

(Academic Session: 2023 - 2024)

# **ONLINE CLASSROOM CONTACT PROGRAMME**

**Course : NEET (NURTURE)** 

PHASE-4

Test Pattern (NEET)

## Date: 18-06-2023

## Paper Type: Practice Test

#### READ THE INSTRUCTIONS CAREFULLY

#### Important Instructions:

- The test is of 1 Hour 40 minutes duration and it contains 100 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 364.
- In this Test, subject Physics will consist of two sections (Section A & Section B). Section A will consist of 20 questions (all questions are mandatory) and Section B will have 5 questions. Candidate can choose to attempt any 3 questions out of these 5 questions. In case if candidate attempts more than 3 questions, first 3 attempted questions will be considered for marking.
- Subject Chemistry will consist of two sections (Section A & Section B). Section A will consist of 20 questions (all questions are mandatory) and Section B will have 5 questions. Candidate can choose to attempt any 3 questions out of these 5 questions. In case if candidate attempts more than 3 questions, first 3 attempted questions will be considered for marking.
- 4. Subject Biology will consist of two sections (Section A & Section B). Section A will consist of 35 questions (all questions are mandatory) and Section B will have 15 questions. Candidate can choose to attempt any 10 questions out of these 15 questions. In case if candidate attempts more than 10 questions, first 10 attempted questions will be considered for marking.

### **Your Hard Work Leads to Strong Foundation**

### **ALLEN** Digital

🌺 Corporate Address : One Biz Square, A-12 (a), Road No. 1, Indraprastha Industrial Area, Kota - 324005 (Raj.)

💱 +91-9513736499 | 오 +91-7849901001 | 🔀 wecare@allendigital.in | 🚭 digital.allen.ac.in



## **SUBJECT : PHYSICS**

## **Topic : Basic Maths, Vectors, Kinematics**

## SECTION-A Attempt All 20 questions

- 1. If the distance covered is zero, the displacement:-
  - (1) must be zero
  - (2) may or my not be zero
  - (3) cannot be zero
  - (4) depends upon the particle
- A runner completes one round of a circular path of radius r in 40 seconds. His displacement after 2 minutes 20 seconds will be :-
  - (1) Zero (2)  $2\pi r$
  - (3) 2r (4)  $7\pi r$
- A motor cyclist from A to B in a circular path of radius r. The ratio of the distance and magnititude of displacement is :



- **4.** A Body moves 6m north. 8m east and 10m vertically upwards, what is its resultant displacement from initial position ?
  - (1)  $10\sqrt{2}m$  (2) 10m (3)  $\frac{10}{\sqrt{2}}m$  (4)  $10 \times 2m$

- 5. The numerical ratio of distance to magnitude of displacement is :-
  - (1) Always equal to one
  - (2) Always less than one
  - (3) Always greater than one
  - (4) Equal to or more than one
- 6. An object initially at position vector  $2\hat{i} + 5\hat{j} + \hat{k}$ is given a displacement  $8\hat{i} - 2\hat{j} + \hat{k}$ . The coordinates of final position are :
  - (1) (10, 3, 2) (2) (6, 3, 0)
  - (3) (10, 7, 2) (4) (6, 3, 2)
- 7. If a car covers  $2/5^{th}$  of the total distance with  $v_1$  speed and  $3/5^{th}$  distance with  $v_2$  then average speed is :-

(1) 
$$\frac{1}{2}\sqrt{v_1v_2}$$
 (2)  $\frac{v_1 + v_2}{2}$   
(3)  $\frac{2v_1v_2}{v_1 + v_2}$  (4)  $\frac{5v_1v_2}{3v_1 + 2v_2}$ 

- A particle moving in a straight line covers half the distance with speed of 3 m/s. The other half of the distance is covered in two equal time intervals with speed of 4.5 m/s and 7.5 m/s respectively. The average speed of the particle during this motion is :-
  - (1) 4.0 m/s (2) 5.0 m/s
  - (3) 5.5 m/s (4) 4.8 m/s

An insect crawls a distance of 4m along north in 10 s and then a distance of 3m along east in 5 s. The average velocity of the insect is :-

(1) 
$$\frac{7}{15}$$
 m/s (2)  $\frac{1}{5}$  m/s  
(3)  $\frac{1}{3}$  m/s (4)  $\frac{4}{5}$  m/s

8.

9.



- Velocity of a particle varies with time 't' as v = t10. - 1. Find the magnitude of average velocity over the time from t = 0 to t = 2 sec :-
  - (1) 1.5 m/s(2) 2 m/s
  - (3) 1 m/s (4) zero
- Find  $\frac{d}{dx}(x^3e^x)$ 11. (2)  $x^3e^x + 3x^2e^x$ (1)  $x^3 e^x$ (3)  $3x^2e^x$ (4)  $x^3e^x - 3x^2e^x$
- Assertion :  $\sin 2^\circ = \frac{\pi}{90}$ 12. **Reason :**  $\sin\theta \approx \theta$  (if  $\theta$  is very small)
  - (1) Both A and R are true and R is the correct explanation of A
  - (2) Both A and R are true and R is not the correct explanation of A
  - (3) A is true but R is false
  - (4) A is false but R is true
- The value of  $1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \dots$  upto  $\infty$ , 13. is :-
  - (1)  $\frac{5}{4}$ (2)  $\frac{4}{3}$ (4)  $\frac{7}{3}$ (3)  $\frac{6}{5}$
- The unit vector along  $\hat{i} + \hat{j}$  is :-14.

(1) 
$$\hat{k}$$
 (2)  $\hat{i} + \hat{j}$   
(3)  $\frac{\hat{i} + \hat{j}}{\sqrt{2}}$  (4)  $\frac{\hat{i} + \hat{j}}{2}$ 

**15.** If  $\vec{a} = 2\hat{i} + 2\hat{j} + \hat{k}$  &  $\vec{b} = -\hat{i} + \hat{j} + 2\hat{k}$ and  $\vec{c} = 3\hat{i} + \hat{j}$  such that  $(\vec{a} + \lambda \vec{b})$ perpendicular to  $\overrightarrow{c}$ , Find  $\lambda$ .

