ADDA-NBTS

ACADEMIC SESSION [2025-26]
CLASS 11th
TEST 01
PART TEST – 01

Date : 10/08/2025 | **Duration : 180 Mins** | **Marks : 720**

Physics	:	Basic Math, Motion in Straight line, U&D, Motion in a plane, Vectors
Chemistry	:	Mole concept, Atomic structure & Periodic Classification
Botany	:	Living world, Biological classification, Plant kingdom
Zoology	:	Animal Kingdom, Structural organization in animals

Instructions

1. The test is of 180 min. duration.
2. The test booklet consists of 180 questions. The maximum mark is 720.
3. There are four Sections in the Question Paper, Sections I, II, III, and IV consisting of Section I (Physics), Section II (Chemistry), Section III (Biology)
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 paper, pager, mobile phone, any electronic device, etc. Inside the examination room/hall.
7. 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.

Physics

Question: 1

A hall has the dimensions (10m×10m×10m). A fly starting at one corner ends up at a diagonally opposite corner. The magnitude of its displacement is nearly.

A 5√3 m

B 10√3 m

C 20√3 m

D 30√3 m

Question: 2

The percentage errors in quantities P,Q,R and S are 0.5%, 1%,3% and 1.5% respectively in the measurement of a physical quantity $A = \frac{P^3Q^2}{\sqrt{R}S}$. The maximum percentage error in the value of A will be.

A 6.5%

B 8.5%

C 6.0%

D 7.5%

Question: 3

A body starts from rest and is uniformly accelerated for 30s. The distance travelled in the first 10s is x_1, next $10s$ is x_2 and the last $10s$ is x_3. Then is the same as

A 1 : 2 : 4

B 1 : 2 : 5

C 1 : 3 : 5

D 1 : 3 : 9

Question: 4

A physical quantity ' y ' is represented by the formula $y = m^2r^{-4}g^xl^{-\frac{3}{2}}$. If the percentage errors found in y,m,r,l and g are 18,1,0.5,4 and p respectively, then find the value of x and p.

A 5 and ±2

B 4 and ±3

C 8 and ±2

D 16/3 and ±3/2

Question: 5

The level of water is h below the top of the well. If v is velocity of sound, the time T after which the splash is heard is given by

A T=2h/v

B $T = \sqrt{\frac{2h}{g}} + \frac{h}{v}$

C $T = \sqrt{\frac{2h}{g}} + \frac{h}{2v}$

D $T = \sqrt{\frac{h}{2g}} + \frac{2h}{v}$

Question: 6

The diameter of a cylinder is measured using a Vernier calipers with no zero error. It is found that the zero of the Vernier scale lies between 5.10 cm and 5.15 cm of the main scale. The Vernier scale has 50 divisions equivalent to 2.45 cm . The 24^"th " division of the Vernier scale exactly coincides with one of the main scale divisions. The diameter of the cylinder is.

A 5.112 cm

B 5.124 cm

C 5.136 cm

D 5.148 cm

Question: 7

A body of mass 1 kg is acted upon by a force $\vec{F} = 2\sin 3\pi t\,\hat{\imath} + 3\cos 3\pi t\,\hat{\jmath}$ find its position at t=1 sec if at t=0 it is at rest at origin.

A $\left(\frac{3}{3\pi^2}, \frac{3}{9\pi^2}\right)$

B $\left(\frac{2}{3\pi^2}, \frac{2}{3\pi^2}\right)$

C $\left(\frac{2}{3\pi}, \frac{2}{3\pi^2}\right)$

D none of these

Question: 8

In the equation $\left[X + \frac{a}{Y^2}\right][Y - b] = RT, X$ is pressure, Y is volume, R is universal gas constant and T is temperature. The physical quantity equivalent to the ratio a/b is.

A Impulse

B Coefficient of viscosity

C Energy

D Pressure gradient

Question: 9

A force $F = Be^{-Ct}$ acts on a particle whose mass is m and whose velocity is 0 m/s at t=0. It's terminal velocity (velocity after a long time) is:

A C/mB

B B/mC

C BC/m

D -B/mC

Question: 10

Young's modulus of elasticity Y is expressed in terms of three derived quantities, namely, the gravitational constant G, Planck's constant h and the speed of light c, as $Y = c^{\alpha}h^{\beta}G^{\gamma}$. Which of the following is the correct option?

A α=7,β=-1,γ=-2

B α=-7,β=-1,γ=-2

C α=7,β=-1,γ=2

D α=-7,β=1,γ=-2

Question: 11

The acceleration of a particle is increasing linearly with time t as bt. The particle starts from the origin with an initial velocity v_0. The distance travelled by the particle in time t will be

A $v_0t + \frac{1}{3}bt^2$

B $v_0t + \frac{1}{3}bt^3$

C $v_0t + \frac{1}{6}bt^3$

D $v_0t + \frac{1}{2}bt^2$

Question: 12

If radius of a spherical bubble starts to increase with time t as r=0.5t. What is the rate of change of volume of the bubble with time t=4s?

