Yakeen NEET 2.0 (2026)

Practice Test - 02

DURATION : 180 Minutes | **DATE : 22/06/2025** | **M. MARKS : 720**

Topics Covered

Physics :	Basic Maths & Calculus (Mathematical Tools) (Complete Chapter), Vectors (Complete Chapter).
Chemistry :	Some Basic Concept of Chemistry, (Complete Chapter), Redox Reaction (Complete Chapter).
Biology :	**(Botany):** Cell - The Unit of Life (Complete Chapter). **(Zoology):** Structural Organization in Animals: Tissues, Animal Tissues, Epithelium Tissue, Cell Junctions, Connective Tissue, Muscular Tissue, Nervous Tissue, FROG.

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 : _____

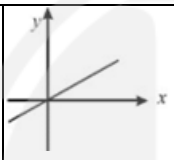
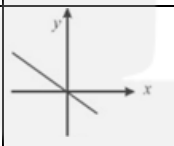
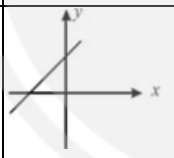
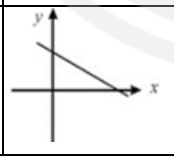
Candidate's Signature : _____ **Invigilator's Signature** _____

Practice Test-02

Yakeen NEET 2.0 (2026)

Q1 If $y = \frac{1}{2}\sin\left(x^2\right)$, $\frac{dy}{dx}$ will be:
(1) $\frac{1}{2}\cos\left(x^2\right)$
(2) $x\cos\left(x^2\right)$
(3) $\cos(x^2)$
(4) $\sin(x)$

Q2 Match the graph in List-II corresponding to the equations given in List I

List I		List II	
(i).	$y = 4x$	(a)	
(ii).	$y = -6x$	(b)	
(iii).	$y = x + 4$	(c)	
(iv).	$y = -2x + 4$	(d)	

Choose the **correct** option from the codes given below
(1) i-(b), ii-(c), iii-(d), iv-(a)
(2) i-(a), ii-(d), iii-(b), iv-(c)
(3) i-(b), ii-(c), iii-(a), iv-(d)
(4) i-(a), ii-(b), iii-(c), iv-(d)

Q3 Evaluate the integrals :- $\int_{-\pi/2}^{\pi/2} \cos x dx -$
(1) 0 (2) 2
(3) –2 (4) 1

Q4 Value of $\sin(37^\circ)\cos(53^\circ)$ is
(1) $\frac{9}{25}$
(2) $\frac{12}{25}$
(3) $\frac{16}{25}$
(4) $\frac{3}{5}$

Q5 A force $\left(2\hat{i} + 2\hat{j}\right)\mathrm{N}$ displaces an object through a displacement $\left(2\hat{i} - 3\hat{j}\right)m.$
The work done is
(1) 2 J (2) –2 J
(3) 5 J (4) 13 J

Q6 Cross product of two vectors $\vec{a}$ and $\vec{b}$ is maximum in magnitude when angle between them is
(1) 0°
(2) 180°
(3) 90°
(4) 45°

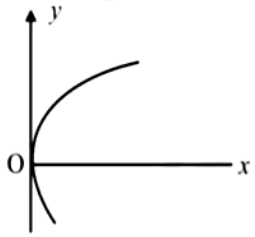
Q7 A set of equal vectors taken in same order give a closed polygon. Then the resultant of these vectors is a
(1) scalar quantity
(2) a non-zero vector
(3) unit vector
(4) null vector

Q8 Match the List I with List II to find out the **correct** option

	List I		List II
(i).	$\log_e 125 + \log_e 4 - 2\log_e 5$	(a)	1
(ii).	$\log_e 16$	(b)	$\log_e 20$
(iii).	$\log_{10} 10$	(c)	$4\log_e 2$
(iv).	$\log_2 16$	(d)	4

Choose the **correct** option from the codes given below
(1) i-(b), ii-(a), iii-(c), iv-(d)
(2) i-(a), ii-(b), iii-(c), iv-(d)
(3) i-(b), ii-(c), iii-(a), iv-(d)
(4) i-(d), ii-(a), iii-(b), iv-(c)

Q9 At $x = 0$, the value of slope is



(1) 0 (2) 1
(3) –1 (4) Infinite

Q10 Two forces, each of magnitude *F* have a resultant of the same magnitude *F*. The angle between the two forces is;
(1) 45° (2) 120°
(3) 150° (4) 60°

Q11 Which of the following pair of forces will **never** give resultant force of $2\ \mathrm{N}$?
(1) $2\ \mathrm{N}$ and $2\ \mathrm{N}$
(2) $1\ \mathrm{N}$ and $1\ \mathrm{N}$
(3) $1\ \mathrm{N}$ and $3\ \mathrm{N}$
(4) $1\ \mathrm{N}$ and $4\ \mathrm{N}$

Q12 A ladder is resting with the wall at an angle of 30°. A man is ascending the ladder at the rate of $3\mathrm{ft/sec}$. His rate of approaching the wall is
(1) $3\mathrm{ft/sec}$
(2) $\frac{3}{2}\mathrm{ft/sec}$
(3) $\frac{3}{4}\mathrm{ft/sec}$
(4) $\frac{3}{\sqrt{2}}\mathrm{ft/sec}$

Q13 Find the approximate value of $(1+x)^{1/2}$ if $|x| << 1$
(1) $\left(1+\frac{x}{2}\right)$
(2) $(1+x)$
(3) $\left(1-\frac{x}{2}\right)$
(4) $\left(1-\frac{x}{3}\right)$

Q14 The slope of straight line $\sqrt{3}y = 3x + 4$ is.
(1) 3 (2) $\sqrt{3}$
(3) $\frac{1}{\sqrt{3}}$ (4) $\frac{1}{3}$

Q15 The angle between the direction of $\hat{i}$ and $(\hat{i}+\hat{j})$ is
(1) 90°
(2) 0°
(3) 45°
(4) 180°

Q16 The component of vector $\vec{V} = 3\hat{i} + 2\hat{j}$ along the vector $\vec{R} = 3\hat{i} - 4\hat{j}$ will be :
(1) 1
(2) $\frac{1}{5}$
(3) 17
(4) 5

Q17 For the resultant of the two vectors to be maximum, what must be the angle between them?
(1) 0° (2) 60°
(3) 90° (4) 180°

Q18 Find value of $e^{-\infty}$
(1) Zero (2) Infinite
(3) e (4) 1

Q19 The component of a vector is -
(1) Less than or equal to its magnitude
(2) Always greater than its magnitude
(3) Always equal to its magnitude
(4) None of these

Q20 $\frac{d}{dx}\sin 7x = ?$
(1) 7 sin 7*x* (2) 7 cos 7*x*
(3) cos 7*x* (4) 8 sin 7*x*

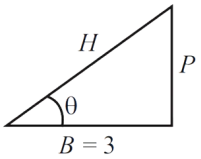
Q21 A particle is simultaneously acted by two forces equal to 8 N and 6 N. The net force on the particle, when angle between them is 90, is;
(1) 14 N (2) 5 N
(3) 2 N (4) 10 N

Q22 If $\mathbf{A}$ is a vector with magnitude A, then the unit vector $\hat{\mathbf{a}}$ in the direction of vector $\mathbf{A}$ is
(1) $A\mathbf{A}$
(2) $\mathbf{A}\cdot\mathbf{A}$
(3) $\mathbf{A}\times\mathbf{A}$
(4) $\frac{\mathbf{A}}{|\mathbf{A}|}$

Q23 If $y = \ln x + e^x$, then find $\frac{dy}{dx}$.
(1) $e^x + x$ (2) $\ln x + x$
(3) $\frac{1}{x} + e^x$ (4) $\frac{1}{x} + e$

Q24 $\log_e 15$ 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) $\log_e 10 - \log_e 5$

Q25 If θ is very small then find H.