 $\frac{\hat{i}+\hat{j}}{\hat{i}+\hat{j}}$ 

(1) 2(2) -6(3) 0 (4) 4

- 16. Two adjacent sides of a parallelogram are represented by two vector  $\hat{i} + 2\hat{j} + 3\hat{k}$  and  $3\hat{i} - 2\hat{j} + \hat{k}$ . What is the area of parallelogram ?
  - (1) 8 (2)  $8\sqrt{3}$
  - (3)  $3\sqrt{8}$ (4) 192
- Two force vectors of same magnitude are 17. arranged in the following manner :-



- 19. The magnitude of pairs of displacement vectors are given. Which pairs of displacement vectors cannot be added to give a resultant vector of magnitude 13 cm?
  - (1) 4 cm, 16 cm (2) 20 cm, 7 cm
  - (3) 1 cm, 15 cm (4) 6 cm, 8 cm
- A particle is moving with speed 6 m/s along the 20. direction of  $\vec{A} = 2\hat{i} + 2\hat{j} - \hat{k}$ , then its velocity is :
  - (1)  $(4\hat{i} + 2\hat{j} 4\hat{k})$  units (2)  $(4\hat{i} + 4\hat{j} - 2\hat{k})$  units
  - (3)  $(4\hat{i} + 4\hat{i} 4\hat{k})$  units
  - (4)  $(2\hat{i} + 4\hat{j} 2\hat{k})$  units



### **SECTION-B**

This section will have 5 questions. Candidate can choose to attempt any 3 questions out of these 5 questions. In case if candidate attempts more than 3 questions, first 3 attempted questions will be considered for marking.

- 21. A particle travels from point A (2, 7, 5) m to point B(8, 7, 7)m then displacement of particle is:-
  - (1)  $\sqrt{10}$  m along x-axis
  - (2)  $2\sqrt{10}$  m along x-axis

(3) 
$$2\sqrt{10}$$
 m, at  $\theta = \cos^{-1}\left(\frac{3}{\sqrt{10}}\right)$  with x-axis  
(4)  $2\sqrt{10}$  m, at  $\theta = \cos^{-1}\left(\frac{1}{\sqrt{10}}\right)$  with x-axis

- 22. A car travels a distance A to B at a speed of 40 km/h and returns to A at a speed of 30 km/h :-(i) What is the average speed for the whole journey?
  - (ii) What is the average velocity?
  - (1) 34.3 km/hr., 0
  - (2) 44.3 km/hr., 0
  - (3) 34.3 km/hr., 34.3 km/hr
  - (4) none of these

- 23. The relation  $3t = \sqrt{3x} + 6$  describes the displacement of a particle in one direction where x is in metres and t in sec. The displacement, when velocity is zero, is :-
  - (1) 24 metres
  - (2) 12 metres
  - (3) 5 metres
  - (4) Zero
- 24. A particle is located at x = 5 initially, and starts moving along +ve x-direction with velocity 'v' which varies as  $v = 5\sqrt{x}$ . Find time dependence of acceleration.

(1) 
$$a \propto t^{1/2}$$
  
(2)  $a \propto t^{-1/2}$ 

(3) 
$$a \propto \frac{1}{t}$$

- 25. A particle moves rectilinearly whose position x, varies with time t as  $x = t^3 2t^2 + 5$ , its acceleration when velocity is becomes zero is.
  - (1) 4 & -4
  - (2) 4 & 0
  - (3) 0 & -4
  - (4)  $\frac{4}{3}$  &0



## **SUBJECT : CHEMISTRY**

## **Topic : Periodic Table**

carbon family?

## SECTION-A Attempt All 20 questions

26. Which of the following is not isoelectronic series :-

(1) 
$$Cl^{-}$$
,  $P^{3-}$ ,  $Ar$  (2)  $N^{3-}$ ,  $Ne$ ,  $Mg^{+2}$   
(3)  $B^{+3}$ ,  $He$ ,  $Li^{+}$  (4)  $N^{3-}$ ,  $S^{2-}$ ,  $Cl^{-}$ 

- 27. What will be the general configuration of
  - (1)  $ns^2 np^1$  (2)  $ns^2$ (3)  $ns^2 np^2$  (4)  $ns^2 np^4$
- **28.** Which of the following is smallest in radius :-
  - (1) 1s<sup>2</sup>, 2s<sup>2</sup> 2p<sup>6</sup>, 3s<sup>1</sup>
     (2) 1s<sup>2</sup>, 2s<sup>2</sup> 2p<sup>6</sup>, 3s<sup>2</sup> 3p<sup>5</sup>
     (3) 1s<sup>2</sup>, 2s<sup>2</sup> 2p<sup>6</sup>, 3s<sup>2</sup> 3p<sup>3</sup>
     (4) 1s<sup>2</sup>, 2s<sup>2</sup> 2p<sup>6</sup>, 3s<sup>2</sup>
- **29.** Which of the following order of atomic/ionic radius is not correct :-
  - (1)  $I^- > I > I^+$  (2)  $Mg^{+2} > Na^+ > F$ (3)  $P^{+5} < P^{+3}$  (4) Li > Be > B
- **30.** Which of the following value may be correct for covalent & vanderwaals radii of Nitrogen-
  - (1) 1.54 & 1.34
    (2) 1.54 & 0.77
    (3) 0.77 & 1.54
    (4) 1.20 & 1.20
- **31.** Most electropositive element is :-
  - (1) Cl
    (2) Mg
    (3) P
    (4) S
- **32.** Which orbital fills completely immediately before the 4f
  - (1) 6s (2) 5p (3) 5d (4) 4d