A 8π unit/s

B 4π unit/s

C 2π unit/s

D π unit/s

Question: 13

Evaluate $\int \left(x^2 - \cos x + \frac{1}{x}\right) dx.$

A $x^3 - \sin x + \ell nx + c$

B $2x + \sin x + \ell nx + c$

C $\frac{x^3}{3} + \sin x + \ell nx + c$

D $\frac{x^3}{3} - \sin x + \ell nx + c$

Question: 14

Solve for $x: \log(3x + 2) - \log(3x - 2) = \log 5$

A -1

B 1

C 2/3

D -2/3

Question: 15

A ball is thrown horizontal from a height of 20m. It hits the ground with a velocity three times its initial velocity. The initial velocity of ball is $(\text{take } g = 9.8\ m/s^2)$

A 2 m/s

B 3 m/s

C 5 m/s

D 7 m/s

Question: 16

The effective acceleration of a body, when thrown upwards with acceleration a will be:

A $\sqrt{a-g^2}$

B $\sqrt{a^2+g^2}$

C $(a-g)$

D $(a+g)$

Question: 17

Sum of the roots of equations, $2x^2-4x+5=0$ is

A -2

B 2

C -4

D 4

Question: 18

The maximum and minimum resultants of two forces are in the ratio 7:3. The ratio of the forces is -

A 4:1

B 5:2

C √7:√3

D 49:9

Question: 19

A stone is dropped from a building of height h and it reaches after t seconds. On earth. From the same building if two stones are thrown (one upwards and other downwards) with the same velocity u and they reach the earth surface after t_1 and t_2 seconds respectively, then

A $t=t_1-t_2$

B $t=\frac{t_1+t_2}{2}$

C $t=\sqrt{t_1t_2}$

D $t=t_1^2t_2^2$

Question: 20

If $\vec{P}=4\hat{\imath}-2\hat{\jmath}+6k$ and $\vec{Q}=\hat{\imath}-2\hat{\jmath}-3k$, then the angle which $\vec{P}+$ makes with x-axis is

A $\cos^{-1}\left(\frac{3}{\sqrt{50}}\right)$

B $\cos^{-1}\left(\frac{4}{\sqrt{50}}\right)$

C $\cos^{-1}\left(\frac{5}{\sqrt{50}}\right)$

D $\cos^{-1}\left(\frac{12}{\sqrt{50}}\right)$

Question: 21

If a ball is thrown vertically upwards with speed u, the distance covered during the last t second of its ascent is

A $\frac{1}{2}gt^2$

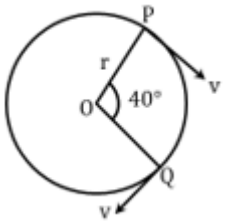
B $ut-\frac{1}{2}gt^2$

C $(u - gt)t$

D ut

Question: 22

A particle is moving on a circular path of radius r with speed v. The change in velocity when the particle moves from P to Q is $(\angle POQ = 40°)$



A $2v \cos 40°$

B $2v \sin 40°$

C $2v \sin 20°$

D $2v \cos 20°$

Question: 23

The unit vector parallel to the resultant of the vectors $\vec{A} = 4\hat{\imath} + 3\hat{\jmath} + 6\hat{k}$ and $\vec{B} = -\hat{\imath} + 3\hat{\jmath} - 8\hat{k}$

A $\frac{1}{7}[3\hat{\imath} + 6\hat{\jmath} - 2\hat{k}]$

B $\frac{1}{7}[3\hat{\imath} + 6\hat{\jmath} + 2\hat{k}]$

C $\frac{1}{49}[3\hat{\imath} + 6\hat{\jmath} + 2\hat{k}]$

D $\frac{1}{49}[3\hat{\imath} + 6\hat{\jmath} - 2\hat{k}]$

Question: 24

What is the component of $(3\hat{\imath} + 4\hat{\jmath})$ along $(\hat{\imath} + \hat{\jmath})$?

A $\frac{1}{2}(\hat{\jmath} + \hat{\imath})$

B $\frac{3}{2}(\hat{\jmath} + \hat{\imath})$

C $\frac{5}{2}(\hat{\jmath} + \hat{\imath})$

D $\frac{7}{2}(\hat{\jmath} + \hat{\imath})$

Question: 25

Which of the following physical quantities has neither dimensions nor unit?

A angle

B Luminous intensity

C coefficient of friction

D Electric current

Question: 26

The force is given in terms of time (t) and displacement (x) by the equation:

$F = A \cos Bx + C \sin Dt$

Then, the dimensions of D/B are.

A $M^0L^0T^0$

B $M^0L^0T^{-1}$

C $M^0L^{-1}T^0$

D M^0LT^{-1}

Question: 27

Which of the following has the highest number of significant figures?

A $0.007\ m^2$

B $2.64 \times 10^{24} kg$

C $0.0006032\ m^2$

D 6.3200 J

Question: 28

The pressure P and volume V of a gas are related as $PV^{3/2} = K$, where K is a constant. The percentage change in the pressure for a decrease of 0.5% in the volume is.

A -0.75 %

B 0.75 %

C 1.50 %

D -1.50 %

Question: 29

A vernier callipers has 40 divisions on the vernier scale which coincide with 38 divisions on the main scale The least count of the instrument is 0.1 mm. The main scale divisions are of

A 0.5 mm

B 1 mm

C 2 mm

D 1/4 mm

Question: 30

Statement -1: The magnitude of velocity of two boats relative to river is same. Both boats start simultaneously from same point on the bank may reach opposite bank simultaneously moving along different paths.

Statement - 2: For boats to cross the river in same time. The component of their velocity relative to river in direction normal to flow should be same.

A Statement - 1 is True, Statement - 2 is True; Statement - 2 is a correct explanation for Statement - 1

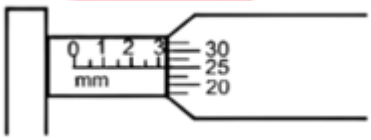
B Statement - 1 is True, Statement - 2 is True; Statement - 2 is NOT a correct explanation for Statement - 1

C Statement - 1 is False Statement - 2 is true.