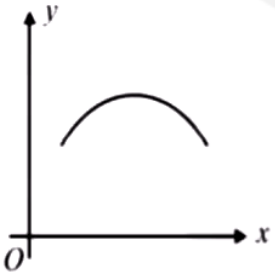


(1) 3
(2) $\frac{3}{5}$
(3) $\frac{4}{5}$
(4) 5

Q26 What is the value of $\log_2 16$?
(1) 8 (2) 4
(3) $1/8$ (4) 16

Q27 Find the approximate value of $\cos 1^\circ$
(1) 1
(2) $\frac{\pi}{60}$
(3) $\frac{\pi}{30}$
(4) $\frac{\pi}{180}$

Q28 Magnitude of slope i.e., steepness of graph shown in figure



(1) First increase and then decreases
(2) First decreases and then increases
(3) Decreases continuously
(4) Increases continuously

Q29 $y = 2u^3, u = 8x - 1$. Find $\frac{dy}{dx}$
(1) $48(8x-1)^2$
(2) $48(8x+1)^2$
(3) $48(8x-1)$
(4) $48(8x+1)$

Q30 If the angle between two forces increases, the magnitude of their resultant
(1) decreases
(2) increases
(3) remains unchanged
(4) first decreases and then increases

Q31 The vector that must be added to the vector $\hat{i} - 3\hat{j} + 2\hat{k}$ so that the resultant will be equal to $3\hat{i} - 6\hat{j} + 10\hat{k}$
(1) $4\hat{i} + 2\hat{j} + 5\hat{k}$ (2) $\left(2\hat{i} - 3\hat{j} + 8\hat{k}\right)$
(3) $3\hat{i} + 4\hat{j} + 5\hat{k}$ (4) Null vector

Q32 There are two force vectors, one of 5 N and other of 12 N at what angle the two vectors be added to get resultant vector of 17 N, 7 N and 13 N respectively
(1) 0°, 180° and 90°
(2) 0°, 90° and 180°
(3) 0°, 90° and 90°
(4) 180°, 0° and 90°

Q33 A vector perpendicular to $(4\hat{\mathrm{i}} - 3\hat{\mathrm{j}})$ may be :
(1) $4\hat{\mathrm{i}} + 3\vec{\mathrm{j}}$
(2) $7\hat{k}$
(3) $6\hat{\mathrm{i}}$
(4) $3\hat{\mathrm{i}} - 4\hat{\mathrm{j}}$

Q34 Differentiation of $(\sin\ x)^2$ w.r.t.x is
(1) $(\cos x)^2$ (2) $2x(\cos x)^2$
(3) $\sin\ 2x$ (4) $-\cos(2x)$

Q35 $\vec{A} = 2\hat{i} + \hat{j}$, $B = 3\hat{j} - \hat{k}$ and $\vec{C} = 6\hat{i} - 2\hat{k}$.
Value of $\vec{A} - 2\vec{B} + 3\vec{C}$ would be
(1) $20\hat{i} + 5\hat{j} + 4\hat{k}$
(2) $20\hat{i} - 5\hat{j} - 4\hat{k}$
(3) $4\hat{i} + 5\hat{j} + 20\hat{k}$
(4) $5\hat{i} + 4\hat{j} + 10\hat{k}$

Q36 As θ increases from 0° to 90°, the value of $\cos\theta$:-

(1) Increases
(2) Decreases
(3) Remains constant
(4) First decreases then increases

Q37 $\int e^{5x}dx$

(1) $e^{5x}+C$
(2) $e^{5x}\cdot\frac{5x^2}{2}+C$
(3) $\frac{e^{5x}}{5}+C$
(4) $e^{x}+C$

Q38 If $\vec{A}=3\hat{i}+4\hat{j}+2\hat{k}$, then find $|\vec{A}|$.

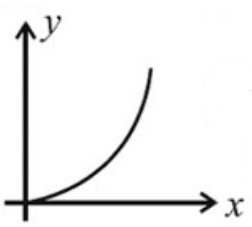
(1) $\sqrt{39}$
(2) $\sqrt{29}$
(3) 28
(4) 29

Q39 The scalar product of two vectors $\vec{A}=2\hat{\mathrm{i}}+2\hat{\mathrm{j}}-\hat{k}$ and $\vec{B}=-\hat{\mathrm{j}}+\hat{\mathrm{k}}$, is given by

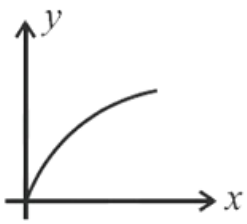
(1) $\vec{\mathrm{A}}\cdot\vec{\mathrm{B}}=3$
(2) $\vec{\mathrm{A}}\cdot\vec{\mathrm{B}}=4$
(3) $\vec{\mathrm{A}}\cdot\vec{\mathrm{B}}=-4$
(4) $\vec{\mathrm{A}}\cdot\vec{\mathrm{B}}=-3$

Q40 Which graph is the best representation for the given equation, $y\propto x^2$

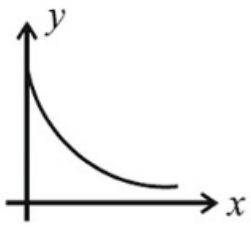
(1)



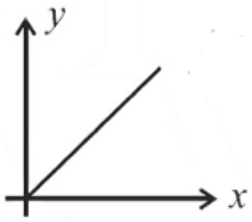
(2)



(3)



(4)



Q41 If $\vec{A}+\vec{B}=\vec{C}$ and $A+B=C$, then the angle between $\vec{A}$ and $\vec{B}$ is:

(1) 0 (2) $\pi/4$
(3) $\pi/2$ (4) π

Q42 The equation $x^2+8x+12=0$ has

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

Q43 Find value of 10^2+10^3

(1) 10^5 (2) 10×10^2
(3) 10^6 (4) 1100

Q44 Which of the following is correct for $(64)^{2/3}$

(1) 16 (2) 32
(3) 4 (4) 8

Q45 $\int 3x^2dx$

(1) x^3+C (2) $6x+C$
(3) $2x^2+C$ (4) x^2+C

Q46 Given below are two statements. One is labelled as Assertion (A) and other is labelled as Reason (R):

Assertion (A): All decomposition reactions are redox reactions.

Reason(R): H_2O on decomposition gives H_2 and O_2.

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.