- **33.** In which pair first atom has more  $Z_{eff}$  than second atom?
  - (1) Be, B (2) C, N
  - (3) Na, K (4) F, O
- **34.** The ionic radii of  $N^{3-}$ ,  $O^{2-}$  and  $F^{-}$  are respectively given by :-
  - (1) 1.36, 1.40, 1.71 (2) 1.36, 1.71, 1.40
  - (3) 1.71, 1.40, 1.36 (4) 1.71, 1.36, 1.40
- **35.** Which of the following has maximum I.P :-
  - (1) Li (2) He
  - (3) Ne (4) Na
- **36.** Ionisation potential is lowest for a period
  - (1) Halogens
  - (2) Inert gas
  - (3) Alkali metals
  - (4) Alkaline earth metals
- 37. The IE<sub>1</sub>, IE<sub>2</sub>, IE<sub>3</sub>, IE<sub>4</sub> and IE<sub>5</sub> of an element are
  7.1, 14.5, 34.0, 46.8, 163 ev respectively. The likely element could be :-
  - (1) Sodium (2) Fluorine
  - (3) Silicon (4) Boron
- **38.** The electron affinity values for the halogens shown the following trend :-
  - (1) F < Cl > Br > I (2) F < Cl < Br < I
  - (3) F > Cl > Br > I (4) F < Cl > Br < I
- **39.** Electron affinity is highest for :-
  - (1) Halogen (2) Alkali metal
  - (3) Inert gas (4) All



- **40.** Which of the following configurations has highest EA.
  - (1)  $_{10}$ [Ne]  $3s^2 3p^1$
  - (2)  $_{10}$ [Ne]  $3s^2 3p^5$
  - (3)  $_{10}$ [Ne]  $3s^2 3p^6 4s^2 3d^5$
  - (4)  $_{2}$ [He]  $2s^{2} 2p^{5}$
- 41. Which of the following order of radii is correct
  - (1) Li < Be < Mg (2)  $\text{H}^+ < \text{Li}^+ < \text{H}^-$ (3) O < F < Ne (4)  $\text{Na}^+ > \text{F}^- > \text{O}^{-2}$
- **42.** Amongst the elements with following electronic configurations, which one of them may have the highest ionization energy :-
  - (1)  $[Ne]3s^2 3p^1$  (2)  $[Ne]3s^2 3p^3$ (3)  $[Ne]3s^2 3p^2$  (4)  $[Ar]3d^{10} 4s^2 4p^3$
- **43.** IE of 1<sup>st</sup> values of A1, Si and S are 496, 530 and 640 kJ/mol respectively then what will be 1<sup>st</sup> IE value for phosphorus ?
  - (1) More than 640 kJ/mol
  - (2) Between [496-530] kJ/mol
  - (3) Between [530-640] kJ/mol
  - (4) Can't be predicted
- **44.** Arrange the elements in increasing order of atomic radius Na, Rb, K, Mg :-
  - (1) Na, K, Mg, Rb (2) K, Na, Mg, Rb
  - (3) Mg, Na, K, Rb (4) Rb, K, Mg, Na
- **45.** Which of the following radius order is not correct?
  - (1)  $Ti < Zr \approx Hf$
  - (2)  $B < Al \approx Ga < In \approx Tl$
  - (3)  $Sc < Y \approx La$
  - $(4) \quad O < N < S < P$

## SECTION-B

This section will have 5 questions. Candidate can choose to attempt any 3 questions out of these 5 questions. In case if candidate attempts more than 3 questions, first 3 attempted questions will be considered for marking.

- **46.** The element X, Y, Z & T have the indicated electronic configurations starting with the innermost shell, which is the most metallic element -
  - (1) X = 2,8,4 (2) Y = 2,8,8
  - (3) Z = 2,8,8,1 (4) T = 2,8,8,7
- 47. Elements X, Y and Z have atomic numbers 19, 37 and 55 respectively. Which of the following statements is true?
  - (1) Their ionisation potential would increase with the increasing atomic number
  - (2) Y would have an ionisation potential in between those of X and Z
  - (3) Z would have the highest ionisation potential
  - (4) Y would have the highest ionisation potential
- **48.** Which process is exothermic :
  - (1)  $N \rightarrow N^-$  (2)  $P \rightarrow P^+$
  - (3)  $Na^+ \rightarrow Na$  (4)  $Ne \rightarrow Ne^-$
- **49.** The electron affinity
  - (1) Of carbon is greater than oxygen
  - (2) Of fluorine is less than iodine
  - (3) Of fluorine is less than Chlorine
  - (4) Of sulphur is less than oxygen
- **50.** Select the correct atomic radius order :-
  - (1) N > O > F > Ne (2) N < O < F > Ne
  - (3) N > O > F < Ne (4) N < O < F < Ne



## **SUBJECT : BIOLOGY**

## Topic : Biomolecules, Respiration in Plants, Locomotion & Movement

#### SECTION-A

#### Attempt All 35 questions

- Assertion :- Phospholipid is amphipathic molecule.
   Reason :- Phospholipid contains both hydrophobic and hydrophilic parts.
  - (1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
  - (2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
  - (3) Assertion is True but the Reason is False.
  - (4) Both Assertion & Reason are False.
- 52. Assertion :- Amino acid may present as zwitter ion.Reason :- Amino acid can contain both positive and negative charge in equal quantity in its structure.
  - Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
  - (2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
  - (3) Assertion is True but the Reason is False.
  - (4) Both Assertion & Reason are False.
- 53. In a glycogen molecule, successive glucose units are joined together by X and branches are linked together by Y. Identify X and Y.
  - (1)  $X = 1, 6-\alpha$ -glycosidic bonds  $Y = 1, 6-\alpha$ -glycosidic bonds
  - (2)  $X = 1,6-\alpha$ -glycosidic bonds  $Y = 1,4-\alpha$ -glycosidic bonds
  - (3)  $X = 1,4-\alpha$ -glycosidic bonds  $Y = 1,6-\alpha$ -glycosidic bonds
  - (4)  $X = 1, 4-\alpha$ -glycosidic bonds  $Y = 1, 4-\alpha$ -glycosidic bonds

