



# Yakeen NEET 2.0 (2026)

## Practice Test - 01

DURATION : 180 Minutes

DATE : 08/06/2025

M. MARKS : 720

### Topics Covered

<b>Physics:</b>	Basic Maths & Calculus, (Mathematical Tools), Trigonometry, Algebra, Binomial, AP, GP, Graphs, Logarithms
<b>Chemistry:</b>	Some Basic Concept of Chemistry: Dalton's Atomic Theory, Types of partical and its calculation, Molar Mass, AMU, Mole, Mole concept, Average molar Mass, VD, Mass % Age, Average Molar Mass, Stoichiometry, Limiting reagent, % age yield, Impure sample, Laws of chemical combination, EF & EF Concentration Terms, Concentration Term Continuous, Equivalents Mass, Normality
<b>Biology:</b>	<b>(Botany):</b> Cell-The Unit of Life, What is a Cell? Discovery of the Cell, Microscopy, Cell Theory, Overview of Cell, Types of cell, Structure Prokaryotic cell, Prokaryotic cells, Eukaryotic cells Topics: Cell Membrane, Cell Wall, Endomembrane System <b>(Zoology):</b> Structural Organization in Animals, Tissues, Animal Tissues, Epithelium Tissue, Cell Junctions, Connective Tissue.

### General Instructions:

1. Immediately fill in the particulars on this page of the test booklet.
2. The test is of **180 minutes** duration and the Test Booklet contains **180** multiple choice questions (four options with a single correct answer) from **Physics, Chemistry and Biology (Botany and Zoology)**. **45** questions in each subject
3. The test booklet consists of **180** questions. The maximum marks are **720**.
4. There is only **one correct** response for each question.
5. Each correct answer will give 4 marks while 1 Mark will be deducted for a wrong MCQ response.
6. No student is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device, etc. inside the examination room/hall.
7. Use of white fluid for correction is **not permissible** on the **Answer Sheet**.
8. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator on duty in the Room/Hall. However, the candidates are allowed to take away this Test Booklet with them.

### OMR Instructions:

1. Use blue/black dark ballpoint pens.
2. Darken the bubbles completely. Don't put a tick mark or a cross mark where it is specified that you fill the bubbles completely. Half-filled or over-filled bubbles will not be read by the software.
3. Never use pencils to mark your answers.
4. Never use whiteners to rectify filling errors as they may disrupt the scanning and evaluation process.
5. Writing on the **OMR Sheet** is permitted on the specified area only and even small marks other than the specified area may create problems during the evaluation.
6. Multiple markings will be treated as invalid responses.
7. **Do not fold or make any stray mark on the Answer Sheet (OMR).**

Name of the Student (In CAPITALS) : \_\_\_\_\_

Roll Number : \_\_\_\_\_

OMR Bar Code Number : \_\_\_\_\_

Candidate's Signature : \_\_\_\_\_ Invigilator's Signature \_\_\_\_\_

## Practice Test-01

## Yakeen NEET 2.0 (2026)

**Q1** Find the value of  $(1+x)^3$ , if  $x \ll 1$ .

- (1)  $1+x$
- (2)  $1-3x$
- (3)  $1+3x$
- (4)  $1+3x+3x^2+x^3$

**Q2** The sum of the series  $1 + 1/4 + 1/16 + 1/64 + \dots \infty$  is:

- (1)  $8/7$
- (2)  $6/5$
- (3)  $5/4$
- (4)  $4/3$

**Q3** The equation  $\sqrt{x}=2y$  represents that graph between  $x$  and  $y$  is a :

- (1) Straight line
- (2) Parabola
- (3) Hyperbola
- (4) Circle

**Q4** The 10<sup>th</sup> term from the end in the AP 5, 8, 11, ..... is 95 then the number of terms in the AP are

- (1) 38
- (2) 40
- (3) 42
- (4) 43

**Q5** Given  $x^2 + 7x + 12 = 0$ , find the values of  $x$

- (1)  $x = \frac{3}{2}, -4$
- (2)  $x = -3, -4$
- (3)  $x = \frac{3}{2}, 4$
- (4)  $x = \frac{3}{2}, -2$

**Q6** If  $\log_{10} 2 = 0.3$ , then value of  $\log_{10} 64$  is;

- (1) 0.3
- (2) 1.8
- (3) 1.2
- (4) 1.5

**Q7**  $\log_e 15$  is equal to;

- (1)  $\log_e 3 + \log_e 5$
- (2)  $\log_e 5 - \log_e 3$
- (3)  $\log_e 10 + \log_e 5$
- (4)  $\log_e 10 - \log_e 5$

**Q8**  $\log_5 x - \log_5(y) = 2$ , find the value of  $\frac{x}{y}$ ;

- (1) 100
- (2) 25
- (3) 50
- (4) 75

**Q9** Find the solution of given equation:

$$2x^2 + 3x - 2 = 0;$$

- (1)  $x = -3, \frac{1}{2}$
- (2)  $x = 3, \frac{1}{2}$
- (3)  $x = -2, \frac{1}{2}$
- (4)  $x = 2, \frac{1}{2}$

**Q10** If  $\cos A = \frac{7}{25}$  then  $\tan A + \cot A =$  \_\_\_\_

- (1)  $\frac{25}{168}$
- (2)  $\frac{168}{25}$
- (3)  $\frac{625}{168}$
- (4) None of these

**Q11** The greatest value of the function

$$-5 \sin \theta + 12 \cos \theta \text{ is;}$$

- (1) 12
- (2) 13
- (3) 7
- (4) 17

**Q12** The equation of a curve is given as

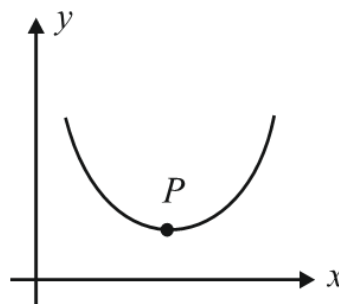
$$y = x^2 + 2 - 3x. \text{ The curve intersects the } x\text{-axis at;}$$

- (1) (1, 0)
- (2) (2, 0)
- (3) Both (1) and (2)
- (4) None of these

**Q13** The equation  $x^2 + 8x + 12 = 0$  has

- (1) No root
- (2) One root
- (3) Two roots
- (4) Four roots

**Q14** At point P, the value of slope is:

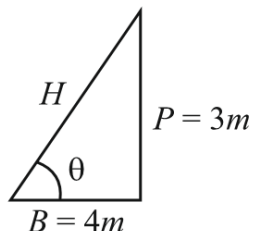


- (1) Zero (2) Positive  
(3) Negative (4) Infinite

**Q15**  $\sin(750^\circ)$  is equal to:

- (1)  $\frac{1}{2}$  (2)  $-\frac{1}{2}$   
(3) 0 (4)  $\frac{\sqrt{3}}{2}$

**Q16** Find the value of hypotenuses:



- (1) 6 m (2) 1 m  
(3) 5 m (4) 7 m

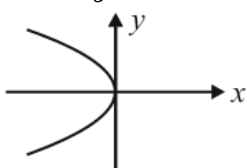
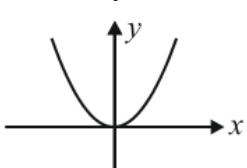
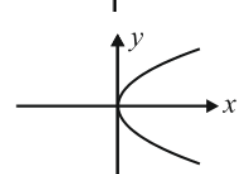
**Q17**  $\sin(A - B)$  is equal to:

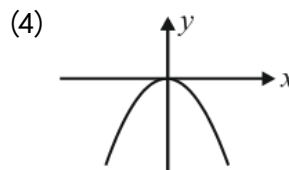
- (1)  $\sin A \cos B + \cos A \sin B$   
(2)  $\sin A \cos B - \cos A \sin B$   
(3)  $\cos A \sin B - \sin A \cos B$   
(4)  $\cos A \cos B + \sin A \sin B$

**Q18** The value of  $\log x^5 + \log x^2$  is:

- (1)  $2 \log x$  (2)  $7 \log x$   
(3)  $5 \log x$  (4)  $10 \log x$

**Q19** If  $x = -5y^2$ , then the **correct** graph is:

- (1)   
(2)   
(3) 