D Statement - 1 is True, Statement - 2 is False.

Question: 31

Find the reading of micrometer?



A 3.25 mm

B 3.24 mm

C 3.30 mm

D 3.41 mm

Question: 32

Statement - 1: In non-uniform circular motion, velocity vector and acceleration vector are not perpendicular to each other.

Statement - 2: In non- uniform circular motion, particle has normal as well as tangential acceleration.

A Statement - 1 is True, Statement - 2 is True; Statement - 2 is a correct explanation for Statement - 1

B Statement - 1 is True, Statement - 2 is True; Statement - 2 is NOT a correct explanation for Statement - 1

C Statement - 1 is False, Statement - 2 True.

D Statement - 1 is True, Statement - 2 is False.

Question: 33

A ship is steaming towards east at a speed of $12\ ms^{-1}$. A woman runs across the deck at a speed of $5\ ms^{-1}$ in the direction at right angles to the direction of motion of the ship i.e. towards north. What is the velocity of the woman relative to sea?

A 13 m/s

B 5 m/s

C 12 m/s

D 17 m/s

Question: 34

Find value of $\frac{dy}{dx}$, if $y = 2\cos(\sqrt{x})$

A $\frac{-1}{2\sqrt{x}}\sin(\sqrt{x})$

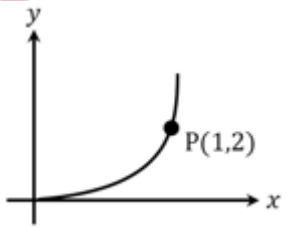
B $\frac{1}{\sqrt{x}}\sin(\sqrt{x})$

C $\frac{1}{2\sqrt{x}}\sin(\sqrt{x})$

D $\frac{-1}{\sqrt{x}}\sin(\sqrt{x})$

Question: 35

The equation of graph shown in figure is $y = 3x^2$. The slope of graph at point P is:



A 1

B 2

C 3

D 6

Question: 36

A body A moves with a uniform acceleration a and zero initial velocity. Another body B, stars from the same point moves in the same direction with a constant velocity v. The two bodies meet after a time t. The value of t is:

A 2v/a

B v/a

C v/2a

D $\sqrt{\frac{v}{2a}}$

Question: 37

Statement - 1: The position - time graph of a uniform motion in one dimension of a body can have negative slope.

Statement - 2: When the speed of body decreases with time, the position - time graph of the moving body has negative slope.

A Statement - 1 is True, Statement - 2 is True; Statement - 2 is a correct explanation for Statement - 1

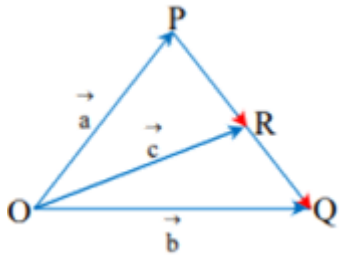
B Statement - 1 is True, Statement - 2 is True Statement - 2 is NOT a correct explanation for Statement - 1

C Statement - 1 is False, Statement - 2 is True

D Statement - 1 is True Statement - 2 is False.

Question: 38

Figure shows the vectors $\vec{a}, \vec{b}$ and $\vec{c}$ where $\vec{R}$ is the mid - point of PQ. Then which of the following is correct?



A $\vec{a} + \vec{b} = 2\vec{c}$

B $\vec{a} + \vec{b} = \vec{c}$

C $\vec{a} - \vec{b} = 2\vec{c}$

D $\vec{a} - \vec{b} = \vec{c}$

Question: 39

Find approximate value of: $(1.005)^{12}$

A 1.005

B 1.060

C 1.025

D 1.020

Question: 40

The velocity of a particle is $\vec{v} = 6\hat{\imath} + 2\hat{\jmath} - 2\hat{k}$. . The component of the velocity of a particle parallel to vector $\vec{a} = \hat{\imath} + \hat{\jmath} + \hat{k}$ in vector from is.

A $6\hat{\imath} + 2\hat{\jmath} + 2\hat{k}$

B $2\hat{\imath} + 2\hat{\jmath} + 2\hat{k}$

C $\hat{\imath} + \hat{\jmath} + \hat{k}$

D $6\hat{i} + 2\hat{j} - 2\hat{k}$

Question: 41

Two trains, each 50 m long are travelling in opposite direction with velocity 10 m/s and 15 m/s. The time of crossing is

A 2 s

B 4 s

C 2√3s

D 4√3 s

Question: 42

Time period of an oscillating water bubble depends on pressure (P), density (d) and Energy (E). Derive formula

A $T \propto P^{\frac{5}{6}} d^{2} E^{\frac{1}{3}}$

B $T \propto P^{\frac{5}{6}} d^{\frac{1}{2}} E^{3}$

C $T \propto P^{-\frac{5}{6}} d^{\frac{1}{2}} E^{\frac{1}{3}}$

D $T \propto P^{-\frac{5}{6}} d^{-\frac{1}{2}} E^{3}$

Question: 43

Distance moved by a screw in 5 rotation is 5 mm and total number of circular divisions is 100. The last count of the screw gauge is.