- 54. Which of the following is/are cellulosic?
  - (i) Paper (ii) Cotton fibre
  - (iii) Chitin (iv) Glycogen
  - (1) (i) and (ii) only
  - (2) (i) and (iii) only
  - (3) (i), (iii) and (iv) only
  - (4) (iii) and (iv) only
- 55. In following graphical representation A, B and C



- (1) A = Product, B = Potential energy, C = Substrate
- (2) A = Product, B = Substrate, C = Potential energy
- (3) A = Potential energy, B = Substrate, C = Product
- (4) All of these
- **56.** Find out the incorrect statment
  - (1) Inulin is a polysaccharide, obtained from the roots of Dahlia
  - (2) GLUT-4 protein enables glucose transport into cells
  - (3) Ribose sugar is present in RNA and ATP
  - (4) Sucrose is a dipeptide, commonly known as table sugar



- **57.** Find the incorrect statement.
  - (1) Oils have higher melting point than ghee
  - (2) Palmitic acid has 15 carbon atom excluding carboxylic group
  - (3) Lectin is a secondary metabolite
  - (4) Unsaturated falty acids have single hydrogen bonds also
- 58. Given below are true statement :
   Statement I : Palmitic acid has 18 carbons including carboxyl carbon.

**Statement II** : Arachidonic acid has 20 carbon atoms including the carboxyl carbon.

Chose the correct answer from the options given below-

- (1) Both statement I and Statement II are correct
- (2) Both statement I and Statement II are incorrect
- (3) statement I is correct but statement II is incorrect
- (4) statement I is incorrect but statement II is correct
- **59.** Given below are true statement :

**Statement I** : Primary metabolites have identifiable function and play known role in normal physiological process.

**Statement II** : Secondary metabolites also have known functions but do not have any ecological role.

Choose the correct answer from the options given below-

- (1) Both statement I and Statement II are correct.
- (2) Both statement I and Statement II are incorrect.
- (3) Statement I is correct but statement II is incorrect.
- (4) Statement I is incorrect but statement II is correct.

**60.** Match the columns I and II, and choose the correct combination from the options given :

	Column-I		Column-II
(a)	Acidic amino acid	1	Valine
(b)	Basic amino acid	2	Glutamic acid
(c)	Neutral amino acid	3	Phenylalanine
(d)	Aromatic amino acid	4	Lysine

(1) a-2, b-4, c-1, d-3

- (2) a-2, b-1, c-4, d-3
- (3) a-3, b-2, c-1, d-4
- (4) a-1, b-4, c-3, d-2
- **61.** In a polysaccharide chain left and right ends are respectively :-
  - (1) Reducing and non-reducing
  - (2) Non-reducing and reducing
  - (3) Reducing and reducing
  - (4) Non-reducing and non-reducing
- **62.** Identify the correct match from the following table –

	Column-I	Column-II	Column-III				
(i)	Alkaloid	Abrin	Ricin				
(ii)	Drug	Vinblastin	Curcumin				
(iii)	Toxins	Codeine	Cellulose				
(1) (	i) Only	(2)	(ii) only				

- (3) (i) and (ii) (4) (ii) and (iii)
- **63.** Which one of the following bond is seen in  $\beta$ -pleated sheet structure of protein other than peptide bond ?
  - (1) Ionic bond
  - (2) Disulphide bond
  - (3) Hydrophobic bond
  - (4) Intermolecular hydrogen bond



- 64. Simplest monosaccharide composed of :-
  - (1) One carbon (2) Three carbon
  - (3) Two carbon (4) Six carbon
- **65.** Which types of bond are not broken in denaturation of protein :-
  - (1) Peptide bonds
  - (2) Disulphide bond
  - (3) Hydrogen bonds
  - (4) 1 & 2 both
- **66.** Assertion : The ratio of the volume of  $CO_2$  evolved to the volume of  $O_2$  consumed in respiration is called respiratory quotient.

**Reason :** The respiratory quotient depends upon the type of respiratory substrate used during respiration.

- (1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
- (2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
- (3) Assertion is True but the Reason is False.
- (4) Both Assertion & Reason are False.
- 67. Statement-I : During glycolysis ATP is utilised in two steps-first in the conversion of glucose into Glucose-6-phosphate and second in conversion of 1,3 Bis-phosphoglyceric acid to 3phosphoglyceric acid.

**Statement-II**: Fructose 1,6-bisphosphate is split into dihydroxyacetone phosphate and 3-phosphoglyceraldehyde.

- (1) Statement I and II both are correct
- (2) Statement I and II both are incorrect
- (3) Only Statement I is correct
- (4) Only Statement II is correct
- LEADER COURSE PHASE-4

- **68.** In EMP pathway (choose the correct one) :-
  - Glucose undergoes complete oxidation to form two molecules of pyruvic acid
  - (2) Glucose undergoes complete oxidation to form one molecule of pyruvic acid
  - (3) Glucose undergoes partial oxidation to form one molecule of pyruvic acid
  - (4) Glucose undergoes partial oxidation to form two molecules of pyruvic acid

### **69.** Which of the following is correct step?

- (1) Pyruvic acid + NAD<sup>+</sup>  $\frac{Pyruvate}{dehydrogenase}$ Acetyl-CoA + NADH + H<sup>+</sup>
- (2) Pyruvic acid + NAD<sup>-</sup>  $\frac{Mg^{++}}{Phosphodikinase}$ Acetyl-CoA + NAD<sup>+</sup>
- (3) Pyruvic acid  $\xrightarrow{Mg^{+2}}$  Acetyl-CoA + NADH
- (4) Pyruvic acid + CoA + NAD<sup>+</sup>  $\xrightarrow{Mg^{+2}} Acetyl-CoA + NADH + H^{+} + CO_{2}$
- 70. Recognise the figure and find out the correct matching :-