**Q20** If in a right angle triangle,  $\sin A = \frac{3}{5}$ , then find  $\tan A$ .

- (1)  $\frac{3}{4}$  (2)  $\frac{3}{5}$   
(3)  $\frac{5}{3}$  (4)  $\frac{4}{3}$

**Q21** 10<sup>th</sup> term of the A.P. 1, 4, 7, 10, ..... is:

- (1) 26 (2) 27  
(3) 28 (4) 29

**Q22** What is the value of  $(\sin 30^\circ \cos 15^\circ) + (\cos 30^\circ \sin 15^\circ)$ ?

- (1)  $\frac{1}{2}$  (2) 0  
(3) 1 (4)  $\frac{1}{\sqrt{2}}$

**Q23**  $\cos^2 \theta$  can be equated to:

- (1)  $\frac{1+\cos 2\theta}{2}$   
(2)  $\frac{1-\cos 2\theta}{2}$   
(3)  $1 + \sin^2 \theta$   
(4)  $\cos(2\theta)$

**Q24** The equation of a straight line is  $2x + 3y = 5$ . What is the slope of this line?

- (1)  $\frac{3}{2}$  (2)  $\frac{2}{3}$   
(3)  $-\frac{2}{3}$  (4)  $-\frac{3}{2}$

**Q25** Calculate the value of  $\sqrt{0.999}$  using binomial approximation method.

- (1) 0.9997 (2) 0.09996  
(3) 0.9995 (4) 0.0932

**Q26** If  $\sin \theta = -\frac{1}{\sqrt{2}}$  and  $\tan \theta = 1$ , then  $\theta$  lies in which quadrant?

- (1) First (2) Second  
(3) Third (4) Fourth

**Q27** If  $y = \frac{\tan \theta}{\theta}$ , then find the value of  $y$  at  $\theta = 1^\circ$ .

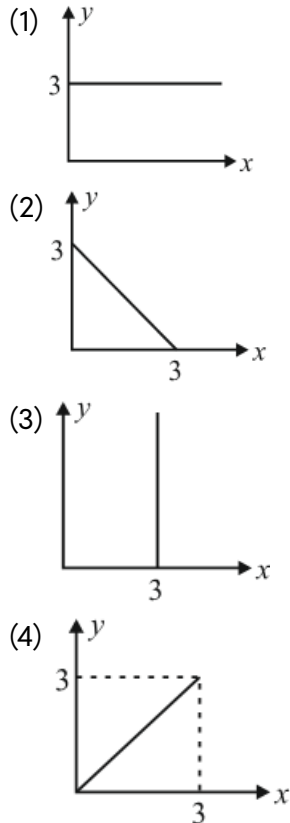


- (1)  $10^\circ$  (2) 0  
(3) 1 (4)  $\sqrt{3}$

**Q28** The value of  $y$  in the expression  $\log_4 y^2 = 4$  is:

- (1) 16 (2) 256  
(3) 64 (4) 32

**Q29** The graph for the equation  $y=3$  is:



**Q30** Value of  $\tan(15^\circ) = \dots\dots\dots$

- (1)  $2 + \sqrt{3}$  (2)  $2 - \sqrt{3}$   
(3)  $1 + \sqrt{3}$  (4)  $\sqrt{3} - 1$

**Q31** Correct value of  $\cos(2^\circ)$

- (1)  $2^\circ$  (2)  $\frac{\pi}{50}$   
(3) 1 (4) 0

**Q32** Value of  $\left( \frac{\ln x + \ln x^2 + \ln x^3 + \ln x^4}{10} \right)$  is:

- (1)  $2\ln x$  (2)  $\ln x$   
(3)  $10\ln x$  (4)  $5\ln x$

**Q33** Find  $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots\dots$  upto  $\infty$ .

- (1)  $\infty$  (2) 1  
(3) 2 (4) 1.925

**Q34** The sum of given arithmetic progression:

$4 + 8 + 12 + \dots\dots\dots + 64$  is:

- (1) 464 (2) 540  
(3) 544 (4) 646

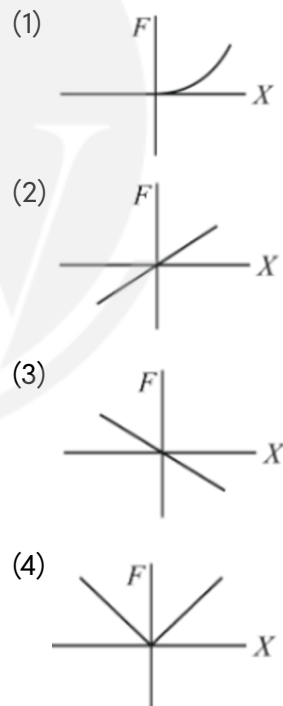
**Q35** Find the value of  $(5.03)^3$  using binomial approximation method.

- (1) 127 (2) 127.27  
(3) 127.29 (4) 127.25

**Q36** Find the sum of first 50 natural numbers.

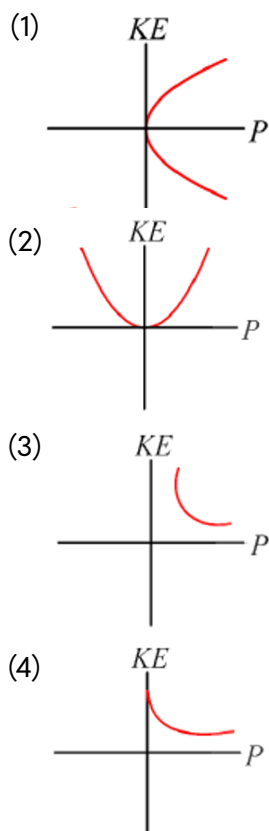
- (1) 637.5 (2) 1275  
(3) 1225 (4) 612.5

**Q37** The spring force is given by  $F = -kx$ , here  $k$  is a constant and  $x$  is deformation of spring. The  $F$ - $x$  graph is:

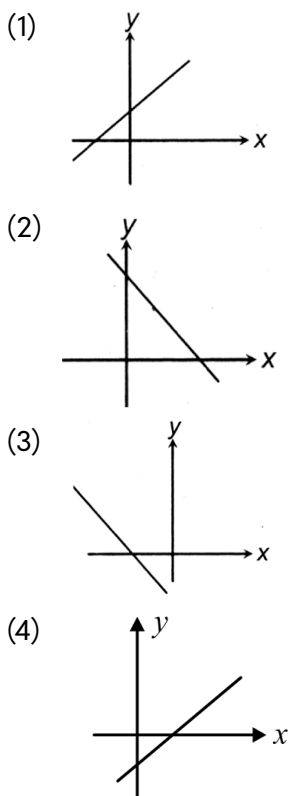


**Q38** If  $KE = \frac{p^2}{2m}$  then draw graph between KE and  $P$  for mass ( $m$ ).

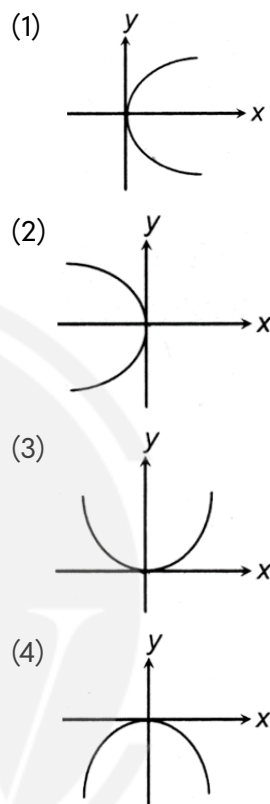




**Q39** Most appropriate graph for the equation  $x = 2y - 3$  is:



**Q40** Most appropriate graph for the equation  $x^2 = -2y$  is:



**Q41** If  $\cos A = \frac{\sqrt{3}}{2}$  then  $\tan 3A =$

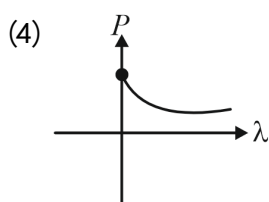
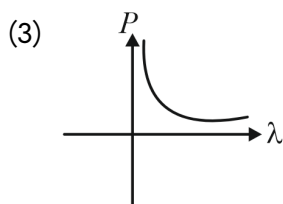
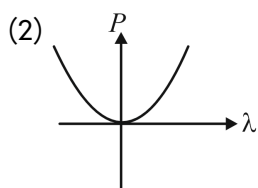
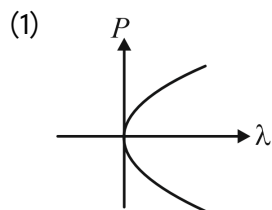
- (1) 0 (2)  $\frac{1}{2}$   
(3) 1 (4)  $\infty$