A 1 mm

B 0.001 m

C 0.001 cm

D 0.001 mm

Question: 44

The path followed by a body projected along y axis is given by

$y = \sqrt{3}x - \left(\frac{1}{2}\right)x^{2}$. If $g = 10\ m/s^{2}$, then the initial velocity of projectile will be - (x and y are in m)

A 3√10 m/s

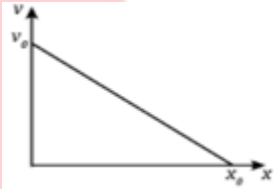
B 2√10 m/s

C 10√3 m/s

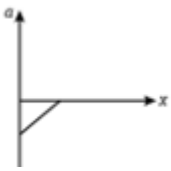
D 10√2 m/s

Question: 45

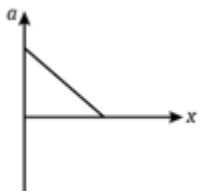
The given graph shows the variation of velocity with displacement Which one of the graphs given below correctly represents the variation of acceleration with displacement.



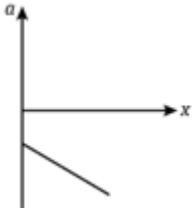
A



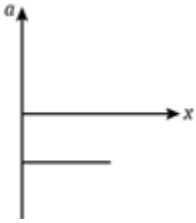
B



D



C



Chemistry

Question: 1

Successive ionization energies of an element X are 100 eV, 150 eV, 180 eV, 2000 eV, 2200 eV respectively then, the correct statement regarding X is:

A Element 'X' may be metal

B Formula of oxide of 'X' may be X_2O_3

C Oxide of element 'X' may be amphoteric

D All are correct

Question: 2

The partial pressure of hydrogen in a flask containing $2\text{ g } H_2$ and $32\text{ g } SO_2$ is

A 1/16th of total pressure

B 1/9th of total pressure

C 2/3rd of total pressure

D 1/8th of total pressure

Question: 3

Calculate the number of atoms present in one drop of water having mass 1.8 g.

A 0.2 N_A atoms

B 0.3 N_A atoms

C 0.6 N_A atoms

D 0.9 N_A atoms

Question: 4

Match the column.

Column I		Column II	
(A)	The radial node of $5s$ atomic orbital is	(P)	1
(B)	The angular node of $3d_{ys}$ atomic orbital is	(Q)	4
(C)	The sum of angular node and radial node of 4 d_{xy} atomic orbital	(R)	2
(D)	The angular node of $3p$ atomic orbital is	(S)	3

A A-Q, B-R, C-S, D-P

B A-P, B-R, C-S, D-Q

C A-Q, B-S, C-R, D-P

D A-R, B-P, C-S, D-S

Question: 5

The ratio of molar mass of two gases whose vapour densities are in ratio of 1:3?

A 2 : 3

B 1 : 2

C 1 : 3

D 3 : 1

Question: 6

Minimum ionic radii among the following is:

A Na^+

B Mg^{2+}

C Al^{3+}

D F^-

Question: 7

In a compound X is 75.8% and Y is 24.2% by weight present. If atomic weight of X and Y are 24 and 16 respectively. Then calculate the empirical formula of the compound.

A XY

B XY_2

C X_2Y

D XY_4

Question: 8

Suppose an orbital may accommodate 3 electrons then the total number of elements in 4th period:

A 18

B 27

C 12

D 45

Question: 9

Mole fraction of solvent in aqueous solution of NaOH having molality of 3 is:

A 0.35

B 0.05

C 0.74

D 0.95

Question: 10

Calculate the volume of $H_2O(g)$ and $CO_2(g)$ produced at STP for the complete combustion of 1.12 L of butane (C_4H_{10})

A 5.6 L and 4.48 L

B 2.8 L and 2.24 L

C 2.8 L and 4.48 L

D 5.6 L and 2.24 L

Question: 11

The correct decreasing order of size of ions are:

A $Br^- > Cl^- > S^{-2} > N^{-3}$

B $N^{3-} > S^{-2} > Cl^- > Br^-$

C $Br^- > S^{-2} > Cl^- > N^{-3}$

D $N^{-3} > Cl^- > S^{-2} > Br^-$

Question: 12

What is the volume of water formed at STP in the given reaction?

$H_2(g) + \frac{1}{2}O_2(g) \rightarrow H_2O(g)$;

(Given: 2 g of H_2 and 32 g of O_2)

A 5.6 L

B 4.48 L

C 22.4 L

D 44.8 L

Question: 13

2.8×10^{-3} mole of CO_2 is left after removing 10^21 molecules from its 'x' mg sample. The mass of CO_2 taken initially is:

A 48.2 mg

B 98.3 mg

C 150.4 mg

D 196.6 mg

Question: 14

The total number of electrons in 1.6 g of CH_4 to that in 1.8 g of H_2O

A Double

B Same

C Triple

D One fourth

Question: 15

The ratio of velocity of the electron in the third and fifth orbit of Li^{2+} would be:

A 3 : 5

B 5 : 3

C 25 : 9

D 9 : 25

Question: 16

Which of the following factors may be regarded as the main cause of lanthanide contraction?

A Greater shielding of 5d electrons by 4f electrons.

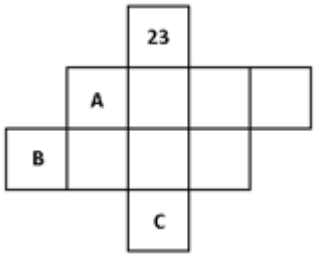
B Poorer shielding of 5d electrons by 4f electrons.

C Effective shielding of one of 4f electrons by another in the sub-shell.

D Poor shielding of one of 4f electrons by another in the sub-shell.

Question: 17

Which of the following statement is not correct?



