Phenylalanine, Tyrosine, and Tryptophan residues:

- 1. Chymotrypsin
- 2. Trypsin
- 3. Cyanogen bromide
- 4. Acetylcholinesterase

#### **Options:**

94091820077.1

94091820078.2

94091820079.3

94091820080.4

Question Number: 10 Question Id: 9409185367 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Starch is a glucose polymer in which glucopyranose units are bonded by:

- 1. α-1,4 linkages
- 2. β-1,4linkages
- 3. y-1,4linkages
- 4. Both  $\alpha$  and  $\beta$ -linkages

## **Options:**

94091820081.1

94091820082.2

94091820083.3

94091820084.4

Question Number: 11 Question Id: 9409185368 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Ethidium bromide is used to stain DNA and the mode of its binding to DNA is by:

- 1. Major groove binding
- 2. Minor groove binding
- 3. External binding
- 4. Intercalation

## **Options:**

94091820085.1

94091820086.2

94091820087.3

94091820088.4

Question Number: 12 Question Id: 9409185369 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

One of the following sequences shows high probability to form bent DNA conformation:

- 1. d(CGCGCG)2
- 2. d(CGCGAATTCGCG)2
- 3. d(ATATATATAT)2
- 4. d(CTCGACGTT)2

## **Options:**

94091820089.1

94091820090.2

94091820091.3

94091820092.4

Question Number: 13 Question Id: 9409185370 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Amino acids Asparagine and Glutamine interact with DNA by:

- 1. Intercalation
- 2. Stacking interaction
- 3. Hydrogen bonds
- 4. Electrostatic interaction

## **Options:**

94091820093.1

94091820094.2

94091820095.3

94091820096.4

Question Number: 14 Question Id: 9409185371 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

In a cell membrane, one of the following components is found in the interior of the bilayer:

- 1. The sugar moiety of a glycoprotein
- 2. Phosphate group of the lipids
- 3. Carbon chains of fatty acids
- 4. Regions of the integral protein containing aspartic acid

## **Options:**

94091820097.1

94091820098.2

94091820099.3

94091820100.4

Question Number: 15 Question Id: 9409185372 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following is best suited as the carrier in gas chromatography?

- 1. Oxygen
- 2. Helium
- 3. Methane
- 4. Carbon dioxide

## **Options:**

94091820101.1

94091820102.2

94091820103.3

94091820104.4

Question Number: 16 Question Id: 9409185373 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

A sample containing mixture of different lipids was separated on a TLC plate. The nature of the lipid that appears at the bottom is:

- 1. Non-polar
- 2. Polar
- 3. Charged
- 4. Uncharged

## **Options:**

94091820105.1

94091820106. 2

94091820107.3

94091820108.4

Question Number: 17 Question Id: 9409185374 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

The channels that are required for movement of hydrophilic nutrients are called:

- 1. Leak channels
- 2. Voltage gated channels
- 3. Transport channels
- 4. Gap junctions

## **Options:**

94091820109.1

94091820110.2

94091820111.3

94091820112.4

Question Number: 18 Question Id: 9409185375 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Proteins that are easily separated from the membrane by giving mild treatment are:

- 1. Peripheral membrane proteins
- 2. Integral membrane proteins
- 3. Proteins towards cytosolic side
- 4. Nuclear proteins

## **Options:**

94091820113.1

94091820114.2

94091820115.3

94091820116.4

Question Number: 19 Question Id: 9409185376 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

The pathway in which cells recognize LDL-cholesterol in the bloodstream and internalize it is called:

- 1. Receptor mediated endocytosis
- 2. Scavenger pathway
- 3. Long chain fatty acid absorption
- 4. Steroid absorption

## **Options:**

94091820117.1

94091820118.2

94091820119.3

94091820120.4

Question Number: 20 Question Id: 9409185377 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

D-glucose has 4 chiral centres; the number of possible stereoisomers are:

- 1.4
- 2.8
- 3.12
- 4.16

## **Options:**

94091820121.1

94091820122.2

94091820123.3

94091820124.4

Question Number: 21 Question Id: 9409185378 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following statements about bond length and bond energies in a molecule is true:

- 1. The lower the bond energy, the shorter the bond length
- 2. The higher the bond energy, the shorter the bond length
- 3. Their relationship is dependent on the nature of molecule
- 4. The higher the bond energy, the longer the bond length

#### **Options:**

94091820125.1

94091820126. 2

94091820127.3

94091820128.4

Question Number: 22 Question Id: 9409185379 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

One of the following statements regarding B cell hybridoma is true?

- 1. They are immortal cell lines that produce antibodies with more than one specificity.
- 2. They are derived from B cells that are first cloned and grow in cell culture for short periods.
- 3. They contain two nuclei.
- 4. They are derived by fusing B cells with malignant plasma cells that are unable to secrete immunoglobulin.