Q47 Consider the following statement:
I. Addition of oxygen or electronegative element to a substance is called oxidation.
II. Electron donors act as reducing agent.
III. An oxidising agent accepts electrons.
The **correct** statements are:
(1) I and II only
(2) I and III only
(3) II and III only
(4) I, II and III

Q48 The equivalent weight of $NaHC_2O_4$ in reaction with NaOH is;
(1) 112 (2) 56
(3) 224 (4) 84

Q49 The oxidation states of sulphur in the anions SO_3^{2-}, $S_2O_4^{2-}$ and $S_2O_6^{2-}$ follow the order
(1) $S_2O_6^{2-} < S_2O_4^{2-} < SO_3^{2-}$
(2) $S_2O_4^{2-} < SO_3^{2-} < S_2O_6^{2-}$
(3) $SO_3^{2-} < S_2O_4^{2-} < S_2O_6^{2-}$
(4) $S_2O_4^{2-} < S_2O_6^{2-} < SO_3^{2-}$

Q50 Given the standard electrode potentials,
$K^+/K = -2.93\ V, Ag^+/Ag = 0.8\ V,$
$Hg^{2+}/Hg = 0.79\ V, Mg^{2+}/Mg = -2.37\ V,$
$Cr^{3+}/Cr = -0.74\ V$
Arrange these metals in increasing order of their reducing power.
(1) Hg < Cr < Ag < Mg < K
(2) Hg < K < Mg < Cr < Ag
(3) Ag < K < Mg < Hg < Cr
(4) Ag < Hg < Cr < Mg < K

Q51 In the reaction, $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$, the ratio by volume of N_2, H_2 and 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.

Q52 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

Q53 The number of atoms present in 0.2 mole of a triatomic gas is:
(1) 3.613×10^{21}
(2) 3.613×10^{23}
(3) 1.8066×10^{24}
(4) 1.8066×10^{22}

Q54 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:
Assertion A: Combustion of $16\ g$ of methane gives $18\ g$ of water.
Reason R: In the combustion of methane, water is one of the product.
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.

Q55 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.

Q56 If the concentration of glucose $(C_6H_{12}O_6)$ in blood is $0.9\ g\ L^{-1}$, what will be the molarity of glucose in blood?
(Molar mass of $C_6H_{12}O_6$=180 g/mol)
(1) $5\ M$ (2) $50\ M$
(3) $0.005\ M$ (4) $0.5\ M$

Q57 3 g of glucose [Molar mass = 180 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

Q58 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.

Q59 A solution is prepared by adding 5 g of a substance x to 20 g of water. The mass percent of the solute (x) is;
(1) 25% (2) 15%
(3) 30% (4) 20%

Q60 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.

Q61 For a reaction A + 2B → C, the amount of C formed by starting the reaction with 5 moles of A and 8 moles of B is:
(1) 5 moles (2) 8 moles
(3) 16 moles (4) 4 moles

Q62 The empirical formula of a gaseous compound is CH_2. The density of the compound is $1.25 g/L$. at S.T.P. The molecular formula of the compound is:
(1) C_2H_4
(2) C_3H_6
(3) C_6H_{12}
(4) C_6H_{10}

Q63 The statement, 'If two elements can combine to form more than one compound, the masses of one element that combine with a fixed mass of the other element, are in the ratio of small whole numbers' is in accordance with;
(1) Avogadro's law
(2) Law of constant proportions
(3) Law of multiple proportions
(4) Law of conservation of mass

Q64 How many moles of magnesium phosphate, $Mg_3(PO_4)_2$ will contain 0.25 mol of oxygen atoms?
(1) 0.02
(2) 3.125×10^{-2}
(3) 1.25×10^{-2}
(4) 2.5×10^{-2}

Q65 Match **List-I** with **List-II.**

List-I (Physical quantity)		**List-II (Unit)**	
(A)	Molarity	(I)	mol
(B)	Mole fraction	(II)	Unitless
(C)	Amount of substance	(III)	mol L^{-1}
(D)	Molality	(IV)	mol kg^{-1}

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

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

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

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

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

Q66 Which of the following is the **incorrect** representation of 1.2345×10^4?

(1) 1234.5×10^1

(2) 123.45×10^2

(3) 1.2345×10^3

(4) 12.345×10^3

Q67 In the reaction, $2SO_2 + O_2 \rightarrow 2SO_3$, when 1 mole of SO_2 and 1 mole of O_2 are made to react to completion:

(1) all the oxygen will be consumed.

(2) 1.0 mole of SO_3 will be produced.

(3) 0.5 mole of SO_2 will remain.

(4) All of these

Q68 In the given balanced reaction,

$$4O_2^x + 2H_2O \longrightarrow 4OH^- + 3O_2$$

(1) $x = -4$ and species is oxide

(2) $x = -2$ and species is superoxide

(3) $x = 0$ and species is oxygen

(4) $x = -1$ and species is superoxide

Q69 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: $H_2S(g) + Cl_2(g) \rightarrow 2HCl(g) + S(s)$ is a redox reaction.

Reason R: H_2S is oxidised because a more electronegative element, chlorine is added (or a more electropositive element, hydrogen has been removed) Whereas Chlorine is reduced due to addition of hydrogen to it.

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.

Q70 The oxidation states of iodine in HIO_4, H_3IO_5 and H_5IO_6 are respectively:

(1) +1, +3, +7 (2) +7, +7, +3

(3) +7, +7, +7 (4) +7, +5, +3

Q71 Which reaction is **not** a redox reaction?

(1) $MnO_4^- \rightarrow MnO_2 + O_2$

(2) $Cl_2 + H_2O \rightarrow HCl + HClO$

(3) $2\,CrO_4^{2-} + 2H^+ \rightarrow Cr_2\,O_7^{2-} + H_2O$

(4) $MnO_4^- + 8H^+ + 5\,Fe^{2+} \rightarrow Mn^{+2} + 5\,Fe^{3+} + 4H_2O$

Q72 Which of the following reactions is the metal displacement reaction?

(1) $Cr_2\,O_3 + 2Al \xrightarrow{\Delta} Al_2\,O_3 + 2\,Cr$

(2) $Fe + 2HCl \rightarrow FeCl_2 + H_2 \uparrow$

(3) $2\,Pb\,(NO_3)_2 \rightarrow 2PbO + 4\,NO_2 + O_2 \uparrow$

(4) $2\,KCl\,O_3 \xrightarrow{\Delta} 2KCl + 3O_2$

Q73 Which of the following reactions involve disproportionation?

(1) $2H_2SO_4 + Cu \longrightarrow CuSO_4 + 2H_2O + SO_2$

(2) $As_2O_3 + 3H_2S \longrightarrow As_2S_3 + 3H_2O$

(3) $2KOH + Cl_2 \longrightarrow KCl + KOCl + H_2O$

(4) $Ca_3P_2 + 6H_2O \longrightarrow 3Ca(OH)_2 + 2PH_3$

Q74 Given below are two statements:

Statement I: I^- can never act as an oxidizing agent.

Statement II: Oxidizing agent undergoes reduction.

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.

Q75 Given below are two statements:

Statement I: The standard electrode potential is measured at 25°C.

Statement II: The standard electrode potential of hydrogen electrode is 0 volt.

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.

Q76 Given below are two statements:

Statements I: In Br_3O_8 each of the two terminal bromine atoms are present in +6 oxidation state.