A Atomic number of A, B, C are 40, 57, 105 respectively

B Group number of A, B, C are IV B, III B and V B respectively

C Period number of A, B, C are 4^{th}, 5^{th} and 6^{th} respectively

D C is a radioactive element

Question: 18

Element A belongs to Group VII in p-block and element B belongs to Group I in s-block of the periodic table. Out of the following assumptions, the correct one is:

A A and B are metals

B A and B are non-metals

C A is a metal and B is a non-metal

D A is a non-metal and B is a metal

Question: 19

Screening effect is observed in:

A He^{+}

B Li^{+2}

C H

D Be^{+2}

Question: 20

Electronegativity values for the elements help in predicting

A polarity of bonds

B dipole moments

C valency of elements

D position in the electrochemical series

Question: 21

Statement I: The elements germanium and arsenic are called metalloids.
Statement II: Metalloids are those elements whose property lies between metal and non-metals.

A Both statement I and II are correct.

B Both statement I and II are incorrect.

C Statement I is correct but statement II is incorrect.

D Statement II is correct but statement I is incorrect.

Question: 22

First ionization potential will be maximum for

A Uranium

B Hydrogen

C Lithium

D Iron

Question: 23

What is the shortest wavelength line in the Paschen series of Li^{2+} ion?

A R/9

B 9/R

C 1/R

D 9R/4

Question: 24

The difference between the radius of 3rd and 4th orbits of Li^{2+} is ΔR_1. The difference between the radius of 3rd and 4th orbits of He^{+} is ΔR_2. Ratio $\Delta R_1 : \Delta R_2$ is:

A 8 : 3

B 3 : 8

C 2 : 3

D 3 : 2

Question: 25

In any subshell, the maximum number of electrons having same value of spin quantum number is:

A $\sqrt{l(l+1)}$

B $l+2$

C $2l+1$

D $4l+2$

Question: 26

The electron in the hydrogen atom undergoes transition from higher orbitals to orbital of radius 212.6 pm. This transition is associated with

A Paschen series

B Brackett series

C Lyman series

D Balmer series

Question: 27

Which series of subshells is arranged in the order of increasing energy for multi-electron atoms?

A 6s, 4f, 5d, 6p

B 4f, 6s, 5d, 6p

C 5d, 4f, 6s, 6p

D 4f, 5d, 6s, 6p

Question: 28

The orbital having two radial as well as two angular nodes is:

A 4f

B 4d

C 5d

D 3p

Question: 29

Assertion: Electronegativity is unaffected by stable electronic configuration.
Reason: EN is the tendency of an atom to attract shared electrons, not to gain electrons.

A Both Assertion & Reason are true and Reason is the correct explanation of Assertion.

B Both Assertion & Reason are true and Reason is not the correct explanation of Assertion.

C Assertion is true but Reason is false.

D Assertion is false but Reason is true.

Question: 30

Value of work function (W_0) for a few metals are given below:

Metal	Li	Na	K	Mg	Cu	Ag
$W_0(eV)$	2.42	2.3	2.25	3.7	4.8	4.3

The number of metals which will show photoelectric effect when light of wavelength 400 nm falls on it is:

A 3

B 2

C 5

D 4

Question: 31

In a set of degenerate orbitals the electrons distribute themselves to retain similar spins as far as possible. This statement is attributed to

A Pauli's exclusion principle

B Aufbau principle

C Hund's Rule

D Slater Rule

Question: 32

If the kinetic energy of an electron is increased 4 times, the wavelength of the de-Broglie wavelength associated with it would become:

A four times

B two times

C half times

D one fourth times

Question: 33

The orbital angular momentum of 3p electron is:

A $\sqrt{3}\ \mathrm{h}$

B $\sqrt{6}\ \mathrm{h}$

C zero

D $\sqrt{2}\ \frac{\mathrm{h}}{2\pi}$

Question: 34

n and l values of an orbital 'A' are 3 and 2, of another orbital 'B' are 5 and 0. The energy of _____.

A B is more than A

B A is more than B

C A and B are of same energy

D None

Question: 35

Which one of the following orders of given properties is correct?

A Atomic radius - Li < Be < B

B Ionisation potential - Li < Be < B

C Electron affinity - Li < Be < B

D Electronegativity - Li < Be < B

Question: 36

The formula of a gaseous hydrocarbon which requires 6 times of its own volume of O_2 for complete oxidation and produces 4 times its own volume of CO_2 is C_xH_y. The value of y is:

A 10

B 8

C 6

D 5

Question: 37

An ion M^{+3} has electronic configuration $[\mathrm{Ar}]3\mathrm{d}^{10}4\mathrm{s}^{2}$ element M belongs to:

A s-block

B p-block

C d-block

D f-block

Question: 38

The percentage by mass of 14 molar HNO_3 in a sample which has density 1.4 g/mL. (Molecular weight of $HNO_3 = 63$)

A 40

B 63

C 25

D 36

Question: 39

Give the correct order of electronegativity of central atom in following compounds

(a) $CH_3 - CH_3$,

(b) $CH_2 = CH_2$

(c) $CH \equiv CH$

A a > b > c

B c > b > a

C c > a > b

D b > c > a

Question: 40

In the reaction, $4A + 2B + 3C \longrightarrow A_4B_2C_3$, what will be the number of moles of product formed, starting from 1 mol of A, 0.6 mol of B and 0.72 mol of C:

A 0.72

B 0.24

C 0.30

D 0.25

Question: 41

Which of the following property generally increases down the group?

A Atomic radius

B Ionization enthalpy

C Electronegativity

D Electron gain enthalpy

Question: 42

100 ml of PH_3 decomposes according to given reaction.