- (1) a-F<sub>1</sub>, b-F<sub>0</sub>, c-intermembrane space, d-outer mitochondrial membrane
- (2) a-F<sub>0</sub>, b-F<sub>1</sub>, c-intermembrane space, d-outer mitochondrial membrane
- (3)  $a-F_1$ ,  $b-F_0$ , c-matrix, d-inner mitochondrial membrane
- (4)  $a-F_0$ ,  $b-F_1$ , c-matrix, d- inner mitochondrial membrane



- 71. Net gain of ATP in anaerobic respiration is
  - (1) 36 ATP (2) 2 ATP
  - (3) 38 ATP (4) 8 ATP
- **72.** Oxidation of a molecule of Acetyl–co–A gives:
  - (1) 15 ATP (2) 24 ATP
  - (3) 12 ATP (4) 30 ATP
- **73.** The first 5-C dicarboxylic acid in Krebs' cycle which is used in nitrogen metabolism is :-
  - (1) OAA
  - (2) citric acid
  - (3)  $\alpha$ -ketoglutaric acid
  - (4) acetyl coenzyme A
- 74. Read the following four statements (A-D).(A) Mannose is monosaccharide
  - (B) Glucose is laevorotatory
  - (C) Galactose has 12 H-atoms
  - (D) Glucose & Fructose are isomers
  - How many of the above statements are correct ?
  - (1) 1 (2) 2
  - (3) 3 (4) 4
- 75. Spinal cord passes through :-
  - (1) foramen of monro
  - (2) obturator foramen
  - (3) odontoid foramen
  - (4) foramen of magnum
- **76.** Which of the following is a flat bone ?
  - (1) Tibia (2) Malleus
  - (3) Sternum (4) Tarsal
- **77.** During muscle contraction of skeletal muscles Ca<sup>++</sup> bind to ?
  - (1) Actin (2) Troponin 'C'
  - (3) Troponin 'T' (4) Myosin ATPase

- **78.** During contraction of muscle which process not occur :-
  - (1) Length of sarcomere decrease
  - (2) Length of I-band and A-band decreases
  - (3) Length of actin filaments and myosin filaments remain same
  - (4) H-zone disappear
- 79. Striated muscle contracted by :-
  - (1) Pulling together of myosin filament
  - (2) Sliding of actin filament upon thick filament
  - (3) Sliding of thin filament upon actin filament
  - (4) Sliding of thick filament upon thin filament
- **80.** During muscle contraction which part of muscle fibre remain unchanged ?
  - (1) Sarcomere length
  - (2) I-band or light band
  - (3) A-band or dark band
  - (4) H-zone
- **81.** Humerus with its rounded upper end (head) articulate into :-
  - (1) Acromian process
  - (2) Deltoid cavity
  - (3) Glenoid cavity
  - (4) Acetabulum cavity
- 82. The clavicle or collar bone articulates with
  - (1) Glenoid cavity
  - (2) Cervical vertebrae
  - (3) Coxal bone
  - (4) Acromian process

**LEADER COURSE PHASE-4** 



**83.** Three of the following pairs of the human skeletal parts are correctly matched with their respective inclusive skeletal category and one pair is not matched. Identify the non-matching pair :-

	Pairs of skeletal parts	Category
(1)	Incus and stapes	Ear osside
(2)	Sternum and vertebral column	Axial skeleton
(3)	Femur and tibia	Appandicular skeleton
(4)	Scapula and clavicle	Pelvic girdle

- **84.** How many of the following bones belong to axial skeletal system ?
  - (i) Ulna(ii) Ischium(iii) Tibia(iv) Frontal(v) Sternum(vi) False ribs
  - (1) Six
  - (2) Five
  - (3) Four
  - (4) Three
- **85.** Which statements are incorrect ?
  - (A) During muscle contraction A-band decreases.

(B) Red muscle fibers contains high quantity of myoglobin.

- (C) M line join "A" band
- (D) Z line appears between H zone
- (1) A and D
- (2) B and D
- $(3) \ A \ and \ C$
- (4) C and D

## **SECTION-B**

This section will have 15 questions. Candidate can choose to attempt any 10 questions out of these 15 questions. In case if candidate attempts more than 10 questions, first 10 attempted questions will be considered for marking.

**86.** Assertion :- Two redox-equivalents are removed from PGAL during glycolysis.

**Reason** :- Two molecules of pyruvic acids are formed at the end of glycolysis.

- Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
- (2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
- (3) Assertion is True but the Reason is False.
- (4) Both Assertion & Reason are False.
- 87. Statement-I : Because the respiratory pathway is involved in the both anabolism and catabolism so it would be better to consider it as amphibolic pathway rather than as a catabolic pathway.

**Statement-II** : Ratio of the volume of  $CO_2$  consumed to the volume of  $O_2$  evolved in respiration is called the respiratory quotient.

- (1) Statement-I & Statement-II both are correct.
- (2) Statement-I is correct & Statement-II is incorrect.
- (3) Statement-I is incorrect & Statement-II is correct.
- (4) Both Statement-I & Statement-II is incorrect.