Statements II: In Br_3O_8, the middle bromine is present in +4 oxidation state.

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.

Q77 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Zn^{2+} is a better reducing agent than Al^{3+}.

Reason R: $E^{o}_{Zn^{2+}\,|\,Zn}$ comes below $E^{o}_{Al^{3+}\,|\,Al}$ in electrochemical series.

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.

Q78 The equivalent mass of H_2O_2 considering only reduction is:

(1) M/2 (2) M

(3) 2M (4) M/4

Q79 Consider the following reaction,

$$xMnO_4^- + yC_2O_4^{2-} + zH^+ \rightarrow xMn^{2+} + 2yCO_2 + \frac{z}{2}H_2O$$

The value of x, y and z in the above reaction are respectively:

(1) 5, 2 and 6 (2) 2, 5 and 8

(3) 2, 5 and 16 (4) 5,2 and 8

Q80 Two oxidation states for chlorine are found in the compound

(1) $CaOCl_2$

(2) KCl

(3) $KClO_3$

(4) Cl_2O_7

Q81 In the conversion of Br_2 to BrO_3^-, the oxidation number of Br changes from:

(1) 0 to +5 (2) +1 to +5

(3) 0 to -3 (4) +2 to +5

Q82 Which of the following is the most powerful oxidising agent?

(1) F_2 (2) O_2

(3) Br_2 (4) I_2

Q83 What is 'A' in the following reaction $2\ Fe^{3+}{}_{(aq)} + Sn^{2+}{}_{(aq)} \rightarrow 2Fe^{2+}_{(aq)} + A$?

(1) $Sn^{3+}_{(aq)}$

(2) $Sn^{2+}{}_{(aq)}$

(3) $Sn^{4+}_{(aq)}$

(4) Sn

Q84 When Sn^{2+} changes to Sn^{4+} in a reaction:

(1) It loses two electrons

(2) It gains two electrons

(3) It loses two protons
(4) It gains two protons

Q85 In the following redox reaction.

$$x\mathrm{MnO} + y\mathrm{PbO_2} + z\mathrm{HNO_3} \rightarrow \mathrm{HMnO_4} + \mathrm{Pb(NO_3)_2} + \mathrm{H_2O}$$

The value of x, y and z, respectively, is;
(1) $x = 2, y = 5, z = 10$
(2) $x = 2, y = 7, z = 8$
(3) $x = 2, y = 5, z = 8$
(4) $x = 2, y = 5, z = 5$

Q86 0.5 mole of $\mathrm{H_2SO_4}$ is mixed with 0.2 mole of $\mathrm{Ca(OH)_2}$. The maximum number of moles of $\mathrm{CaSO_4}$ formed is:
(1) 0.2 (2) 0.5
(3) 0.4 (4) 1.5

Q87 Consider the reaction:
$A_2 + 3B_2 \rightarrow 2AB_3$
To produce 3 mole of AB_3, how many moles of A_2 should be consumed?
(1) 2.5 mole (2) 1.5 mole
(3) 0.5 mole (4) 2 mole

Q88 5.6 litre of oxygen (O_2) at STP contains;
(1) 6.022×10^{23} oxygen atoms.
(2) 3.011×10^{23} oxygen atoms.
(3) 1.505×10^{23} oxygen atoms.
(4) 0.7525×10^{23} oxygen atoms.

Q89 Match **List-I** with **List-II.**

List-I (Numbers)		**List-II (Significant figures)**	
(A)	2.653×10^4	(I)	2
(B)	1.00368	(II)	3
(C)	65.4	(III)	6
(D)	0.36	(IV)	4

Choose the **correct** answer from the options given below:
(1) A-IV; B-III; C-II; D-I
(2) A-I; B-III; C-II; D-IV
(3) A-II; B-IV; C-III; D-I
(4) A-IV; B-I; C-II; D-III

Q90 Boron has two stable isotopes, ^{10}B (19%) and ^{11}B (81%). Average atomic mass for boron is:
(1) 10.8 u (2) 10.2 u
(3) 11.2 u (4) 10.0 u

Q91 Hydrophobic tails of all the lipid molecules in plasma membrane are towards the:
(1) outer side of the membrane.
(2) outer side of cell surface.
(3) inner part of membrane.
(4) cytoplasm of the cell.

Q92 Polysomes are formed in:
(1) cytoplasm of both eukaryotes and prokaryotes.
(2) nucleoplasm of eukaryotes.
(3) cytoplasm of prokaryotes only.
(4) both nucleoplasm and cytoplasm of eukaryotes.

Q93 The cell organelles in animals which are **not** bound by any membrane are:
(1) ribosome and gas vacuole.
(2) centrosome and chromatophore.
(3) ribosome and peroxisome.
(4) centrosome and ribosome.

Q94 Select the **wrong** match.
(1) Chromatophore - Pigment containing membranous extension
(2) Fimbriae - Help in movement of bacteria
(3) Gas vacuole - Inclusion bodies
(4) Cytoplasm - Main arena of cellular activity

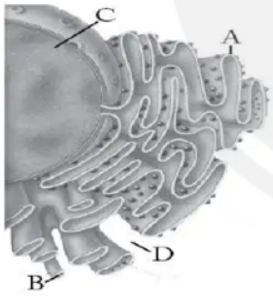
Q95 Given below are two statements:
Statement I: Tonoplast facilitates transport of a number of ions against concentration gradient inside vacuole.
Statement II: Mitochondria lack component required for protein synthesis.
In the light of the above statements, choose the most appropriate answer from the 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.

Q96 In eukaryotic flagella, one of the tubules of each peripheral doublets is connected with central sheath by:
(1) central hub.
(2) central bridge.
(3) linker tubule.
(4) radial spoke.

Q97 Who reported that cells had a thin outer layer which is today known as plasma membrane?
(1) Matthias Schleiden
(2) Theodore Schwann
(3) Rudolf Virchow
(4) Anton Von Leeuwenhoek

Q98 Based on the diagram shown below, identify the structures labeled **A**, **B**, **C**, and **D** by matching them with their **correct** cell components from the list provided.



(I) Cristae of mitochondria
(II) Inner membrane of mitochondria
(III) Cytoplasm
(IV) Smooth endoplasmic reticulum
(V) Rough endoplasmic
(VI) Mitochondrial matrix
(VII) Cell vacuole
(VIII) Nucleus.
The **correct** components are:
(1) A - V, B - IV, C - VIII, D - III
(2) A - I, B - IV, C - VII, D - VI
(3) A - VI, B - V, C - IV, D - VII
(4) A - V, B - I, C - III, D - II

Q99 Select the **wrong** statement from the following.
(1) The chloroplasts are generally much larger than mitochondria.
(2) Both chloroplasts and mitochondria contain an inner and an outer membrane.
(3) Both chloroplasts and mitochondria have an internal compartment called cisternae.
(4) Both chloroplasts and mitochondria contain DNA.