$PH_3(g) \longrightarrow P(s) + \frac{3}{2}H_2(g)$

The change in volume of the gas is:

A 50 ml increase

B 50 ml decrease

C 100 ml decrease

D 150 ml increase

Question: 43

An atom with high electronegativity generally has:

A tendency to form +ve ions

B high ionization potential

C large atomic size

D low electron affinity

Question: 44

The density of 3 M solution of sodium chloride is $1.252\ \text{g}\ mL^{-1}$. The molality of the solution will be:
[Molar mass, NaCl = 58.5 g mol^{-1}]

A 2.18 m

B 3.00 m

C 2.60 m

D 2.79 m

Question: 45

A subshell $n = 5, l = 3$ can accomodate:

A 10 electrons

B 14 electrons

C 18 electrons

D None of these

Biology

Question: 1
Binomial nomenclature of scientific naming system was given by _____ is being practiced by biologists all over the world.

A Ernst Mayr

B Whittaker

C Aristotle

D Carolus Linnaeus

Question: 2
Select the incorrect features w.r.t. euglenoids.

A Found in fresh stagnant water

B Pellicle as a proteinaceous covering

C They have mixotrophic nutrition

D Euglena placed in continuous darkness loses their photosynthetic activity and die

Question: 3
Read the statements from the following-
P. Families are characterized on the basis of both vegetative and reproductive features of plant species.
Q. Genus Panthera is put along with genus Canis in the family Canidae
R. 'Families' are characterized on the basis of merely reproductive features of plant species
S. Convolvulaceae family is included in order Polymoniales on the basis of its floral characters.
T. In case of plants, classes with a few similar characters are aligned to a higher category called phylum.
How many is/are correct?

A Two
B One

C Three
D Four

Question: 4
Read the following features and identify the organism based on the below mentioned features-
(i) Reproduction by binary fission
(ii) Float passively on water current
(iii) Cell wall is impregnated with silica

A Dinoflagellates
B Slime moulds

C Protozoa
D Diatoms

Question: 5
In taxonomic hierarchy, which of the following serves as basic and lowest category?

A Kingdom
B Class

C Order
D Species

Question: 6
Match the following and choose the correct option.

A.	Phycomycetes	(i)	Puffballs
B.	Ascomycetes	(ii)	Imperfect fungi
C.	Basidiomycetes	(iii)	Albugo
D.	Deuteromycetes	(iv)	Sac fungi

	A	B	C	D
(1)	(iv)	(iii)	(ii)	(i)
(2)	(iii)	(iv)	(ii)	(i)
(3)	(iii)	(iv)	(i)	(ii)
(4)	(i)	(iii)	(iv)	(ii)

A 1

B 2

C 3

D 4

Question: 7
Which of the following is correct statement w.r.t order

A Order is the assemblage of classes which exhibit a few similar characters

B Order is the assemblage of families which exhibit large number of similar characters

C Convolvulaceae and Solanaceae are included in two different orders

D Carnivora includes families like Felidae and Canidae

Question: 8
The organisms which are known as chief producers in ocean are

A Found only in marine environment

B Euglenoids

C Found in freshwater as well as in marine environment

D Macroscopic

Question: 9
How many of the following are associated with members of red algae?
Chl. d, Mannitol, Floridean starch, Motile male gamete, Oogamous reproduction, Complex post fertilization development.

A Four
B Three

C Five
D Two

Question: 10
Which of the following is correct about the slime mould?
I. The body moves along decaying twigs and leaves engulfing organic material.
II. During unfavourable conditions plasmodium differentiates and produces fruiting bodies.
III. Spores possess no true cell wall.
IV. The spores are dispersed by air current.
V. Being extremely resistant, spores survive for many years
VI. Plasmodium can grow upto

several feet.

A I, II, III
B I, II, IV, V, VI

C I, II, III, VI
D II, III, VI

Question: 11
Which of the following organisms is/are unable to reproduce?

A Hydra
B Amoeba

C Mules
D Yeast

Question: 12
Assertion: In gymnosperms, the male and female gametophytes do not have independent existence.
Reason: They remain within the sporangia retained on the sporophyte.

A If both assertion and reason are true and reason is the correct explanation of assertion.

B If both assertion and reason are true but reason is not the correct explanation of assertion.

C If assertion is true but reason is false.

D If assertion is false but reason is true.

Question: 13
Which of the following are true w.r.t. ascospores?
(A) Haploid
(B) Meiospores
(C) Exogenously produced
(D) Found in Alternaria and Neurospora

A (A) and (B) only

B (B) and (C) only

C (C) and (D) only

D (A) and (C) only

Question: 14
In _____ , chemical constituents of the plant are used to resolve confusions.

A Numerical taxonomy

B Cytotaxonomy

C Karyotaxonomy

D Chemotaxonomy

Question: 15
Classification system based upon gross superficial morphological characters

A Consider various internal features also for classification of organisms

B Was an artificial classification

C Was given by Bentham and Hooker

D Was mainly based upon evolutionary relationships among organisms

Question: 16
Members of Ascomycetes which is exclusively used in biochemical

and genetic work is

A Claviceps
B Aspergillus

C Neurospora
D Penicillium

Question: 17
The archaebacteria

A Not capable of tolerating high temperature

B Not used for the production of biogas

C Never found in extreme saline environment

D Can present in the gut of several ruminant animals

Question: 18
Pyriform gametes with laterally attached flagella are present in

A Volvox

B Ectocarpus

C Cyanobacteria

D Gracilaria

Question: 19
Select the incorrect match from the following.