**Q42** If  $y = \sin 2\theta$ , then find ' $\theta$ ' for which  $y$  is maximum.

- (1)  $90^\circ$  (2)  $60^\circ$   
(3)  $45^\circ$  (4)  $32^\circ$

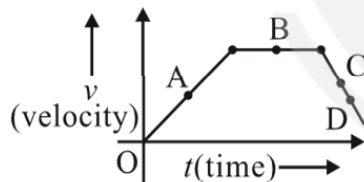
**Q43** If linear momentum  $P = \frac{h}{\lambda}$ , then what will be graph between  $P$  and  $\lambda$ ? ( $h$  is Planck's constant)





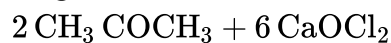
- Q44** Calculate the value of  $(1001)^{1/3}$
- (1) 10.0033                      (2) 12.0033  
(3) 15.0000                      (4) 10.00033

- Q45** The slope of  $v - t$  is zero at point:



- (1) A                                      (2) B  
(3) C                                      (4) D
- Q46** If 0.01 mole of  $P_4O_{10}$  is removed from its 0.1 mole then the remaining molecules of  $P_4O_{10}$  will be:
- (1)  $7.2 \times 10^{22}$   
(2)  $4.5 \times 10^{23}$   
(3)  $5.4 \times 10^{22}$   
(4)  $3.15 \times 10^{23}$
- Q47** If the yield of chloroform obtainable from acetone and bleaching powder is 75%, then

what mass of acetone is required for producing 30 g of chloroform?

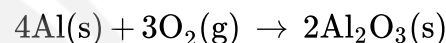


[Molar mass of  $\text{CHCl}_3 = 119.5$

Molar mass of  $\text{CH}_3\text{COCH}_3 = 58$ ]

- (1) 40 g  
(2) 19.4 g  
(3) 10.92 g  
(4) 14.56 g

- Q48** If  $1/2$  moles of oxygen ( $\text{O}_2$ ) combine with aluminium to form  $\frac{1}{3}$  moles of  $\text{Al}_2\text{O}_3$ , then weight of aluminium metal used in the reaction is: (Atomic mass of Al = 27 g/mol)



- (1) 27 g                                      (2) 18 g  
(3) 54 g                                      (4) 40.5 g

- Q49** Given below are two statements:

**Statement-I:** Empirical formula of methane and ethane are different.

**Statement-II:** Molecular formula and empirical formula of methane are different.

In the light of the above statements, choose the *most appropriate* answer from the options given below:

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

- Q50** How many atoms are contained in a mole of  $\text{Ca}(\text{OH})_2$  ?

- (1)  $30 \times 6.022 \times 10^{23}$  atom/mol  
(2)  $5 \times 6.022 \times 10^{23}$  atom/mol  
(3)  $3 \times 6.022 \times 10^{23}$  atom/mol  
(4)  $6.022 \times 10^{23}$  atom/mol



**Q51** The given statement, "the total mass of reactants is always equal to the total mass of products in a chemical reaction" is known as:

- (1) Law of conservation of mass
- (2) Law of definite proportions
- (3) Law of multiple proportions
- (4) Law of gaseous volume

**Q52** 10 mL of 1 N HCl, 20 mL of N/2  $\text{H}_2\text{SO}_4$  and 30 mL of N/3  $\text{HNO}_3$  are mixed together and volume made to one litre. The normality of  $\text{H}^+$  in the resulting solution is:

- (1)  $3N/100$
- (2)  $N/10$
- (3)  $N/20$
- (4)  $N/40$

**Q53** Calculate the number of moles for each case respectively;

- I. 11g  $\text{CO}_2$
- II.  $N_A/4$  Molecule of  $\text{CO}_2$
- III. 1.12 L  $\text{CO}_2$  at STP

- (1) 0.25, 2.5, 0.5
- (2) 0.25, 0.05, 0.05
- (3) 0.05, 0.25, 0.25
- (4) 0.25, 0.25, 0.05

**Q54** Match List-I with List-II.

List-I (Compound)		List-II (Gram Molecular Mass)	
(A)	$\text{H}_2\text{O}$	(I)	18 g
(B)	$\text{N}_2$	(II)	28 g
(C)	$\text{CH}_4$	(III)	16 g
(D)	$\text{SO}_2$	(IV)	64 g

Choose the **correct** answer from the options given below:

- (1) A-I, B-II, C-III, D-IV
- (2) A-II, B-I, C-IV, D-III
- (3) A-I, B-III, C-IV, D-II
- (4) A-III, B-II, C-I, D-IV

**Q55** The total number of electrons in 10 moles of water is;

- (1)  $N_A$
- (2)  $100 N_A$
- (3)  $10 N_A$
- (4)  $1000 N_A$

**Q56** An oxide of metal contains 60% of the metal what will be the equivalent weight of the metal?

- (1) 12
- (2) 40
- (3) 24
- (4) 48

**Q57** Law of multiple proportions is **not** valid for the pair of:

- (1)  $\text{C}_2\text{H}_2$  and  $\text{C}_2\text{H}_4$
- (2)  $\text{N}_2\text{O}_5$  and  $\text{N}_2\text{O}_3$
- (3)  $\text{H}_2\text{O}$  and  $\text{H}_2\text{O}_2$
- (4)  $\text{CO}_2$  and  $\text{SO}_2$

**Q58** Boron has two stable isotopes,  $^{10}\text{B}$  (19%) and  $^{11}\text{B}$  (81%). Average atomic mass for boron is:

- (1) 10.8 u
- (2) 10.2 u
- (3) 11.2 u
- (4) 10.0 u

**Q59** Mole fraction of the solute in a 1.00 molal aqueous solution is:

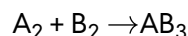
- (1) 1.7700
- (2) 0.1770
- (3) 0.018
- (4) 0.0344

**Q60** In the reaction,  $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightarrow 2\text{NH}_3(\text{g})$ , the ratio by volume of  $\text{N}_2$ ,  $\text{H}_2$  and  $\text{NH}_3$  is 1: 3: 2 under constant temperature and pressure.

This illustrates the law of:

- (1) Definite proportion.
- (2) Multiple proportion.
- (3) Conservation of mass.
- (4) Gaseous volumes.

**Q61** Consider the reaction:



To produce 3 mole of  $\text{AB}_3$ , how many moles of  $\text{A}_2$  should be consumed?

- (1) 2.5 mole
- (2) 1.5 mole
- (3) 0.5 mole
- (4) 2 mole



**Q62** According to Avogadro's Hypothesis, if 2 volumes of hydrogen gas react with 1 volume of oxygen gas at same temperature and pressure, how many volumes of water vapour are formed?

- (1) 1 volume                      (2) 2 volumes  
(3) 3 volumes                    (4) 4 volumes

**Q63** Find the equivalent weight of  $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$  (Molar mass = M)

- (1)  $\frac{M}{8}$                               (2)  $\frac{M}{6}$   
(3)  $\frac{M}{12}$                             (4)  $\frac{M}{2}$

**Q64** Which of the following has highest mass? [Atomic Mass of Fe = 56 amu, N = 14 amu, C = 12 amu, Ag = 108 amu]

- (1) 50 g of iron  
(2) 5 moles of nitrogen gas  
(3) 0.1 g of silver  
(4)  $10^{23}$  atoms of carbon

**Q65** Given below are two statements:

**Statement I:** 22.4 L of He gas have  $N_A$  atoms of He at 1 atm and 273 K.

**Statement II:** 1 mole of any gas occupy 22.4 L at 1 atm and 273 K.

In the light of the above statements, Choose the *most appropriate* answer from the options given below:

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

**Q66** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

**Assertion (A):** One molal aqueous solution of glucose contains 180 g of glucose in 1 kg of water.

**Reason (R):** A solution containing one mole of solute in 1000 g of solvent is called one molal solution.

In the light of the above statements, choose the **correct** answer from the options given below.