Q100 Select the **wrong** statement about chromatin.
(1) These are nucleoprotein fibres
(2) Named by Flemming
(3) Composed of DNA and histone proteins
(4) Does not get stained with any dye

Q101 Read the following statement w.r.t mitochondria.
(I) Sausage shaped / cylindrical.
(II) Diameter 0.2 - 1.0 μm (average 0.5 μm) and length 1.0 - 4.1 μm.
(III) The mitochondria divide by fission.
(IV) It is site of anaerobic respiration.
(V) Both membranes have their own specific enzymes.
How many features are **correct**?
(1) Three (2) two
(3) Four (4) Five

Q102 The plasmid DNA:
(1) is found in all eukaryotes.
(2) is used to monitor bacterial transformation.
(3) is the genetic material inside the genomic DNA of prokaryotes.
(4) is larger than genomic DNA.

Q103 Select the **correct** option stating true (T) and false (F) w.r.t. ribosomes.
(A) Protein synthesis in eukaryotic cell occurs in the ribosomes of nucleus only.
(B) Ribosomes are the granular structures first observed under the electron microscope.
(C) The sedimentation coefficient is indirect measure of density and size.
(D) They are composed of RNA (ribonucleic acid) and protein.

(1) A - T, B - T, C - T, D - F
(2) A - F, B - F, C - F, D - T
(3) A - T, B - F, C - T, D - T
(4) A - F, B - T, C - T, D - T

Q104 The important cell organelles responsible for the formation of glycoproteins and glycolipids.
(1) Is responsible for synthesis of cellular energy.
(2) Is the largest organelle of plant cell.
(3) Was first observed by Camillo Golgi.
(4) Is minute membrane bound vesicles called microbodies.

Q105 The cell wall is the outermost covering in plant cell which:
(I) protects the cell from infection.
(II) shows the selectively permeable nature.
(III) helps in cell-to-cell interaction.
(IV) gives shape to the cell.
Which of the above statement(s) is/are **correct**?
(1) I and II only
(2) II and III only
(3) Only III
(4) I, III and IV only

Q106 Select the **incorrect** statement about glycocalyx in bacteria.
(1) It can be present in the form of a loose sheath.
(2) It is the outermost layer of cell envelope.
(3) Differs in composition and thickness among different bacteria.
(4) Is always hard and thick.

Q107 Read the following features.
(I) It is found in the nuclear matrix.
(II) It is not bounded by a membrane.
(III) It is the site for ribosomal RNA synthesis.
In the light of above statements mark the most appropriate option which has all the features.
(1) Nucleus
(2) Chromosome
(3) Nucleolus
(4) Chromatin

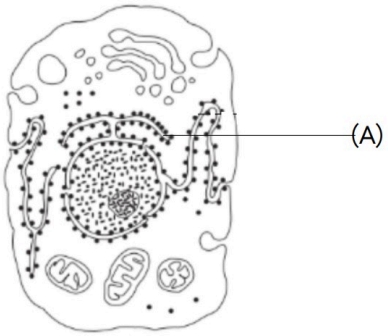
Q108 Given below are two statements. One is labelled as Assertion (A) and other is labelled as Reason (R):
Assertion (A): In prokaryotes, ribosomes are associated with plasma membrane of the cell.
Reason (R): In prokaryotes, ribosomes are about 20 nm by 50 nm in size.
In the light of the above statements, 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.

Q109 Match the **List-I** with **List-II**.

List-I		**List-II**	
(A)	Mitochondria	(I)	Formed by the process of packaging in Golgi apparatus
(B)	Lysosomes	(II)	Occupy 90% volume of the cell in plant cells
(C)	Smooth endoplasmic reticulum	(III)	Help in oxidative phosphorylation
(D)	Vacuole	(IV)	Major site for synthesis of lipid

Choose the **correct** answer from the options given below:
(1) A - IV, B - I, C - II, D - III
(2) A - III, B - IV, C - II, D - I
(3) A - II, B - I, C - IV, D - III
(4) A - III, B - I, C - IV, D - II

Q110 Select the **correct** option w.r.t. labelled part **A** in the given figure.



(1) It is not a membrane bound organelle.
(2) It is the site of lipid synthesis.
(3) Frequently observed in the cells active in protein synthesis and secretion.
(4) It bears 70S ribosomes.

Q111 Arrange the following scientists and their contributions in the **correct** chronological order:
(A) Rudolf Virchow – Stated that new cells arise from pre-existing cells
(B) Schleiden and Schwann – Formulated cell theory
(C) Robert Brown – Discovered the nucleus
(D) Anton von Leeuwenhoek – First to observe living cells
Select the **correct** sequence:
(1) D → C → B → A
(2) C → D → B → A
(3) A → B → C → D
(4) D → B → C → A

Q112 Match the **List-I** with **List-II**.

List-I		List-II	
(A)	Mesosome	(I)	Infoldings of plasma membrane in bacteria
(B)	Plasmodesmata	(II)	Connections between plant cells
(C)	Centriole	(III)	Forms spindle fibers during cell division
(D)	Perinuclear space	(IV)	10 to 50 nm

Choose the **correct** answer from the options given below:
(1) A - I, B - II, C - III, D - IV
(2) A - II, B - I, C - III, D - IV
(3) A - III, B - IV, C - II, D - I
(4) A - IV, B - III, C - I, D - II

Q113 Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R):
Assertion A: The nuclear envelope is interrupted by minute pores, which are formed by the fusion of its membrane.
Reason R: Nuclear pores allow the movement of only DNA into the cytoplasm.
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.

Q114 Which of the following statements regarding plastids are **correct**?
(I) Chloroplasts contain chlorophyll and carotenoid pigments and are involved in photosynthesis.
(II) Chromoplasts are colourless and store oils and fats.
(III) Amyloplast store carbohydrates (starch) e.g. potato.
(IV) Stroma lamellae connect thylakoids of different grana.
(1) I, III and IV only
(2) II, III and IV only
(3) I and IV only
(4) All I, II, III and IV

Q115 Identify the **incorrect** statement regarding eukaryotic cells.
(1) Fungi, protists, plants, and animals are all composed of eukaryotic cells.
(2) Cells that have membrane bound nuclei are called eukaryotic cells.

(3) All plant and animal cells contain centrioles and plastids.
(4) The cytoplasm in eukaryotes is divided into compartments by organelle membranes.

Q116 Match the **List-I** with **List-II**.

List-I		List-II	
(A)	Thylakoid	(I)	Flattened membranous sac contain chlorophyll pigments
(B)	Stroma	(II)	Site of enzyme activity
(C)	Grana	(III)	Stacks of thylakoids

Choose the **correct** answer from the options given below:
(1) A–I, B–II, C–III
(2) A–III, B–I, C–II
(3) A–II, B–I, C–III
(4) A–II, B–III, C–I

Q117 Which of the following is **incorrect** about plasma membrane transport?
(1) Passive transport does not involve ATP consumption.
(2) Osmosis is a special case of diffusion involving water.
(3) The polar molecules do not require a carrier protein of the membrane to facilitate their transport across the membrane.
(4) Active transport helps in moving substances against the concentration gradient.