A Morels - Edible fungi

B Claviceps - A sac fungus

C Penicillium - Exhibits dikaryophase

D Neurospora - Produces motile male gametes

Question: 20
How many of the following features is/are associated with mosses?
(A) Haploid plant body
(B) Vegetative reproduction takes place in primary protonema
(C) Branched rhizoids
(D) Zygote undergoes meiosis

A Two
B One

C Three
D Four

Question: 21
Members of phylum Arthropoda lack one of the following features: -

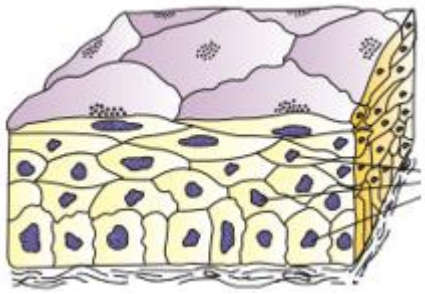
A External skeleton made up of chitin

B Compound eyes

C Excretion by malphigian tubules

D Usually a close type of blood vascular system

Question: 22
Select the incorrect statement for the given figure



A Multilayered

B Found beneath the skin and help in secretin and absorption

C Found in inner lining of ducts of salivary glands

D All the given statements are correct

Question: 23
Spongilla belongs to a group of animals, which are best described as:-

A Unicellular or acellular

B Multicellular without any tissue organization

C Multicellular with a gastrovascular system

D Multicellular having tissue organization but no body cavity

Question: 24
Statement I: Bones have a hard and non-pliable ground substance rich in calcium salts and collagen fibres
Statement II: The bone cells (osteocytes) are present in the spaces called lacunae.

A Both statements I and II are correct

B Statement I is correct but II is incorrect

C Statement I is incorrect but II is correct

D Both statements I and II are incorrect

Question: 25
Alimentary canal in frog terminates into

A Cloaca
B Stomach

C Ileum
D Duodenum

Question: 26
Which of the following characteristic is not of phylum Mollusca?

A Soft body covered usually by a calcareous shell

B Segmented body

C Triploblastic

D All of the given characters belong to phylum Mollusca

Question: 27
Three chambered hearts and incomplete double circulation is found in:-

A Fish
B Butterfly

C Frog
D Crocodile

Question: 28
Choose the correct combination of the given option?

A Calotes - Garden lizard

B Chameleon - krait

C Poisonous snake - Python (Azgar)

D Bony fish - Scolidon

Question: 29
The characteristic of vertebrate is

A Presence of notochord

B Presence of nerve chord

C Presence of vertebral column

D Presence of gill slits

Question: 30
Compound squamous epithelium occurs in

A Stomach
B Pharynx

C Intestine
D Trachea

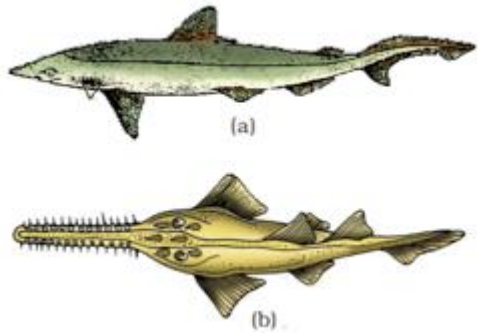
Question: 31
Given below are four matchings of an animal and its kind of respiratory organs
(A) Silver fish - Trachea
(B) Scorpion - Book lung
(C) Saccoglossus - Gills
(D) Dolphin - skin
The correct matching are:

A A and D
B A, B and C

C B and D
D C and D

Question: 32

Select the correct names of the animals shown in the figure



A Pristis and Scolidon respectively

B Pristis and Petrmyzon respectively

C Scolidon and Pristis respectively

D Myxine and Pristis respectively

Question: 33
Trachea consist of _____epithelium

A Simple columnar

B PSCCGE

C Simple cuboidal

D Stratified cuboidal

Question: 34
Characteristic of Corvus is:

A Unisexual and sexual dimorphism absent

B Bisexual and sexual dimorphism absent

C Unisexual and sexual dimorphism present

D Bisexual and sexual dimorphism present

Question: 35
Vision of cockroach is

A Mosaic

B With more sensitive

C With less resolution

D All of these

Question: 36
Which one of the following phyla is correctly matched with its general characteristics?

A Porifera - Cellular level of organization and external fertilization

B Coelenterata - Diploblastic and mostly asymmetric

C Annelida - Coelomates and closed circulatory system

D Hemichordata - Coelomates and closed circulatory system

Question: 37
Match the column I with Column II

Column I	Column II
A. Compound epithelium	i. Single layer cube like cells
B. Columnar epithelium	ii. Made up of more than one layer
C. Cuboidal epithelium	iii. Long cells having nuclei at base

A A-ii, B-iii, C-i

B A-i, B-iii, C-ii

C A-iii, B-ii, C-i

D A-i, B-ii, C-iii

Question: 38
Assertion: Cockroaches have biting and chewing type of mouth parts.
Reason: Mouth parts of cockroach consist of a labrum two mandibles, two maxillae, a labium and hypopharynx.

A If both the assertion and the reason are true and the reason is a correct explanation of the assertion.

B If both the assertion and the reason are true and the reason is not a correct explanation of the assertion.

C If the assertion is true but the reason is false.

D If both the assertion and reason are false.

Question: 39
Which of the following characters is not related to Platyhelminthes

A Dorso-ventrally flattened body

B Bilaterally symmetrical, Diploblastic and acoelomate

C Sexes are not separate

D Flame cells help in osmoregulation

Question: 40
Assertion: Tendon is an example of dense connective tissue.
Reason: Fibers and fibroblast

irregularly arranged in tendon.

A If both the assertion and the reason are true and the reason is a correct explanation of the assertion.