LEADER COURSE PHASE-4



**88.** Match the column :

	Column-I		Column-II
(A)	Complex-I	(i)	Cytochrome bc <sub>1</sub> complex
(B)	Complex-II	(ii)	Succinate dehydrogenase
(C)	Complex- III	(iii)	Cytochrome-c oxide
(D)	Complex- IV	(iv)	NADH- dehydrogenase

- (1) A = (ii), B = (iv), C = (iii), D = (i)
- (2) A = (i), B = (iv), C = (ii), D = (iii)
- (3) A = (iv), B = (ii), C = (i), D = (iii)
- (4) A = (iv), B = (ii), C = (iii), D = (i)
- **89.** The enzyme of Krebs cycle where NADH +  $H^+$  are produced are
  - (1) Isocitrate dehydrogenase, succinate dehydrogenase and malic dehydrogenase
  - (2) Succinate thiokinase, succinate dehydrogenase and aconitase
  - (3) Isocitrate dehydrogenase, α-ketoglutaric dehydrogenase, malic dehydrogenase
  - (4) Isocitrate dehydrogenase, α-ketoglutaric dehydrogenase and succinate dehydrogenase
- **90.** Which of the following is incorrect about fermentation :-
  - (1) It account for partial breakdown of glucose
  - (2) Net gain is only 2 ATP
  - (3) NADH to NAD<sup>+</sup> formation reaction is vigorous
  - (4) It occur in cytoplasm

- 91. A phosphoglyceride is always made up of :-
  - (1) only an unsaturated fatty acid esterified to a glycerol molecule to, which a phosphate group is also attached
  - (2) a saturated or unsaturated fatty acid esterified to a glycerol molecule to, which a phosphate group is also attached
  - (3) a saturated or unsaturated fatty acid esterified to a phosphate group, which is also attached to a glycerol molecule
  - (4) only a saturated fatty acid esterified to a glycol molecule to, which a phosphate group is also attached
- **92.** In some place a protein molecule may twist or fold back on itself this is called \_\_\_\_\_and the coil of folds are held in place by\_\_\_\_\_.
  - (1) Primary structure, covalent bond
  - (2) Tertiary structure, hydrogen bond
  - (3) Secondary structure, peptide bond
  - (4) Secondary structure, hydrogen bond
- 93. Unsaturated fatty acids contain :-
  - (1) Only carbon-carbon single bonds
  - (2) Only carbon-carbon double bonds
  - (3) Both carbon-carbon single and double bonds
  - (4) Only carbon-oxygen double bonds
- **94.** Which of the following is not a steroidal hormone ?
  - (1) Progesterone (2) Insulin
  - (3) Testosterone (4) Cortisol



- 95. Choose the incorrect statements :-
  - (1) Anomers exist only in cyclic forms
  - (2) Epimers exist in both linear and cyclic forms
  - (3) Galactose and mannose are epimers of glucose
  - (4) Galactose and mannose are epimers of each other
- **96.** Which of the following is correct ?
  - (1) Palmitic acid has sixteen carbon atoms including carboxyl carbon
  - (2) Arachidonic acid has twenty carbon atoms excluding carboxyl carbon
  - (3) Stearic acid has eighteen carbon atoms excluding carboxyl carbon
  - (4) All are correct
- 97. Amoeboid movement is found in
  - (1) Limbs, jaw
  - (2) Macrophages, leucocytes
  - (3) Trachea, fallopian tube
  - (4) Tongue, leucocytes

- **98.** Which muscle are mainly related for changes in body posture ?
  - (1) Cardiac muscle (2) Striped muscle
  - (3) Smooth muscle (4) Skeletal muscle
- **99.** Patella is :-
  - (1) Cartilagenous bone (2) Sesamoid bone
  - (3) Dermal bone (4) Visceral bone
- **100.** Identify the correct match:-

	Column I		Column II		Column III
1.	Sphenoid bone	(a)	Forelimb	(i)	Sella turcica
2.	Coxal bone	(b)	Cranium	(ii)	3 bones fused
3.	Scapula	(c)	Pelvic girdle	(iii)	Triangular
4.	Pisciform	(d)	Pectoral girdle	(iv)	Sesamoid

- (1) 1-(a)-(i), 2-(b)-(ii), 3-(c)-(iii), 4-(d)-iv
- (2) 2-(a)-(i), 1-(b)-(ii), 3-(d)-(iii), 4-(c)-iv
- (3) 3-(c)-(i), 4-(d)-(ii), 1-(a)-(iii), 2-(b)-iv
- (4) 1-(b)-(i), 2-(c)-(ii), 3-(d)-(iii), 4-(a)-iv



## **CLASSROOM CONTACT PROGRAMME**

(Academic Session : 2023 - 2024)

## LEADER COURSE LEADERSE : 4

TARGETHASE MEDICAL 2024

Test Type :PRACTICE TEST

Test Pattern :NEET (UG)

**TEST DATE : 18-06-2023** 

$\left( \right)$	ANSWER KEY																													
Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Α.	1	3	3	1	4	1	4	1	3	4	2	1	2	3	4	2	3	2	3	2	3	1	4	4	1	4	3	2	2	3
Q.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Α.	2	1	4	3	2	3	3	1	1	2	2	2	1	3	3	3	2	3	3	3	1	1	3	1	3	4	1	4	3	1
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Α.	2	2.	4	2	1	2	4	4	4	4	2	3	3	3	4	3	2	2	2	3	3	4	4	4	1	2	2	3	3	3
Q.	91	92	93	94	95	96	97	98	99	100																				
Α.	2	4	3	2	4	1	2	4	2	4	]																			

## HINT - SHEET

## **SUBJECT : PHYSICS**

## 1. Ans (1)

If distance covered is zero, particle remained at rest in the given interval of time so displacement must be zero.