- (1) A is true but R is false.  
(2) A is false but R is true.  
(3) Both A and R are true and R is the correct explanation of A.  
(4) Both A and R are true but R is NOT the correct explanation of A.

**Q67** Number of molecules in 100mL of each of  $O_2(g)$ ,  $NH_3(g)$  and  $CO_2(g)$  at STP are:

- (1)  $CO_2(g) < O_2(g) < NH_3(g)$  (number of molecules)  
(2)  $NH_3(g) < O_2(g) < CO_2(g)$  (number of molecules)  
(3)  $O_2(g) = NH_3(g) = CO_2(g)$  (number of molecules)  
(4)  $NH_3 = CO_2 < O_2$  (number of molecules)

**Q68** Given below are two statements:

**Statement I:** Equivalent weight of a species can be written as the molecular weight of the species divided by the valence factor.

**Statement II:** Valency factor represents valency in an element, acidity in bases, basicity in acids, and total charge on cation or anion in an ionic compound

In the light of the above statements, choose the *most appropriate* answer from the options given below:

- (1) Statement I is correct but Statement II is incorrect.



- (2) Statement I is incorrect but Statement II is correct.  
 (3) Both Statement I and Statement II are correct.  
 (4) Both Statement I and Statement II are incorrect.
- Q69** One mole of oxygen gas at STP contains:  
 (1)  $6.022 \times 10^{23}$  molecules of oxygen.  
 (2)  $6.022 \times 10^{23}$  atoms of oxygen.  
 (3) 16 g of  $O_2$ .  
 (4) 64 g of oxygen.
- Q70** According to the Law of Conservation of Mass, which of the following reactions is **not** correct?  
 (1)  $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$   
 (2)  $C_3H_8(g) + O_2(g) \rightarrow CO_2(g) + H_2O(g)$   
 (3)  $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$   
 (4)  $P_4(s) + 5O_2(g) \rightarrow P_4O_{10}(s)$
- Q71** The total number of electrons present in one molecule of methane is;  
 (1) 16 (2) 32  
 (3) 10 (4) 4
- Q72** Calculate the molecular mass of sucrose ( $C_{12}H_{22}O_{11}$ ) molecule.  
 (1) 343 u (2) 342 u  
 (3) 341 u (4) 340 u
- Q73** The number of atoms present in 0.1 mole of a triatomic gas is:  
 (1)  $1.8066 \times 10^{21}$   
 (2)  $1.8066 \times 10^{23}$   
 (3)  $1.8066 \times 10^{24}$   
 (4)  $1.8066 \times 10^{22}$
- Q74** If the molecular formula of glucose is  $C_6H_{12}O_6$ , then its empirical formula is;  
 (1) CHO (2)  $C_2HO_2$   
 (3)  $CH_2O$  (4)  $CHO_2$
- Q75** Which of the following is **not** consistent with the law of definite proportions?  
 (1) Water from different sources has same ratio of H:O by mass.  
 (2) A mixture of iron and sulphur shows variable composition.  
 (3) Pure  $CO_2$  always has 12:32 mass ratio of C : O.  
 (4)  $NH_3$  always has 3:14 H:N mass ratio.
- Q76** The total number of neutrons present in 36 g of water is:  
 (1)  $24 N_A$  (2)  $32 N_A$   
 (3)  $16 N_A$  (4)  $20 N_A$
- Q77** Which of the following is the best example of law of conservation of mass?  
 (1) 12 g of carbon combines with 32 g of oxygen to form 44 g of  $CO_2$ .  
 (2) When 12 g of carbon is heated in a vacuum there is no change in mass.  
 (3) A sample of air increases in volume when heated at constant pressure but its mass remains unaltered.  
 (4) the weight of a piece of platinum is the same before and after heating in air.
- Q78** Formula unit mass of  $NaHCO_3$  is:  
 (1) 84 u  
 (2) 76 u  
 (3) 52 u  
 (4) 64 u
- Q79** Given below are two statements. One is labelled as Assertion (A) and other is labelled as Reason (R):  
**Assertion A:** Atomicity of oxygen gas is 2.  
**Reason R:** 1 mole of an element contains  $6.022 \times 10^{23}$  atoms.  
 In the light of the above statements, choose the most appropriate answer from the options given below:



- (1) A is true, but R is false.  
 (2) A is false, but R is true.  
 (3) Both A and R are true and R is the correct explanation of A.  
 (4) Both A and R are true, but R is not the correct explanation of A.

**Q80** The number of molecules in 100 mL of 0.02 N  $\text{H}_2\text{SO}_4$  is:

- (1)  $6.022 \times 10^{20}$   
 (2)  $6.022 \times 10^{18}$   
 (3)  $6.022 \times 10^{21}$   
 (4)  $6.022 \times 10^{22}$

**Q81** Which one of the following is **not** a compound?

- (1) Ammonia (2) Mercuric oxide  
 (3) KCl (4) Mercury

**Q82** 1 amu is equal to:

- (1)  $1.66 \times 10^{-20}$  g  
 (2)  $1.66 \times 10^{-27}$  g  
 (3)  $1.66 \times 10^{-24}$  g  
 (4)  $1.66 \times 10^{-23}$  g

**Q83** 11.2 L of a gas at STP weighs 14 g. The gas could be:

- (1)  $\text{N}_2$  (2)  $\text{CO}_2$   
 (3)  $\text{NO}_2$  (4)  $\text{N}_2\text{O}$

**Q84** If the concentration of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) in blood is  $0.9 \text{ g L}^{-1}$ , what will be the molarity of glucose in blood?

(Molar mass of  $\text{C}_6\text{H}_{12}\text{O}_6 = 180 \text{ g/mol}$ )

- (1) 5 M (2) 50 M  
 (3) 0.005 M (4) 0.5 M

**Q85** Given below are two statements.

**Statement I:** One mole of calcium carbonate ( $\text{CaCO}_3$ ) contains 1 mole of  $\text{Ca}^{2+}$  ions and 3 moles of  $\text{O}^{2-}$  ions.

**Statement II:** The total number of atoms in 1 mole of  $\text{CaCO}_3$  is  $5 \times 6.022 \times 10^{23}$ .

In the light of the above statements, choose the *most appropriate* answer from the options given below.

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

**Q86** The percentage of nitrogen in urea ( $\text{NH}_2\text{CONH}_2$ ) is:

- (1) 46.66% (2) 85.02%  
 (3) 18.02% (4) 28.74%

**Q87** A small amount of soluble salt dissolved in water is an example of a:

- (1) homogeneous mixture  
 (2) heterogeneous mixture  
 (3) compound  
 (4) pure substance

**Q88** 3 g of glucose [Molar mass =  $180 \text{ g mol}^{-1}$ ] is present in 53 g of solution. The molality of solution is:

- (1) 6.6 m (2) 0.66 m  
 (3) 0.33 m (4) 3.3 m

**Q89** The amount of oxalic acid (eq. wt 63) required to prepare 500 mL of its 0.10 N solution is:

- (1) 0.315 g  
 (2) 3.150 g  
 (3) 6.300 g  
 (4) 63.00 g

**Q90** The nitrogen atom has 7 protons and 7 electrons, the nitride ion ( $\text{N}^{3-}$ ) will have:

- (1) 7 protons and 10 electrons  
 (2) 4 protons and 7 electrons  
 (3) 4 protons and 10 electrons  
 (4) 10 protons and 7 electrons



**Q91** The \_\_\_\_\_ is the main arena of cellular activities in both the plant and animal cells.

- (1) nucleus (2) cytoplasm  
(3) mitochondrion (4) cell membrane

**Q92** Inclusion bodies are:

- (1) reserve material in eukaryotic and prokaryotic cells.  
(2) present in the cytoplasm of prokaryotic cells.  
(3) membrane bound organelles.  
(4) phosphate granules and cyanophycean granules in eukaryotic cells.