Q118 From the statements given below choose the **correct** option.
(I) The eukaryotic ribosomes are 80S and prokaryotic ribosomes are 70S.
(II) Each ribosome has two sub-units.
(III) The two sub-units of 80S ribosome are 60S and 40S while that of 70S are 50S and 30S.
(IV) The two sub-units of 80S ribosome are 60S and 20S and that of 70S are 50S and 20S.
(V) The two sub-units of 80S ribosome are 60S and 30S and that of 70S are 50S and 30S.
(1) I, II, III are true
(2) I, II, IV are true
(3) I, II, V are true
(4) II, IV, V are true

Q119 Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R):
Assertion (A): The endoplasmic reticulum is a network of tiny tubular structures scattered in the cytoplasm.
Reason (R): Endoplasmic reticulum contains tubules or cisternae.
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.

Q120 After vesicles from the endoplasmic reticulum fuse with the *cis* face of the Golgi apparatus, in which direction do the transported proteins move next?
(1) Toward the nucleus
(2) Toward the *trans* or maturing face
(3) Back into the ER lumen
(4) Into the lysosomes directly

Q121 Which of the following **correctly** distinguishes between lysosomes and vacuoles?
(1) Lysosomes are surrounded by a double membrane; vacuoles are not.
(2) Lysosomes contain hydrolytic enzymes; vacuoles contains water,sap and excretory product.
(3) Lysosomes are absent in animal cells; vacuoles are large in mature plant cells.
(4) Vacuoles are involved in osmoregulation; lysosomes help in formation of glycoprotein.

Q122 A researcher identifies an oval, double-membraned organelle in a mesophyll cell that contains thylakoids and stroma. Which structure is most likely being studied?

(1) Leucoplast (2) Mitochondrion
(3) Chromoplast (4) Chloroplast

Q123 Read the following statements and select the **correct** ones regarding cell organelles and structures:

(I) Chloroplasts contain circular DNA, 70S ribosomes, and enzymes for protein synthesis.

(II) The membrane of the thylakoids enclose a space known as the lumen.

(III) In eukaryotes,cilia and flagella are hair- like outgrowths of the cell wall.

(IV) The cytoskeleton consists of microtubules, microfilaments, and intermediate filaments, and it helps in maintaining cell shape and internal organisation.

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

Q124 Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R):

Assertion (A): Centrosome is an organelle usually containing two cylindrical structures called centrioles.

Reason (R): Centrosomes are surrounded by amorphous pericentriolar materials.

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

Q125 Read the following and identify the **incorrect** statement(s).

(I) Both the cilium and flagellum emerge from centriole-like structure called the basal bodies.

(II) Flagella are small structures which work like oars, causing the movement of either the cell or the surrounding fluid.

(III) Cilia are comparatively longer than flagella and responsible for cell movement.

(IV) The prokaryotic bacteria possess flagella but these are structurally different from that of the eukaryotic flagella.

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

Q126 Larger and more numerous _____ are present in cells actively carrying out protein synthesis.

(1) nucleoli (2) centrosome
(3) lysosomes (4) vacuoles

Q127 Given below are two statements:

Statement I: A single human cell has approximately two metre long thread of DNA distributed among its forty six (twenty three pairs) chromosomes.

Statement II: Interphase nucleus has a loose and indistinct network of nucleoprotein fibres called chromatin.

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.

Q128 The leucoplasts are:

(1) responsible for trapping light energy essential for photosynthesis.
(2) the plastids containing pigments like carotene, xanthophylls.

(3) responsible for giving the part of the plant a yellow, orange or red colour.
(4) the colourless plastids of varied shapes and sizes with stored nutrients.

Q129 Gas vacuoles are found in:
(1) blue green and purple and green photosynthetic bacteria.
(2) mycoplasma only.
(3) PPLO and mycoplasma.
(4) plant cells.

Q130 Identify the **mismatched** pair.
(1) Metacentric chromosome - Centromere at the middle of chromosome
(2) Sub-metacentric chromosome - Centromere slightly away from the middle of the chromosome
(3) Acrocentric chromosome - Centromere is situated close to middle of chromosome
(4) Telocentric chromosome - Terminal centromere present on chromosome

Q131 Plastids are found in all:
(1) plant cells and in euglenoides.
(2) plant cells only.
(3) plant cells and in fungi.
(4) bacteria only.

Q132 Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R):
Assertion (A): The content of nucleolus is continuous with the rest of the nucleoplasm.
Reason (R): Nucleolus are spherical structure present in the nucleoplasm.
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.

Q133 Given below are two statements.
Statement-I: All organisms are composed of cells and product of cells.
Statement-II: The invention of the microscope and its improvement leading to the electron microscope revealed all the structural details of the cell.
In the light of the above statements, choose 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.

Q134 Identify a double membrane bound organelle from the following.
(1) Rough endoplasmic reticulum
(2) Vacuole
(3) Nucleus
(4) Golgi apparatus

Q135 Cell membrane:
(1) does not contain cholesterol.
(2) contains lipids and proteins only.
(3) contains lipids, proteins, carbohydrates, and cholesterol.
(4) does not contain carbohydrates.

Q136 Epithelial tissue is characterized by having a free surface. Which of the following statements accurately describes the possible orientations or locations of this free surface?
(1) It exclusively faces the internal environment, such as within organs, never the outside.
(2) It always forms the outermost protective layer, directly exposed to the external environment only.
(3) It can face either a body fluid or the outside environment, defining its boundary role.
(4) Its orientation is randomly determined and has no functional significance.

Q137 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Tight junctions are crucial in epithelium and other tissues.

Reason R: Tight junctions help to stop substances from leaking across a 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 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.

Q138 In all connective tissues, with the notable exception of blood, the cells secrete fibres of structural proteins such as collagen or elastin. A student states that these secreted fibres are primarily responsible for the tissue's metabolic regulation. Which of the following evaluations of this statement is **correct?**

(1) The statement is true, as structural proteins directly regulate metabolic pathways.

(2) The statement is false; the fibres primarily provide strength, elasticity, and flexibility to the tissue.

(3) The statement is true for collagen but false for elastin.

(4) The statement is false because only blood secretes such fibers.

Q139 Adipose tissue is specialized for a particular metabolic function. Which of the following accurately describes the primary substance stored in adipose tissue and the condition under which this storage occurs?

(1) Excess water, stored during dehydration.

(2) Undigested waste, accumulated for excretion.

(3) Excess nutrients, converted into fats and stored when not used immediately.

(4) Structural proteins, deposited for later use in muscle repair.

Q140 The skeletal system consists of hard, non-pliable bones composed of calcium salts and collagen fibers, and bone marrow in certain bones produces blood cells.

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

(1) The statement is true for composition but false for function.

(2) The statement is true for function but false for composition.

(3) The statement is true for both composition and function.

(4) The statement is false for both composition and function.

Q141 A pathologist observes a tissue sample characterized by cells held together by specialized junctions, forming a contractile unit that, when stimulated, causes neighboring cells to also contract. This tissue is exclusively found in one organ. Which of the following organs is the most likely source of this tissue?

(1) Stomach

(2) Biceps

(3) Heart

(4) Blood vessel wall

Q142 A biopsy reveals a muscle tissue that exhibits striations and is directly responsible for consciously controlled movements of the limbs. This tissue is most accurately classified as:

(1) smooth muscle, due to its involuntary nature.

(2) cardiac muscle, given its presence in the intestine.

(3) skeletal muscle, characterized by striations and voluntary control.

(4) visceral muscle, found in the walls of internal organs.