## 2. Ans (3)

Total time = 140 sec time for one round of a circular path = 40 sec

Then after time 120 sec he will complete half of circular path so displacement (D = 2r)

## 3. Ans (3)

Displacement =  $2r \sin\theta/2 = 2r \sin30 = r$ Distance =  $\frac{\text{Distance}}{\text{Displacement}} = \frac{\pi r}{3r} = \frac{\pi}{3}$ 

- 4. Ans (1)  $\vec{S} = x\hat{i} + y\hat{j} + z\hat{k}$
- 5. Ans (4) distance  $\geq$  |displacement|

As  $\Delta \vec{r} = \vec{r}_2 - \vec{r}_1$ 

so  $\vec{r}_2 = \vec{r}_1 + \Delta \vec{r}$ 

$$= \left(2\hat{i} + 5\hat{j} + \hat{k}\right) + \left(8\hat{i} - 2\hat{j} + \hat{k}\right)$$
$$= 10\hat{i} + 3\hat{j} + 2\hat{k}$$

Therefore coordinates of find position are (10,3,2)

$$v_{avg} = \frac{d}{\frac{\frac{2d}{5v_1} + \frac{3d}{5v_2}}{5v_1v_2}}$$
$$v_{avg} = \frac{5v_1v_2}{2v_2 + 3v_1}$$

)

8. Ans (1)

$$\frac{1}{3 \text{ m/s}} + \frac{1}{4.5 \text{ m/s}} + \frac{1}{7.5 \text{ m/s}} + \frac{1}{7.5 \text{ m/s}} + \frac{1}{2} = 6 \text{ m/s}$$

$$v_{1} = \frac{4.5 + 7.5}{2} = 6 \text{ m/s}$$

$$v_{av} = \frac{2(3)(6)}{3 + 6} = \frac{36}{9} = 4 \text{ m/s}$$



9.

Ans (3)  
$$|\vec{v}_{av}| = \frac{|4\hat{j} + 3\hat{i}|}{15} = \frac{1}{3}$$
m/s

10. Ans (4)

$$< v_t > = \frac{\int_0^2 v dt}{2 - 0} = \frac{\int_0^2 (t - 1) dt}{2} = 0$$

11. Ans (2) d a

$$\frac{d}{dx}(x^3e^x)$$

$$= x^3 \frac{d}{dx}(e^x) + e^x \frac{d(x^3)}{dx}$$

$$= x^3 e^x + 3x^2 e^x$$

- Ans (1) 12. when  $\theta$  is very small; sin  $\theta \approx \theta$  $\therefore \sin 2^\circ = \frac{2\pi}{180} = \frac{\pi}{90}$
- 18. Ans (2)

 $\int y \, dx =$  Area between y vs x curve and x-axis  $= \frac{1}{2}(1)(2) + \frac{1}{2}(-1)(2)$ = 0

Ans(3)19.

> Resultant of two vectors  $\vec{A}$  and  $\vec{B}$  must satisfy  $A{\sim}\,B \leq R \leq A+B$

20. Ans (2)  

$$\vec{v} = |\vec{v}| \hat{v}$$
  
 $= 6 \left( \frac{2\hat{i} + 2\hat{j} - \hat{k}}{3} \right)$   
 $= 4\hat{i} + 4\hat{j} - 2\hat{k}$ 

#### **SECTION-B**

21. Ans (3) Displacement =  $(8-2)\hat{i} + (7-7)\hat{j} + (7-5)\hat{k}$ =  $6\hat{i} + 0\hat{j} + 2\hat{k}$ θ  $2\sqrt{10}$ m;  $\theta = \cos^{-1}\left(\frac{3}{\sqrt{10}}\right)$ with x – axis

22. Ans (1)  
Displacement zero 
$$\Rightarrow$$
 velocity = 0  
 $A \leftarrow d \rightarrow B$   
 $t_1 = \frac{d}{40}$ ;  $t_2 = \frac{d}{30}$   
Avg. speed =  $\frac{2d}{\frac{d}{40} + \frac{d}{30}} = \frac{2400}{70}$   
= 34.3 km/hr  
23. Ans (4)  
 $3t = \sqrt{3x} + 6 \Rightarrow 3x = (3t - 6)^2$   
 $\Rightarrow x = 3t^2 - 12t + 12$   
 $v = \frac{dx}{dt} = 6t - 12$ , for v = 0, t = 2 sec.  
 $x = 3(2)^2 - 12 \times 2 + 12 = 0$   
24. Ans (4)  
 $v = 5\sqrt{x}$   
 $v^2 = 25x$   
 $2v \frac{dv}{dx} = 25$   
 $a = \frac{25}{2} \text{ m/s}^2 = \text{constant}$   
 $a \propto t^\circ$   
25. Ans (1)  
 $x = t^3 - 2t^2 + 5$   
 $V = 3t^2 - 4t \Rightarrow V = 0 \Rightarrow 3t^2 - 4t = 0$   
 $t = (4/3) \sec, t = 0$   
 $a = 6t - 4$   
 $a = 6 \times \frac{4}{3} - 4 = 4 \text{ m/s}^2$ , &  $a = 6 \times 0 - 4 = -4$   
 $\text{m/s}^2$ 

## **SUBJECT : CHEMISTRY**

#### **SECTION-A**

#### 26. Ans(4)

Isoelectronic -species having same no. of electrons.

$$_{7}N^{3-} = 10$$
 electrons

 ${}_{16}S^{2-} = 18$  electrons

 $_{17}Cl^- = 18$  electrons

 $N^{3-}$ ,  $S^{2-}$ ,  $Cl^{-}$  are not isoelectronic.

9610WMD307035230001



## 27. Ans (3)

Carbon family belongs to group 14.

The general configuration of group 14 elements is -  $ns^2 np^2$ 

## 28. Ans (2)

In a period – Left  $\xrightarrow{\text{Zeff increases, size decreases}}$  Right

## 29. Ans (2)

Ionic radius  $\propto \frac{1}{Z_{eff}} \propto \frac{-\text{ve charge}}{+\text{ve charge}}$ 

## 30. Ans (3)

Van der Waal's radius  $\approx 2 \times$  Covalent radius

## 31. Ans (2)

All the given elements belong to the same period in Periodic Table. So, as we go left to right in a period the electro-positivity decreases.

Hence, Mg is the most electropositive element.