**Q93** Match List-I with List-II.

List-I		List-II	
(A)	Slime layer	(I)	Glycocalyx in the form of loose sheath
(B)	Capsule	(II)	Extensions of cell membrane in the form of vesicles, tubules and lamellae
(C)	Mesosomes	(III)	Thick and tough glycocalyx
(D)	Polysome	(IV)	Several ribosomes attach to a single mRNA to form a chain

Choose the most appropriate answer from the options given below:

- (1) A-I, B-IV, C-II, D-III  
(2) A-I, B-III, C-II, D-IV  
(3) A-II, B-IV, C-III, D-I  
(4) A-II, B-III, C-IV, D-I

**Q94** Centrioles are the structures found in:

- (1) all plant cells.  
(2) animal cells.  
(3) blue green algae.  
(4) PPLO.

**Q95** Identify the cell wall layer that is mainly composed of calcium pectate which holds or

glues the different neighbouring plant cells together.

- (1) Plasmodesmata (2) Middle lamella  
(3) Glycocalyx (4) Primary wall

**Q96** Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R):

**Assertion (A):** The eukaryotes include only the plants, animals and fungi.

**Reason (R):** In eukaryotic cells, there is an extensive compartmentalisation of cytoplasm through the presence of membrane bound organelles.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) A is true but R is false.  
(2) A is false but R is true.  
(3) Both A and R are true and R is the correct explanation of A.  
(4) Both A and R are true but R is NOT the correct explanation of A.

**Q97** In prokaryotes, resistance to antibiotics is conferred by:

- (1) plasmid DNA.  
(2) mesosomes.  
(3) capsule.  
(4) genomic DNA.

**Q98** Match List-I with List-II.

List - I		List - II	
(A)	Singer and Nicolson	(I)	Formulated the cell theory
(B)	Schleiden and Schwann	(II)	Proposed fluid mosaic model of cell membrane
(C)	Anton Von Leeuwenhoek	(III)	Discovered the nucleus



(D)	Robert Brown	(IV)	First saw and described a live cell
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Choose the most appropriate answer from the options given below:

- (1) A-III, B-I, C-II, D-IV
- (2) A-II, B-I, C-III, D-IV
- (3) A-II, B-I, C-IV, D-III
- (4) A-I, B-II, C-IV, D-III

**Q99** The non-membrane bound organelles found in all cells – both eukaryotic as well as prokaryotic are;

- (1) ribosomes. (2) centrosomes.
- (3) plastids. (4) golgi bodies.

**Q100** All the given statements are true w.r.t endoplasmic reticulum, **except** that it:

- (1) appears smooth in the absence of ribosomes.
- (2) is a network or reticulum of tiny tubular structures scattered in the cytoplasm
- (3) divides the intracellular space into luminal and extra-luminal compartments.
- (4) is extensive and continuous with the plasma membrane of the cell.

**Q101** Which statement **correctly** differentiates plant and animal cells?

- (1) Animal cells have plastids and large vacuoles; plant cells do not.
- (2) Plant cells possess cell walls and plastids; animal cells do not.
- (3) Both plant and animal cells contain cell walls.
- (4) Animal cells contain plastids but lack mitochondria.

**Q102** The lipids are arranged within the plasma membrane with:

- (1) polar heads towards inner-side and the hydrophobic tails towards outer part.
- (2) both heads and tails towards inner-side.

(3) polar heads towards outer sides and hydrophobic tails towards the inner part.

(4) both heads and tails towards outer-side.

**Q103** Cells had a thin outer layer which is today known as the 'plasma membrane' was reported by:

- (1) Theodore Schwann.
- (2) Rudolf Virchow.
- (3) Matthias Schleiden.
- (4) Robert Brown.

**Q104** Given below are two statements:

**Statement I:** Movement of water by diffusion is called osmosis.

**Statement II:** Neutral solutes may move across the membrane by the process of simple diffusion along the concentration gradient.

In the light of the above statements, choose the correct answer from the options given below:

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

**Q105** Read the following statements and choose the **correct** option.

(I) The Golgi cisternae are randomly scattered throughout the cytoplasm and not associated with the nucleus.

(II) In the prokaryotes, the semifluid matrix filling the cell is the cytoplasm.

(III) All eukaryotic cells are identical.

(IV) Eukaryotic cells possess an organised nucleus with a nuclear envelope.

- (1) I and III are incorrect.
- (2) II and III are correct.
- (3) III and IV are correct.
- (4) Only III is incorrect.



**Q106** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

**Assertion (A):**  $\text{Na}^+/\text{K}^+$  pump in the plasma membrane is an example of active transport.

**Reason (R):**  $\text{Na}^+/\text{K}^+$  pump transports the molecules across membrane utilising ATP.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) A is true but R is false.
- (2) A is false but R is true.
- (3) Both A and R are true and R is the correct explanation of A.
- (4) Both A and R are true but R is NOT the correct explanation of A.

**Q107** Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R):

**Assertion (A):** In plants, concentration of ions and other materials is significantly higher in the vacuole than in the cytoplasm.

**Reason (R):** In plants, the tonoplast facilitates the transport of a number of ions and other materials against concentration gradients into the vacuole.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) A is true but R is false.
- (2) A is false but R is true.
- (3) Both A and R are true and R is the correct explanation of A.
- (4) Both A and R are true but R is NOT the correct explanation of A.

**Q108** Which of the following macromolecules can be broken down by lysosomal enzymes?

- (1) Proteins only
- (2) Carbohydrates and lipids only
- (3) Nucleic acids only

(4) Carbohydrates, proteins, lipids, and nucleic acids

**Q109** Given below are two statements:

**Statement I:** The detailed structure of the membrane was studied before the advent of the electron microscope in the 1950s.

**Statement II:** A living rigid structure called the cell wall forms an outer covering for the plasma membrane.

In the light of the above statements, choose the correct answer from the options given below:

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

**Q110** Read the following statements and choose the **correct** option.

(I) Cell wall gives shape to the cell and protects the cell from mechanical damage and infection.

(II) In higher plants, cell wall is made of cellulose, galactans, mannans and minerals like calcium carbonate.

(III) In algae, cell wall is made of cellulose, hemicellulose, pectins and proteins.

(IV) Cell wall helps in cell-to-cell interaction and provides barrier to undesirable macromolecules.

- (1) I and III are correct
- (2) II and III are incorrect
- (3) III and IV are correct
- (4) I and IV are incorrect

**Q111** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:



**Assertion A:** Mesosome in bacteria help in photosynthesis.

**Reason R:** Mesosome increase the surface area of plasma membrane.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) A is true but R is false.
- (2) A is false but R is true.
- (3) Both A and R are true and R is the correct explanation of A.
- (4) Both A and R are true but R is NOT the correct explanation of A.

**Q112** Disc-shaped sacs in golgi apparatus are called:

- (1) tubules. (2) cisternae.
- (3) lamellae (4) vesicles.

**Q113** Prokaryotic cells are generally **A** and multiply more **B** than the eukaryotic cells. A and B, respectively, are;

- (1) A - smaller, B - slowly
- (2) A - larger, B - slowly
- (3) A - smaller, B - rapidly
- (4) A - larger, B - rapidly

**Q114** All the following are the functions of mesosome, **except:**

- (1) DNA replication.
- (2) respiration.
- (3) motility.
- (4) DNA distribution to daughter cells.

**Q115** Match **List-I** with **List-II**.

List-I		List-II	
(A)	Lysosome	(I)	Help in cell division
(B)	Golgi apparatus	(II)	Formed by the process of packaging in the golgi apparatus

(C)	Smooth endoplasmic reticulum	(III)	Site of formation of glycoproteins
(D)	Centrosome	(IV)	Major site for synthesis of lipid

Choose the **correct** answer from the options given below:

- (1) A-IV, B-III, C-II, D-I
- (2) A-I, B-III, C-IV, D-II
- (3) A-II, B-III, C-IV, D-I
- (4) A-I, B-III, C-II, D-IV

**Q116** Read the following steps related to the functioning of the Golgi apparatus and choose the **correct** sequence:

- (I) Proteins are synthesised by ribosomes on the endoplasmic reticulum.
- (II) Modified materials are released from the *trans* face.
- (III) Proteins are modified in the cisternae of the Golgi apparatus.
- (IV) Vesicles containing materials bud off from the ER and fuse with the *cis* face of the Golgi apparatus.