Q143 Each muscle is made of short, cylindrical fibers containing myofibrils that contract and relax in a coordinated manner to bring about body movement.

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

(1) The statement is true for structure but false for function.
(2) The statement is true for both structure and function.
(3) The statement is false for both structure and function.
(4) The statement is false for structure but true for function.

Q144 Which type of muscle tissue is characterized by cells that taper at both ends (fusiform)?
(1) Skeletal muscle
(2) Cardiac muscle
(3) Smooth muscle
(4) Both (1) and (2)

Q145 Neuroglial cells play a vital supportive role within the neural system. Their significant volumetric contribution (more than one-half of the neural tissue volume) underscores their primary importance in:
(1) generating and transmitting electrical impulses.
(2) protecting and supporting neurons.
(3) directing voluntary muscle contractions.
(4) absorbing nutrients for the entire nervous system.

Q146 Given below are two statements:
Statement I: Dense irregular connective tissue has fibroblasts and many fibres (mostly collagen) that are oriented differently.
Statement II: Muscles are essential for maintaining the proper positions of the various parts of the body.
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.

Q147 A neuroscientist is studying the fundamental property of neurons that enables rapid communication within the neural system. Which of the following statements best describes the immediate consequence of a neuron being "suitably stimulated" based on its intrinsic nature?
(1) The neuron undergoes immediate structural transformation to form a synapse.
(2) An electrical disturbance is generated that swiftly travels along its plasma membrane.
(3) The neuron begins to secrete chemical neurotransmitters directly into the bloodstream immediately.
(4) It initiates a process of cell division to increase neural tissue volume.

Q148 The "output zone" at a neuron's endings is critical for its communicative role. Which of the following most accurately characterizes the functional purpose of the events triggered at this specific region?
(1) To inhibit the activity of adjacent cells always.
(2) To cause a permanent cessation of electrical activity within the neuron.
(3) To only stimulate the activity of adjacent cells.
(4) To mediate the influence (stimulation or inhibition) of the neuron on adjacent cells.

Q149 Given below are two statements:
Statement I: The dorsal side of a frog is generally olive green with dark spots.
Statement II: In frogs, partially digested food called chyme enters the duodenum from the stomach.
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.

Q150 A frog is observed undergoing a period of reduced metabolic activity, characterized by shelter in a deep burrow during extreme environmental heat. This physiological adaptation is best described as:
(1) hibernation, a response to extreme cold.
(2) mimicry, a protective coloration mechanism.
(3) aestivation, a summer sleep adaptation.
(4) metamorphosis, a developmental transformation.

Q151 Match **List-I** with **List-II**.

List-I		List-II	
(A)	Ventral side of the frog	(I)	Air sacs of the lungs
(B)	The midbrain of a frog	(II)	A pair of optic lobes
(C)	Compound epithelium	(III)	Uniformly pale yellow
(D)	Squamous epithelium	(IV)	Inner lining of pancreatic ducts

Choose the **correct** answer from the options given below.
(1) A-III, B-II, C-IV, D-I
(2) A-II, B-I, C-IV, D-III
(3) A-IV, B-III, C-II, D-I
(4) A-II, B-I, C-III, D-IV

Q152 *Rana tigrina* is described as a "poikilotherm." This term signifies that the frog's body temperature:
(1) is maintained at a constant, elevated level regardless of the environment.
(2) varies in accordance with the ambient environmental temperature.
(3) is regulated internally through a complex thermoregulatory system.
(4) remains stable only during periods of aestivation or hibernation.

Q153 During an anatomical study of a frog, a student identifies webbed digits on its feet. This specific morphological adaptation is most directly beneficial for the frog in which of its natural behaviors?
(1) Climbing trees and rocky surfaces.
(2) Efficiently capturing insects on land.
(3) Facilitating movement through water, particularly swimming.
(4) Providing camouflage against predators on dry land.

Q154 A researcher finds a frog specimen lacking both vocal sacs and a copulatory pad on the first digit of its forelimbs. Based on the concept of sexual dimorphism in frogs, which of the following is the most accurate conclusion about this specimen?
(1) It is a male frog in its adult stage.
(2) It is a female frog.
(3) It is a normal male frog.
(4) It is a frog species that does not exhibit sexual dimorphism.

Q155 Given below are two statements:
Statement I: The hind limbs of a frog are larger and more muscular than its forelimbs.
Statement II: Frogs can live both on land and in freshwater and belong to the class Amphibia of Non-Chordata.
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.

Q156 A veterinary student notes that a frog absorbs water directly through its skin and possesses a smooth, slippery integument due to mucus secretion. This observation highlights the frog's adaptation for:
(1) efficient thermoregulation in arid environments.
(2) cutaneous respiration and maintaining a moist body surface.
(3) enhanced camouflage on dry land.
(4) specialized water intake mechanisms only.

Q157 Refer to the flowchart showing a simplified representation of the frog's digestive tract from the mouth to the cloaca, with key regions labelled **A**, **B**, **C**, **D**, and **E**.

Mouth → **A** (Buccal Cavity) → **B** (Pharynx) → **C** (Oesophagus) → **D** (Stomach) → **E** (Intestine)

Which of the following statements accurately describes the path of food or a digestive function related to the labelled organs, based on the provided text?

(1) Food is captured by a bilobed tongue and initially enters organ E.
(2) Fully digested food is passed from organ C to the D.
(3) Organ C is a highly coiled tube primarily responsible for water absorption.
(4) Organ D secretes HCl and gastric juice.

Q158 The duodenum of the frog's small intestine receives bile from the gall bladder and pancreatic juices from the pancreas through a common bile duct. This anatomical arrangement ensures that:

(1) only water is absorbed at this stage.
(2) fat emulsification and the digestion of carbohydrates and proteins commence in this section.
(3) undigested waste is immediately expelled.
(4) respiration occurs exclusively within the digestive tract.

Q159 In frogs, the alimentary canal is short due to their carnivorous diet, and the absorption of nutrients takes place through finger-like villi and microvilli in the stomach alone.

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

(1) The statement is true for diet but false for absorption.
(2) The statement is false for both diet and absorption.
(3) The statement is false for diet but true for absorption.
(4) The statement is true for both diet and absorption.

Q160 Which of the following statements accurately describes the dual respiratory adaptations of *Rana tigrina* in different environments?

(1) On land, it primarily uses its skin for gas exchange, while in water, lungs are the dominant respiratory organs.
(2) In water, the buccal cavity facilitates respiration, whereas on land, only the skin is involved.
(3) The skin acts as an aquatic respiratory organ in water, while on land, the buccal cavity, skin, and lungs function as respiratory organs.
(4) Pulmonary respiration is exclusive to the aquatic environment, and cutaneous respiration occurs only during aestivation.

Q161 Consider the following:

A. The frog's lungs are located in the lower abdominal region and are responsible for pulmonary respiration.
B. The vascular system of the frog is a well-developed closed type, complemented by a lymphatic system.
C. Air enters the frog's respiratory system directly into the lungs from the nostrils, without involving the buccal cavity.
D. The lymphatic system in frogs consists solely of lymph and lymph channels, lacking lymph nodes.

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

(1) Only A and C are true.
(2) Only B is true.
(3) Only B and D are true.
(4) Only C and D are true.