## **Options:**

94091820129.1

94091820130.2

94091820131.3

94091820132.4

Question Number: 23 Question Id: 9409185380 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following is NOT an essential amino acid:

- 1. Ser
- 2. Phe
- 3. Val
- 4. Thr

## **Options:**

94091820133. 1

94091820134.2

94091820135.3

94091820136.4

Question Number: 24 Question Id: 9409185381 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

In sickle-cell anemia, the negatively charged glutamic acid residue is replaced by one of the following amino acid:

- 1. Glycine
- 2. Valine
- 3. Alanine
- 4. Leucine

## **Options:**

94091820137.1

94091820138.2

94091820139.3

94091820140.4

Question Number: 25 Question Id: 9409185382 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

In the Golgi apparatus glycosylation on a protein occurs at Ser or Thr residue and this is referred to as:

- 1. N-glycosylation
- 2. O-glycosylation
- 3. N-mannosylation
- 4. O-mannosylation

## **Options:**

94091820141.1

94091820142.2

94091820143.3

94091820144.4

Question Number: 26 Question Id: 9409185383 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Cis-platin, the anticancer drug binds to DNA by:

- 1. Intercalation
- 2. Alkylation
- 3. Major groove binding
- 4. Minor groove binding

## **Options:**

94091820145.1

94091820146.2

94091820147.3

94091820148.4

Question Number: 27 Question Id: 9409185384 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following histone proteins does NOT participate in the nucleosome core:

- 1. H1
- 2. H2A
- 3. H2B
- 4. H3

## **Options:**

94091820149.1

94091820150. 2

94091820151.3

94091820152.4

Question Number: 28 Question Id: 9409185385 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

## Cholesterol plays a vital role in membrane:

- 1. Functions as a channel
- 2. Serves as a signal for protein sorting in the trans face of the Golgi apparatus
- 3. Broadens the thermal transition temperature thereby preventing rapid phase transitions in the membrane
- 4. Serves in cell recognition

## **Options:**

94091820153.1

94091820154. 2

94091820155.3

94091820156.4

Question Number: 29 Question Id: 9409185386 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Adsorption in chromatography is a process of:

- 1. Attenuation
- 2. Partitioning
- 3. Retention
- 4. Transmission

## **Options:**

94091820157.1

94091820158.2

94091820159.3

94091820160.4

Question Number: 30 Question Id: 9409185387 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

The principle of electrophoresis is based on the following property of the molecule:

- 1. Size
- 2. Shape
- 3. Charge
- 4. Density

## **Options:**

94091820161.1

94091820162.2

94091820163.3

94091820164.4

Question Number: 31 Question Id: 9409185388 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following is a modified base found in RNA:

- 1. DihydroUridine
- 2. 5'methylcytosine
- 3. Guanosine
- 4. 2'-deoxyadenosine

## **Options:**

94091820165.1

94091820166.2

94091820167.3

94091820168.4

Question Number: 32 Question Id: 9409185389 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

The electromagnetic radiation that has wavelength in the range of inter atomic distances: 1. U.V rays 2. X-rays 3. Radio waves 4. IR rays **Options:** 94091820169.1 94091820170.2 94091820171.3 94091820172.4 Question Number: 33 Question Id: 9409185390 Question Type: MCQ Option Shuffling: No Is **Question Mandatory: No** Correct Marks: 2 Wrong Marks: 0 Hemoglobin molecule is made up of the following subunits: 1. 1α,1β,2γ 2. 1α,2β,1γ

## **Options:**

2α,2 γ
2α,2β

94091820173.1

94091820174. 2

94091820175.3

94091820176.4

Question Number: 34 Question Id: 9409185391 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

The carbon atom of the sugar moiety is joined to nucleic acid base is:

- 1. C5' of pentose
- 2. C4' of pentose
- 3. C3' of pentose
- 4. C1' of pentose

## **Options:**

94091820177.1

94091820178.2

94091820179.3

94091820180.4

Question Number: 35 Question Id: 9409185392 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following is NOT a purine based structure:

- 1. Xanthine
- 2. Uric Acid
- 3. Adenine
- 4. Thiamine

## **Options:**

94091820181.1

94091820182. 2

94091820183.3

94091820184.4

Question Number: 36 Question Id: 9409185393 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Glucose, a chief component in plants is a polymer of glucose units linked by:

- 1. α-1,4 linkages
- 2. β-1,4 linkages
- 3. γ-1,4 linkages
- 4. both  $\alpha$  and  $\beta$ -linkages

## **Options:**

94091820185.1

94091820186.2

94091820187.3

94091820188.4

Question Number: 37 Question Id: 9409185394 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

**Correct Marks: 2 Wrong Marks: 0** 

The following is produced by the mast cells and is used as an anticoagulant:

- 1. Chondrotin
- 2. Keratan
- 3. Heparin
- 4. Dermatan

## **Options:**

94091820189.1

94091820190.2

94091820191.3

94091820192.4

Question Number: 38 Question Id: 9409185395 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