- (1) I → II → III → IV
- (2) II → I → III → IV
- (3) I → IV → III → II
- (4) II → III → I → IV

**Q117** In protists, \_\_\_\_\_ are formed by engulfing the food particles.

- (1) gas vacuoles
- (2) lysosome
- (3) glycogen granules
- (4) food vacuoles

**Q118** Given below are two statements:

**Statement I:** In plant cells the vacuoles can occupy up to 90 per cent of the volume of the cell.



**Statement II:** The vacuole is bound by a single membrane called tonoplast.

In the light of the above statements, choose the **correct** answer from the options given below:

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

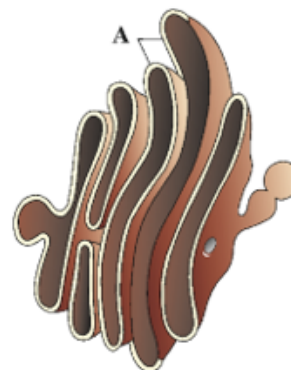
**Q119** Endomembrane system includes:

- (1) golgi complex, endoplasmic reticulum, mitochondria and lysosomes.
- (2) golgi complex, mitochondria, ribosomes and lysosomes.
- (3) endoplasmic reticulum, golgi complex, lysosomes and vacuoles.
- (4) endoplasmic reticulum, mitochondria, ribosomes and lysosomes.

**Q120** Identify the **incorrect** statement.

- (1) Most prokaryotic cells, particularly the bacterial cells, have a chemically complex cell envelope.
- (2) The plasma membrane is selectively permeable in nature and interacts with the outside world.
- (3) Bacteria can be classified into two groups on the basis of the differences in the cell envelopes and the manner in which they respond to the Gram staining procedure.
- (4) Each layer of the bacterial cell envelope performs same function, they act together as a single protective unit.

**Q121** Identify 'A' in the given figure.



- (1) Cisternae of golgi apparatus
- (2) Lumen of golgi apparatus
- (3) Cisternae of endoplasmic reticulum
- (4) Lumen of endoplasmic reticulum

**Q122** Which of the following are functions supported by the fluid nature of the plasma membrane?

- (I) Cell growth
- (II) Formation of intercellular junctions
- (III) Endocytosis
- (IV) Secretion
- (1) I and III only
- (2) I, II, and IV only
- (3) III and IV only
- (4) I, II, III and IV

**Q123** In bacteria, the small bristle like fibres sprouting out of the cell, known to help attach the bacteria to rocks in streams are called:

- (1) pili.
- (2) fimbriae.
- (3) filament.
- (4) hook.

**Q124** Identify the **incorrect** statements from the following.

- (1) Biochemical investigation clearly revealed that the cell membranes possess protein and carbohydrate.
- (2) The ratio of protein and lipid varies considerably in different cell types.
- (3) The cells of the human cheek have an outer membrane as the delimiting structure of the cell.



(4) Besides the nucleus, the prokaryotic cells have other membrane bound distinct structures called organelles.

**Q125** In some prokaryotes like cyanobacteria, there are membranous extensions into the cytoplasm called:

- (1) mesosomes which contain food particles.
- (2) chromosomes which contain DNA.
- (3) polysomes which contain enzymes.
- (4) chromatophores which contain pigments.

**Q126** Vacuole contains all of the following in it, **except**:

- (1) water.
- (2) sap.
- (3) excretory product.
- (4) reserve materials useful for the cell.

**Q127** Which of the following statement(s) is/are **correct**?

- (I) Nerve cells are some of the longest cells.
  - (II) Cells differ greatly in size, shape and activities.
  - (III) Ribosomes are found not only in the cytoplasm but also within the two organelles chloroplasts and mitochondria.
  - (IV) Various chemical reactions occur in cytoplasm to keep the cell in the living state.
- Choose the most appropriate answer from the options given below:

- (1) I, II, III and IV
- (2) I and II only
- (3) II and IV only
- (4) III and IV only

**Q128** Different cells have different sizes. Arrange the following cells in an ascending order of their size. Choose the **correct** option among the followings.

- I. Mycoplasma
- II. Ostrich egg
- III. Human RBC

IV. Bacteria

- (1) I → IV → III → II
- (2) I → II → III → IV
- (3) II → I → III → IV
- (4) III → II → I → IV

**Q129** In *Amoeba*, the contractile vacuole is important for:

- (1) respiration and osmoregulation.
- (2) excretion and respiration.
- (3) osmoregulation and excretion.
- (4) excretion and digestion.

**Q130** Match **List-I** with **List-II**:

List-I (cell type)		List-II (size)	
(A)	Viruses	(I)	1-2 micrometer
(B)	PPLO	(II)	10-20 micrometer
(C)	Eukaryotic cell	(III)	About 0.1 micrometer
(D)	Bacterium	(IV)	0.02-0.2 micrometer

Choose the **correct** answer from the options given below:

- (1) A-I, B-II, C-III, D-IV
- (2) A-IV, B-III, C-II, D-I
- (3) A-I, B-III, C-II, D-IV
- (4) A-IV, B-II, C-III, D-I

**Q131** Which bacterial shape is **correctly** matched?

- (1) Bacillus – Spiral like
- (2) Spirillum – Spherical-shaped
- (3) Vibrio – Comma-shaped
- (4) Coccus – Rod-like

**Q132** All the given statements about plasmodesmata are true, **except**:

- (1) they connect the cytoplasm of adjacent plant cells.



- (2) they allow the transport of molecules between cells.
- (3) they are present in both plant and animal cells.
- (4) they help in communication between cells.

**Q133** Read the following and identify the **correct** statements.

- (I) The bacterial flagellum consists of three parts: filament, hook, and basal body.
- (II) Fimbriae and pili are involved in bacterial motility.
- (III) Ribosomes in prokaryotes are 70S and made up of 50S and 30S subunits.
- (IV) In prokaryotes, ribosomes are associated with the plasma membrane of the cell.

- (1) I, II, and III only
- (2) I, III, and IV only
- (3) II, III, and IV only
- (4) I, II, III, and IV

**Q134** In animal cells, lipid-like steroidal hormones are synthesised in:

- (1) mitochondria.
- (2) smooth endoplasmic reticulum.
- (3) golgi body.
- (4) rough endoplasmic reticulum.

**Q135** Identify the **incorrect** statement.

- (1) In addition to the genomic DNA, few bacteria have small linear DNA outside the genomic DNA.
- (2) In bacteria, genomic DNA is single chromosome/circular DNA.
- (3) Prokaryotes have something unique in the form of inclusions.
- (4) Plasmid DNA is used to monitor bacterial transformation with foreign DNA.

**Q136** During the organization of living organisms, cells differentiate to perform specific roles. Which of

the following best describes the process and significance of tissue formation in multicellular organisms?

- (1) All functions like digestion, respiration, and reproduction are performed by a single cell, as seen in most complex organisms like *Hydra*.
- (2) Billions of cells in the human body perform all necessary functions for survival always independently.
- (3) A group of similar cells, along with intercellular substances, collaborate to perform a specific function, forming a tissue.
- (4) In unicellular organisms, tissues are formed to allow for more efficient nutrient absorption and waste removal.

**Q137** A student observes a layer of tightly packed cells with minimal intercellular space lining the inside of a blood vessel. These cells are interconnected through tight junctions. Based on this observation, which function is performed by this tissue?

- (1) Absorption of nutrients.
- (2) Allow no leakage across the tissue.
- (3) Rapid diffusion of gases.
- (4) All of these

**Q138** Tissues are only of two types in animals: epithelial and muscular.

Choose the **correct** answer from the following:

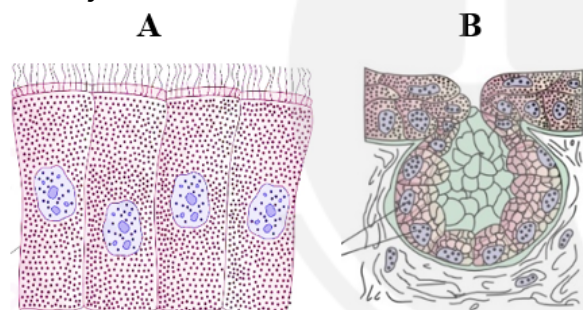
- (1) The statement is true for types but false for number.
- (2) The statement is true for number but false for types.
- (3) The statement is false for both types and number.
- (4) The statement is true for both types and number.