## 32. Ans (1)

Orbitals are filled by electron according to (n + 1) rule.

(n + 1) value for 4f orbital is = 4+3=7.

So, the orbital having (n + 1) value = 6 should be filled completely before 4f.

6s = 6 + 0 = 6

Since, the orbital having highest value of n will be filled first for the same value of (n + 1).

## 33. Ans (4)

In a period, as we go from left to right  $\rm Z_{eff}$  increases.

In a group, moving down  $Z_{\text{eff}}$  is almost constant.

So correct order is -

- (1) Be  $\leq$  B
- (2) C < N
- (3) Na  $\approx$  K
- 4) F > O

9610WMD307035230001

## 34. Ans (3)

For Isoelectronic species-

Ionic radius 
$$\propto \frac{1}{Z_{eff}} \propto \frac{-\text{ve charge}}{+\text{ve charge}}$$

## 35. Ans (2)

 $_{2}$ He  $-1s^{2}$  has inert gas stable configuration and  $e^{-}$  in shell are very close to nucleus. So, it is very difficult to remove  $e^{-}$  from He atom.

### 36. Ans (3)

Alkali metals have minimum  $Z_{eff}$  across a period.

## 37. Ans (3)

Maximum difference is in between  $IE_4$  and  $IE_5$ 

So 4 valence e<sup>-</sup>s are there.

## 38. Ans (1)

In a halogen group of non-metal, electron gain enthalpy of the 3<sup>rd</sup> period element is maximum. Among halogens, Cl has the highest electron affinity.

Fluorine is so small that it leads to interelectronic repulsions Hence, it has lesser electron affinity than Cl.

## 39. Ans (1)

EA  $\propto$  Z<sub>eff</sub> and EA of inert gas is zero.

## 40. Ans (2)

 $_{10}$ [Ne] 3s<sup>2</sup> 3p<sup>5</sup> or Cl has maximum EA.

## 41. Ans (2)

In a periodic table, As we go down the group the atomic radii of elements increases due to increase in the number of shell.

For Ions 
$$\Rightarrow$$
 Ionic radius  $\propto \frac{1}{Z_{eff}}$   
 $\propto \frac{-ve}{+ve}$  Charge  
So,  $H^{\bigoplus} < Li^{\bigoplus} < H^{\Theta}$ 



## 42. Ans (2)

 $3p^1 < 3p^2 < 3p^3 > 4p^3$ 

[Ne] $3s^2$   $3p^3$  has stable configuration of half filled subshell and also the outermost electron is in  $3^{rd}$  shell which is more closer to nucleus as compare to  $4^{th}$  shell

## 43. Ans (1)

 $\begin{array}{l} {}_{13}\mathrm{Al}-3 {s}^{2} \ 3 {p}^{1} \\ {}_{14}\mathrm{Si}-3 {s}^{2} \ 3 {p}^{2} \\ {}_{16}\mathrm{S}-3 {s}^{2} \ 3 {p}^{4} \\ {}_{15}\mathrm{P}-3 {s}^{2} \ 3 {p}^{3} \end{array}$ 

Half filled stable configuration

So, 1<sup>st</sup> IE of P will be greater than all the three given elements.

## 44. Ans (3)

In a period, from left to right atomic radius decreases.

Down the group, atomic radius increases. So,

Na > Mg ^ K ^ Rb

## 45. Ans (3)

In group 3 atomic radius increases as we go down the group due to increase in the number of shell.

So, Sc < Y < La as lanthanide contraction starts from group-4

Hence, Option (3) is incorrect.

## **SECTION-B**

## 46. Ans (3)

On moving down the group metallic character increases.

In a period from left to right metallic character decreases.

So, Z is most metallic element.

Target:PRE-MEDICAL 2024/18-06-2023

47. Ans (2)  $_{19}X - 4s^1$   $_{37}Y - 5s^1$   $_{55}Z - 6s^1$ Size order  $\rightarrow X < Y < Z$ I.P. Order  $\rightarrow X > Y > Z$ 

## 48. Ans (3)

Na  $\xrightarrow{I.E.}$  Na<sup>+</sup> is an endothermic process as IE is involved in it. So, Na<sup>+</sup>  $\rightarrow$  Na is an exothermic process.

## 49. Ans (3)

The electron affinity of F is less than Cl, this is due to interelectronic repulsion of F when an extra electron is added in its valence shell.

### 50. Ans (3)

In a period, moving from left to right the atomic radius of elements decreases till group 17 (as Zeff increases).

Note - Group 18 (Inert gas) has maximum atomic radius in a period (Van der Waal's radius).

### **SUBJECT : BIOLOGY**

#### **SECTION-A**

- **51. Ans (1)** NCERT-XI, Pg # 145, From Fig. 9.1 Concept
- **52. Ans (1)** NCERT-XI, Pg # 144, 2nd para
- **54.** Ans (1) NCERT-XI, Pg.# 149, 1st Para
- 55. Ans ( 3 ) NCERT-XI, Pg.# 156, Fig. 9.6
- 58. Ans (4) NCERT Page # 144

9610WMD307035230001



- 61. Ans (2) NCERT-XI, Pg.# 149, 2nd Para
- 66. Ans (2) NCERT XI Page No. # 236
- 67. Ans (4) NCERT-XI Pg#229, PARA-14.2
- 68. Ans (4) NCERT–XI, Eng. Pg. # 228 (last para)
- **76. Ans ( 3 )** NCERT Pg. # 310
- 81. Ans (3) NCERT Pg. # 311, para 2

## **SECTION-B**

- 86. Ans ( 2 ) NCERT XI, Page # 229
- 88. Ans (3) NCERT Pg. # 233
- **96. Ans (1)** NCERT Pg. # 144
- **98.** Ans ( 4 ) NCERT Pg. # 303, para = 20.2
- **99. Ans ( 2 )** NCERT Pg. # 146