In systems biology "Systems" referred to as:

- 1. Closed systems
- 2. Integrated Systems
- 3. Additive systems
- 4. Defined systems

## **Options:**

94091820193.1

94091820194.2

94091820195.3

94091820196.4

Question Number: 39 Question Id: 9409185396 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

One of the following statements about histone acetylation chromatin is TRUE:

- 1. Neutralizes positive histone charges and binds to DNA more tightly
- 2. Neutralizes negative histone charges and binds to DNA more tightly
- 3. Increases positive histone charges and binds to DNA more tightly
- 4. Neutralizes positive histone charges and binds to DNA more loosely

#### **Options:**

94091820197.1

94091820198.2

94091820199.3

94091820200.4

Question Number: 40 Question Id: 9409185397 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Modern Biology is rapidly shifting from a single system based experiment to:

- 1. Binary system
- 2. Semi quantitative system
- 3. Multiple based system
- 4. Omics based system

## **Options:**

94091820201.1

94091820202.2

94091820203.3

94091820204.4

Question Number: 41 Question Id: 9409185398 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Which of the following sequences is most prone to local melting?

- 1. GGGGGGG
- 2. ATATATAT
- 3. CGCGCGCG
- 4. ATCGATCG

#### **Options:**

94091820205.1

94091820206.2

94091820207.3

94091820208.4

Question Number: 42 Question Id: 9409185399 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

## Which of the following is NOT connected with replication of circular DNA

- 1. Rolling circle,
- 2. DNA polymerase-III,
- 3. Topoisomerase,
- 4. Concatemer.

## **Options:**

94091820209.1

94091820210.2

94091820211.3

94091820212.4

Question Number: 43 Question Id: 9409185400 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Which of the following statements is correct

- 1. The A site in the ribosome binds to an aminoacyl-mRNA
- 2. The A site in the ribosome binds to an aminoacyl-rRNA
- 3. The A site in the ribosome binds to an amino acid
- 4. The A site in the ribosome binds to an aminoacyl-tRNA

## **Options:**

94091820213.1

94091820214. 2

94091820215.3

94091820216.4

Question Number: 44 Question Id: 9409185401 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

The following Except one are various types of RNAs present in the cell

- 1. 1 rRNA
- 2.2 mRNA
- 3.3 mi RNA
- 4. cRNA

## **Options:**

94091820217.1

94091820218.2

94091820219.3

94091820220.4

Question Number: 45 Question Id: 9409185402 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

The major storage form of lipids is:

- 1. Sphingolipid
- 2. Glycolipid
- 3. Cholesterol
- 4. Triacylglycerol

## **Options:**

94091820221.1

94091820222. 2

94091820223.3

94091820224.4

Question Number: 46 Question Id: 9409185403 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

An animal needs to store lipid for long term, but does not want to carry an extra weight of water, then which would be the preferred storage form of lipid?

- 1. Fructose in the form of honey
- 2. Starch
- 3. Glycogen
- 4. Fat molecules

## **Options:**

94091820225.1

94091820226.2

94091820227.3

94091820228.4

Question Number: 47 Question Id: 9409185404 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

How many ATP molecules are needed for one step of myosin.

- 1. One
- 2. Two
- 3. Three
- 4. Four

## **Options:**

94091820229.1

94091820230.2

94091820231.3

94091820232.4

Question Number: 48 Question Id: 9409185405 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

The collagen is made up of extended left hand helix with

- 1. 3 residues / turn and with 9.6 Å rise per turn.
- 2. 4 residues / turn and with 9.6 Å rise per turn.
- 3. 3.3 residues /turn and 10 Årise per turn
- 4. 3.3 residues / turn and with 9.6 Å rise per turn.

## **Options:**

94091820233.1

94091820234. 2

94091820235.3

94091820236, 4

Question Number: 49 Question Id: 9409185406 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Correct Marks: 2 Wrong Marks: 0

Which is of the following statement regarding B cell hybridoma is true?

- 1. They are immortal cell lines that produce antibodies with more than one specificity.
- 2. They are derived from B cells that are first cloned and grow in cell culture for short periods.
- 3. They contain two nuclei.
- They are derived by fusing B cells with malignant plasma cells that are unable to secrete immunoglobulin.

## **Options:**

94091820237.1

94091820238. 2

94091820239.3

94091820240.4

Question Number: 50 Question Id: 9409185407 Question Type: MCQ Option Shuffling: No Is

**Question Mandatory: No** 

Western blot assay used to test serum samples for the presence of antibodies to infectious agents, such as HIV, are particularly useful as diagnostic assay because

- 1. They are more sensitive than ELISA
- 2. Ab specific for multiple antigenic epitopes can be detected
- 3. They provide qualitative data for sample analysis
- 4. They are less expensive and take less time to perform as compared with ELISA

## Options:

94091820241.1

94091820242. 2

94091820243.3

94091820244.4