**Q139** What is the primary difference between exocrine and endocrine glands, and how do they release their secretions?



- (1) Exocrine glands release hormones directly into the bloodstream, while endocrine glands secrete mucus, saliva, and digestive enzymes.
- (2) Exocrine glands secrete hormones directly into the fluid bathing the gland, while endocrine glands release products through ducts or tubes.
- (3) Exocrine glands secrete products like earwax and oil through ducts, while endocrine glands release hormones directly into the bloodstream.
- (4) Exocrine glands do not have ducts, while endocrine glands release digestive enzymes into the fluid bathing the gland.

**Q140** A student was given sample of two tissues. He observed the tissues under the microscope and drew their figures as **A** and **B** given below. Identify the tissues **A** and **B**.



- (1) **A**-Columnar cells bearing cilia, **B**-Unicellular glandular epithelium
- (2) **A**- Cuboidal cells bearing cilia, **B**-Multicellular glandular epithelium
- (3) **A**- Compound cells bearing cilia, **B**-Unicellular glandular epithelium
- (4) **A**- Columnar cells bearing cilia, **B**-Multicellular glandular epithelium

**Q141** Consider the concept of "division of labour" in complex animals. Which of the following scenarios best exemplifies this principle?

- (1) A single cell performing all functions like digestion, respiration, and reproduction.
- (2) All cells in the body perform identical functions to ensure survival.
- (3) Different organs, like the kidneys, specialize in distinct functions that contribute to the body's overall survival.
- (4) A group of similar cells working independently without any interaction with other cells.

**Q142** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

**Assertion A:** Blood is composed of plasma, red blood cells, white blood cells and platelets.

**Reason R:** Blood is the main circulating fluid that helps in the transport of various substances.

In the light of the above statements, choose the **correct** answer from the options given below.

- (1) A is true but R is false.
- (2) A is false but R is true.
- (3) Both A and R are true and R is the correct explanation of A.
- (4) Both A and R are true but R is not the correct explanation of A.

**Q143** A student is observing different cell types under a microscope and notes their varying shapes and internal structures. This variation directly correlates with their specialized roles. Which of the following is the most accurate conclusion about the organization of these cells?

- (1) All cells, regardless of their structure, are grouped into a single, unclassified tissue type.
- (2) The structures of cells vary according to their function, therefore the tissues are classified into four main types: Epithelial, Connective, Muscular, and Neural.



- (3) Cellular structure has no bearing on tissue classification; only their location in the body matters.
- (4) Tissues are classified based on their size, with larger cells forming one type and smaller cells forming another.

**Q144** Consider a tissue found lining the digestive tract and covering external surfaces of the body. Its cells form protective barriers. Which of the following tissue types does this description best fit?

- (1) Connective tissue holds organs in place.
- (2) Neural tissue, because it receives stimuli.
- (3) Epithelial tissue, known for its roles in protection.
- (4) Muscular tissue, which is responsible for contractile movements.

**Q145** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

**Assertion A:** The macrophage of areolar tissue secretes collagen fibres.

**Reason R:** The fibres provide strength, elasticity and flexibility to the tissue.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) A is true but R is false.
- (2) A is false but R is true.
- (3) Both A and R true and R is the correct explanation of A.
- (4) Both A and R true and R is not the correct explanation of A.

**Q146** Epithelial tissue is characterized by having a **free surface**. What is the significance of this characteristic?

- (1) It allows the tissue to easily connect with the underlying muscle tissue.

- (2) It ensures the tissue is always submerged in blood for nutrient supply.
- (3) It means the tissue always forms a single layer of cells for efficient diffusion.
- (4) It signifies that one side of the tissue is exposed to either a body fluid or the outside environment.

**Q147** Which of the following pairs does **not** have a similar kind of epithelial tissue?

- (1) Blood vessels and alveoli.
- (2) Stomach and intestine.
- (3) Blood vessels and fallopian tubes.
- (4) Buccal cavity and pharynx.

**Q148** Imagine a specialized lining in the walls of blood vessels, where diffusion of substances occurs. Given its function, which type of epithelial tissue would you expect to find here?

- (1) Compound epithelium, due to its multi-layered structure.
- (2) Squamous epithelium, composed of a single layer of cells optimized for exchange.
- (3) Neural tissue, as it needs to transmit signals for kidney function.
- (4) Connective tissue, providing the primary framework for filtration.

**Q149** Which of the following statements best explains why the presence of microvilli in the epithelium of the proximal convoluted tubule (PCT) of the nephron is significant?

- (1) Microvilli help to move mucus in a specific direction over the epithelium.
- (2) Microvilli are characteristic of flattened cells only.
- (3) Microvilli increase the surface area for efficient absorption and reabsorption of substances in the kidney.
- (4) Microvilli are only found on tall, slender cells whose primary function is secretion.



- Q150** Bone differs from cartilage in possessing:
- (1) solid and pliable ground substance.
  - (2) chondrocytes are present in the fluid filled spaces.
  - (3) matrix which is rich in calcium salts and collagen fibres.
  - (4) intercellular material that resists compression.

- Q151** A researcher observes a biological structure composed of a cluster of cells working together to produce a secretion. This structure is identified as a salivary gland. Choose the **correct** answer from the following:

- (1) The observation is consistent with a unicellular organism.
- (2) The observation is consistent with a multicellular structure consisting of a cluster of cells.
- (3) The observation describes a tissue, not a gland.
- (4) The observation is false, as glands are always single-celled.

- Q152** Which of the following statements **correctly** describes the primary function of connective tissues?

- (1) It is mainly involved in forming a thin, irregular barrier.
- (2) It primarily functions in transmitting electrical signals for muscle contraction.
- (3) It specializes in the secretion of digestive juices and the absorption of nutrients due to its tall and slender cells.
- (4) It helps in linking and supporting other tissues/organs of the body.

- Q153** Match the **List-I** with **List-II**:

List-I		List-II	
(A)	Cuboidal epithelium	(I)	Lining of intestine

(B)	Ciliated epithelium	(II)	Moist surface of buccal cavity
(C)	Compound epithelium	(III)	Bronchioles
(D)	Columnar epithelium	(IV)	Ducts of glands

Choose the **correct** answer from the options given below.

- (1) A-I, B-III, C-II, D-IV
- (2) A-III, B-II, C-IV, D-I
- (3) A-IV, B-III, C-II, D-I
- (4) A-IV, B-II, C-III, D-I

- Q154** Which of the following statements best explains why the presence of cilia on epithelial cells in the fallopian tube is crucial?

- (1) Cilia enhance the secretion of digestive fluids into the fallopian tubes.
- (2) Cilia facilitate the movement of air into and out of the lungs by rapid contractions.
- (3) Cilia help to move the egg in a specific direction over the epithelium in the fallopian tubes.
- (4) Cilia increase the surface area for efficient gas exchange across the membrane.

- Q155** A biopsy from a region subject to frequent abrasion and exposure to various substances reveals a multi-layered epithelial tissue. Which of the following options **correctly** identifies this tissue?

- (1) Glandular epithelium
- (2) Ciliated epithelium
- (3) Compound epithelium
- (4) Squamous epithelium

- Q156** Given below are two statements:

**Statement I:** Simple epithelium is composed of a single layer of cells and functions as a lining for body cavities, ducts, and tubes.



**Statement II:** On the basis of structural modification of the cells, simple epithelium is further divided into three types.

In the light of the above statements, choose the most appropriate answer from the options given below:

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

**Q157** If the adhering junctions between neighbouring cells in a tissue are not functioning properly, what is the most likely result?

- (1) The cells will lose their ability to secrete substances.
- (2) The tissue will fail to transmit electrical impulses effectively.
- (3) The neighboring cells will not be properly cemented together, affecting tissue integrity.
- (4) The cells will be unable to divide and multiply.

**Q158** Consider the following statements about the components of connective tissues.

- A. Collagen and elastin are examples of structural proteins secreted by connective tissue cells.
- B. Blood cells are unique among connective tissues in secreting protein fibers.
- C. The matrix (ground substance) is formed by the accumulation of modified polysaccharides between cells and fibers.
- D. Cartilage and bone are classified under dense connective tissue.
- E. Connective tissues are the least abundant in the body of complex animals.

Choose the **correct** answer from the options given below.

- (1) Only statements A and C are correct.
- (2) Only statements B and D are correct.
- (3) Only statements A, C, and E are correct.
- (4) All statements are correct.