Q162 The frog's heart is a muscular, three-chambered structure covered by a pericardium. A triangular sinus venosus joins the right atrium. This arrangement indicates that the sinus venosus serves as a primary recipient for:

(1) oxygenated blood returning from the lungs.
(2) deoxygenated blood from the body before it enters the atrium.
(3) arterial blood leaving the ventricle.
(4) lymph fluid from the lymphatic system.

Q163 Given below are two statements:

Statement I: In frogs, kidneys are compact, dark red, and bean-like structures situated a little posteriorly in the body cavity on both sides of the vertebral column.

Statement II: The medulla oblongata passes out through the foramen magnum and continues into spinal cord.

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.

Q164 A circulatory physiologist is studying the unique features of the frog's vascular system. They note two distinct special venous connections: one between the liver and the intestine, and another between the kidney and the lower parts of the body. These systems are **correctly** identified as:

(1) systemic and pulmonary circuits, respectively.

(2) hepatic portal system and renal portal system, respectively.

(3) arterial and venous systems, respectively.

(4) lymphatic and circulatory systems, respectively.

Q165 A geneticist examines the blood cells of *Rana tigrina* and observes the red blood cells. The frog's erythrocytes are:

(1) enucleated, similar to mammalian red blood cells, for increased oxygen capacity.

(2) responsible for immune responses due to their nuclear material.

(3) nucleated and contain haemoglobin, distinguishing them from several other vertebrate erythrocytes.

(4) primarily involved in clotting, as suggested by their pigment.

Q166 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: In frogs, lymph is distinct from blood and cannot effectively transport oxygen to tissues.

Reason R: In frogs, lymph lacks a few proteins and red blood cells (RBCs).

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.

Q167 Consider the following w.r.t. frogs:

A. The blood vascular system involves the heart, blood vessels, and blood, with the heart's muscular action achieving circulation.

B. The ventricle of the frog's heart opens into a sac-like conus arteriosus located on the dorsal side of the heart.

C. Arteries carry blood from the heart to all parts of the body, while veins collect blood and return it to the heart.

D. Blood primarily transports nutrients, gases, and water to the respective sites during circulation.

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

(1) Only A, B and C are true.

(2) A and D are true, but B and C are false.

(3) Only A, C and D are true.

(4) All are true.

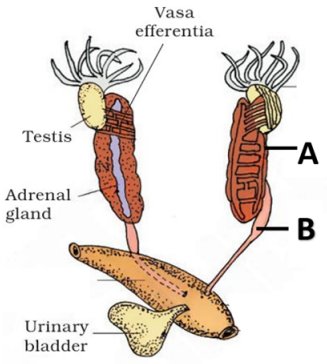
Q168 The fact that the frog is classified as a ureotelic animal. This means its primary nitrogenous waste product is:

(1) ammonia, highly toxic.

(2) uric acid.

(3) urea.
(4) amino acids, directly expelled.

Q169 Refer to the diagram below, with structures labelled **A** and **B**.



Which of the following statements accurately describes a functional connection or characteristic of the labeled structures based on the provided text?
(1) Structure A is composed of several structural and functional units called villi.
(2) In male frogs, two structures B emerge from structures A and act as urinogenital ducts.
(3) Structure A is absent in female frogs.
(4) Structure B is exclusively used for the passage of faecal matter, never urine.

Q170 The central nervous system (CNS) in a frog is enclosed within a bony structure, and the brain is further divided into three main regions. Which of the following **correctly** identifies the bony enclosure for the brain and the three principal brain divisions?
(1) Spinal column; Forebrain, Midbrain, Hindbrain.
(2) Cranium; Forebrain, Midbrain, Hindbrain.
(3) Vertebral column; Olfactory lobes, Optic lobes, Cerebellum.
(4) Skull; Cerebrum, Brainstem, Cerebellum.

Q171 The forebrain of a frog is a complex structure composed of several distinct parts. Which of the following options accurately represents the components that constitute the forebrain in a frog?
(1) Olfactory lobes, unpaired cerebral hemispheres, and paired diencephalon.
(2) A pair of optic lobes and the cerebellum.
(3) Olfactory lobes, paired cerebral hemispheres, and unpaired diencephalon.
(4) Cerebellum, medulla oblongata, and optic lobes.

Q172 Frogs possess various sense organs, but only two are described as "well-organised structures," while the rest are cellular aggregations around nerve endings. Which pair of sense organs fits the description of "well-organised structures" in frogs?
(1) Sensory papillae (touch) and taste buds (taste).
(2) Nasal epithelium (smell) and tympanum (hearing).
(3) Eyes (vision) and internal ears (hearing/balancing).
(4) Taste buds (taste) and outer ear joints (hearing).

Q173 The system for control and coordination in the frog is highly evolved, encompassing both the neural system and endocrine glands. Chemical coordination of various organs is achieved by hormones secreted by endocrine glands. Which of the following is **NOT** listed as a prominent endocrine gland in the frog?
(1) Pituitary (2) Thymus
(3) Spleen (4) Gonads

Q174 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:
Assertion A: The cloaca in male frogs functions as a shared exit chamber for multiple systems.
Reason R: The cloaca is a small, median chamber used to pass faecal matter, urine, and sperm to the exterior.
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.

Q175 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Female frogs differ from male frogs in that they exhibit a distinct separation of excretory and reproductive ducts at their terminal opening.

Reason R: In female frogs, the ureters and oviducts open separately into the cloaca.

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.

Q176 Consider the following w.r.t. frogs:

A. Male reproductive organs include yellowish ovoid testes adhered to the upper part of the kidneys by a double fold of peritoneum called mesorchium.

B. A mature female can lay 250 to 300 ova at a time.

C. Frogs cannot eat insects.

D. Fertilization in frogs is external and takes place in water, followed by a larval stage called a tadpole that undergoes metamorphosis.

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

(1) A and B are true.

(2) B and C are true.

(3) A and D are true.

(4) C and D are true.

Q177 Match **List-I** with **List-II** w.r.t to *Rana*:

List-I		**List-II**	
(A)	Autonomic nervous system	(I)	Ten pairs
(B)	Organs of touch	(II)	Sympathetic and parasympathetic
(C)	Simple eyes	(III)	Sensory papillae
(D)	Cranial nerves	(IV)	A single unit

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

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

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

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

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

Q178 Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: The testes in male frogs are structurally integrated with the kidneys.

Reason R: Vasa efferentia, arising from the testes, enter the kidneys and open into Bidder's canal, which communicates with the urinogenital duct.

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.

Q179 Given below are two statements:

Statement I: The body of a frog is divisible into head, neck, trunk and tail.

Statement II: In some countries, the muscular legs of the frog are used as food by humans.

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.

Q180 Frogs are beneficial for mankind and maintain ecological balance. Which of the following roles is explicitly stated as contributing to their ecological importance?

(1) Their direct role in nitrogen fixation in the soil.
(2) Serving as an important link in the food chain and food web in the ecosystem.
(3) Their ability to produce antibiotics for human use.
(4) Their significant contribution to soil aeration.

SPACE FOR ROUGH WORK

PW Web/App - https://smart.link/7wwosivoicgd4

Library- https://smart.link/sdfez8ejd80if