**Q159** Given below are two statements:

**Statement I:** In complex body of multicellular animals, same basic functions are carried out by different groups of cells in a well-organized manner.

**Statement II:** Simple cuboidal epithelium consists of a single layer of cube-like cells.

In the light of the above statements, choose the most appropriate answer from the options given below:

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

**Q160** Which of the following statements is **true** regarding the tissue composition of any organ in a complex animal, such as the kidney?

- (1) It contains only specialized connective tissues.
- (2) It consists of just epithelial and muscular tissues.
- (3) It is made up of a specific arrangement of the four basic types of tissues.
- (4) It is a single cell.

**Q161** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

**Assertion A:** Stomach of our body is lined by simple columnar epithelium.



**Reason R:** Simple columnar epithelium helps in secretion and absorption.

In the light of the above statements, choose the **correct** answer from the options given below.

- (1) A is true but R is false.
- (2) A is false but R is true.
- (3) Both A and R are true and R is the correct explanation of A.
- (4) Both A and R are true but R is not the correct explanation of A.

**Q162** Loose connective tissue, such as areolar tissue, is found beneath the skin and has cells and fibres loosely arranged. Choose the **correct** answer from the following:

- (1) The statement is true for the location but false for the arrangement of cells and fibres.
- (2) The statement is true for both aspects.
- (3) The statement is false for the location but true for the arrangement of cells and fibres.
- (4) The statement is false for both aspects.

**Q163** Which of the following statements **correctly** describes the distribution of cartilage in adult human limbs and hands?

- (1) Cartilage is completely absent in adult limbs and hands, having been fully replaced by bone.
- (2) Cartilage is present throughout the entire length of bones in the limbs only.
- (3) Cartilage is present in the limbs and hands.
- (4) Cartilage forms the primary supportive framework for all soft tissues in the limbs and hands.

**Q164** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

**Assertion A:** Bone's rigid, mineralized matrix with osteocytes in lacunae provides skeletal support.

**Reason R:** Large amoeboid cells, that are a part

of our innate immune system, found in the areolar tissue are called as macrophages.

In the light of the above statements, choose the correct answer from the options given below:

- (1) A is true but R is false.
- (2) A is false but R is true.
- (3) Both A and R are true and R is the correct explanation of A.
- (4) Both A and R are true but R is not the correct explanation of A.

**Q165** Find the **mismatched** pair.

- (1) Ligaments - Dense regular connective tissue
- (2) Pharynx - Compound epithelium
- (3) Blood - Loose connective tissue
- (4) Dry surface of skin - Compound epithelium

**Q166** What is the primary characteristic of dense connective tissues regarding their cellular and/or fibrous components?

- (1) Cells and fibers are loosely arranged in a semi-fluid ground substance.
- (2) Fibers are completely absent, and cells are suspended in a liquid matrix.
- (3) Fibers are compactly packed within the tissue.
- (4) All of these

**Q167** Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

**Assertion A:** Gap junction is a type of cytoplasmic connection between adjacent cells.

**Reason R:** Gap junctions facilitate the cells to communicate with each other by connecting the cytoplasm of adjoining cells, for rapid transfer of ions, small molecules and sometimes big molecules.

In the light of the above statements, choose the **correct** answer from the options given below:

- (1) A is true but R is false.
- (2) A is false but R is true.



- (3) Both A and R are true and R is the correct explanation of A.  
 (4) Both A and R are true but R is NOT the correct explanation of A.

**Q168** A patient undergoes a bone marrow transplant as a treatment for a blood disorder. This procedure directly targets which vital function associated with bones?

- (1) Their fat digestion and absorption capacity.
- (2) Their ability to interact with muscles for movement.
- (3) Their role as a protective shield for internal organs.
- (4) Their function as the site of blood cell production.

**Q169** What is the primary factor that differentiates dense regular from dense irregular connective tissues?

- (1) The type of protein fibers present (collagen vs. elastin).
- (2) The abundance of cells versus the amount of extracellular matrix.
- (3) The orientation of the fibers, showing either a regular or irregular pattern.
- (4) The presence or absence of a semi-fluid ground substance.

**Q170** Which of the following structures attaches one bone to another bone?

- A. Tendons  
 B. Ligaments  
 C. Epithelium  
 D. Neural tissue

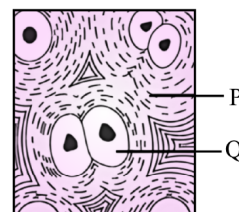
- (1) D only                      (2) B only  
 (3) A and C only            (4) B and D only

**Q171** If a tissue contains fibroblasts and a high concentration of collagen fibers oriented predominantly in a single, parallel direction, it would be classified as dense irregular connective

tissue. Choose the **correct** answer from the following:

- (1) The statement is true for the cell and fiber content but false for the classification based on orientation.
- (2) The statement is true for both aspects.
- (3) The statement is false for the cell and fiber content but true for the classification.
- (4) The statement is false for both aspects.

**Q172** Identify the **correct** labelling of the diagram given below.



- (1) P-Collagen fibres, Q-Osteocyte
- (2) P-Elastic fibres, Q-Fibroblast
- (3) P-Elastic fibres, Q-Macrophage
- (4) P-Collagen fibres, Q-Chondrocyte

**Q173** In the development of vertebrates, which of the following statements about skeletal tissue transformation is **correct**?

- (1) Most bones in vertebrate embryos are replaced by cartilage in adults.
- (2) Cartilage remains the primary skeletal support throughout the adult life of all vertebrates.
- (3) Most of the cartilages present in vertebrate embryos are replaced by bones in adults.
- (4) Bones are formed directly, without any prior cartilage templates, in embryos.

**Q174** Which of the following statements **correctly** identifies a location where cartilage is present in adult humans?

- (1) In the marrow of long bones.
- (2) In the inner lining of the stomach.
- (3) At the tip of the nose.



(4) Throughout the entire length of the spinal cord.

**Q175** In an experimental model, a researcher removed the tissue that stores excess nutrients in the form of fat and also plays a role in cushioning and insulation. Post removal, the animal showed rapid weight loss and poor temperature regulation. Which tissue was likely removed, and what is the main cell type found in this tissue?

- (1) Cartilage; chondrocytes
- (2) Blood; fibroblasts
- (3) Adipose tissue; adipocytes
- (4) Bone; osteocytes

**Q176** If an adult human experiences flexibility between adjacent bones of the vertebral column, which of the following tissues is primarily responsible for this?

- (1) Dense irregular connective tissue
- (2) Bone tissue
- (3) Cartilage
- (4) Loose connective tissue

**Q177** A scientist notes that the cells forming a tissue specialized for transmitting signals have a distinctly different structure from cells forming a tissue specialized for contraction. Based on the fundamental principle of tissue organization, what does this observation imply?

- (1) All four types of tissues (Epithelial, Connective, Muscular, Neural) have identical cellular structures.
- (2) The structure of cells varies according to their specific function, leading to the differentiation into various tissue types.
- (3) Tissue classification is based solely on the location of the cells within the body, not their structure or function.

(4) Complex animals only possess one universal type of cell that adapts its function as needed without structural variation.

**Q178** A patient suffers a severe impact to the chest, but internal organs like the heart and lungs remain largely undamaged. Based on the protective function of the skeletal system, which of the following best explains this outcome?

- (1) Adipose tissue around the organs absorbed most of the impact.
- (2) Ligaments provided sufficient cushioning to prevent organ damage.
- (3) Bones provided structural support and protection to the softer tissues and organs.
- (4) Tendons stretched and dissipated the force of the impact.

**Q179** If a microscopic image of bone tissue shows mature bone cells, where would you expect to find these cells embedded?

- (1) Freely floating in the bloodstream.
- (2) Forming a continuous sheet on the surface of the bone.
- (3) Hollow spaces referred to as lacunae.
- (4) Organized in parallel bundles within tendons.

**Q180** A gymnast's training regimen heavily emphasizes strengthening their long bones, such as those in the legs and arms, due to the high impact and stress involved in their sport. This focus is directly related to which essential function of these bones?

- (1) Their role in regulating body temperature.
- (2) Their capacity for producing various enzymes.
- (3) Their crucial weight-bearing and supportive functions.
- (4) Their primary involvement in nerve impulse transmission.



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