B If both the assertion and the reason are true and the reason is not a correct explanation of the assertion.

C If the assertion is true but the reason is false.

D If both the assertion and reason are false.

Question: 41
Given organisms belong to how many genera?

Wheat, Brinjal, Potato, Lion, Dog, Tiger

A Three
B Two

C Four
D Five

Question: 42
In taxonomic hierarchy, which of the following group of taxa will have more number of similarities as compared to other?

A Anacardiaceae, Convolvulaceae and Poaceae

B Polymoniales, Poales and Sapindales

C Solanum, Petunia and Atropa

D Leopard, tiger and lion

Question: 43
The equivalent rank of Carnivora in taxonomic categories of man and housefly is respectively

A Homo and Musca

B Hominidae and Muscidae

C Mammalia and Insecta

D Primata and Diptera

Question: 44
Potato and brinjal belong to the genus Solanum, which reflects that

A They belong to single species

B They are a group of related species

C They both are morphologically and structurally similar to each other in all respects

D They can always produce fertile hybrid

Question: 45
Nomenclature is governed by certain universal rules. Which one of the following is contrary to the rules of nomenclature?

A When written by hand, the names are to be underlined

B Biological names can be written in any language

C The first word in a biological name represents the genus name and the second is a

specific epithet

D The names are written in Latin and are italicized

Question: 46
Assertion (A): The anthropocentric view of biology restricted the advancement of biological understanding in ancient civilizations.
Reason (R): An anthropocentric approach limited observations to human utility, overlooking biodiversity as a whole.

A Both A and R are true, and R is the correct explanation of A.

B Both A and R are true, but R is not the correct explanation of A.

C A is true, R is false.

D A is false, R is true.

Question: 47
According to Linnaeus two kingdom system of classification, the unicellular organisms like Diatoms and Dinoflagellates are included in kingdom:

A Plantae
B Protista

C Monera
D Animalia

Question: 48
The similarity between Ascomycetes and deuteromycetes is-

A Conidiophore

B Conidia

C Septate hyphae

D All

Question: 49
Liverworts attach to substratum by-

A Multicellular rhizoids

B Thallus

C Unicellular rhizoids

D Protonema

Question: 50
Read the given statements and select the correct option.
Statement-A: Many species of Porphyra, Laminaria and Sargassum are among the 70 species of marine algae used as food.
Statement-B: Chlamydomonas, a unicellular alga rich in proteins is used as food supplement by space travellers.

A Both statements A and B are correct

B Statement A is correct but statement B is incorrect

C Statement A is incorrect but statement B is correct

D Both statements A and B are incorrect.

Question: 51
Select the list of items of column I with Column II and select the correct option from the codes

given below:

	Column I		Column II
A.	Golden algae	i.	Protein rich layer present
B.	Dinoflagellates	ii.	Cell walls form two thin overlapping shells.
C.	Euglena	iii.	Cell wall having stiff cellulose plates
D.	Slime moulds	iv.	Form fruiting bodies

A A-i, B-ii, C-iii, D-iv

B A-ii, B-iii, C-i, D-iv

C A-iii, B-ii, C-iv, D-i

D A-ii, B-i, C-iv, D-iii

Question: 52
Which of the following is multicellular and diploid?

A Rhizoids

B Ascocarp

C Archegonium

D Protonema

Question: 53
Neurospora and Ustilago shows similarity in having-

A Exogenous sexual spores

B Endogenous sexual spores

C Branched and septate mycelium

D Exogenous asexual spores

Question: 54
All of the following fungi belongs to Basidiomycetes, except

A Toadstools

B Pink mould

C Rust of wheat

D Bracket fungi

Question: 55
Mark the incorrect statement -

A Sporophyte is non-photosynthetic and dependent in mosses

B Gametophyte of bryophyte is more advance than algae

C Homosporous sporophyte is present in salvinia and selaginella

D All are correct

Question: 56
Select the correctly matched pair:

A Gemmae buds - Green and Unicellular

B Protonema - Creeping and Unbranched

C Motile gametes - Ulothrix and Dictyota

D Branched stem - Cycas and Cedrus

Question: 57
Assertion: Cyanobacteria can fix atmospheric nitrogen in specialized cells called heterocysts.
Reason: Cyanobacteria have chlorophyll a similar to green plants.

A If both assertion and reason are true and reason is the correct explanation of assertion.

B If both assertion and reason are true but reason is not the correct explanation of assertion.

C If assertion is true but reason is false.

D If both assertion and reason are false.

Question: 58
Motile zoospore can be present in-

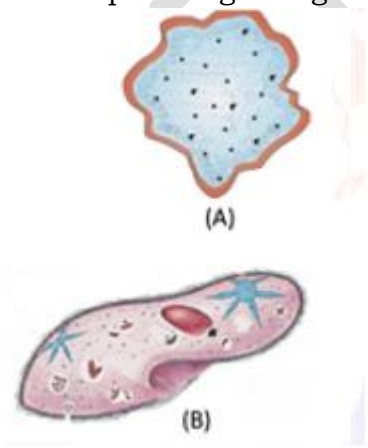
A Gelidium

B Albugo

C Gracilaria

D All of the above

Question: 59
Identify the figures and select the correct option regarding them



A Both 'A' and 'B' comes under Kingdom Protista

B 'A' form plasmodium under suitable conditions; 'B' have a cavity opens outside of the cell surface

C Both 'A' and 'B' are heterotrophs

D All are correct options

Question: 60
Organization is thallus and chloroplast is diverse. Protein bodies storing starch are present in chloroplasts. The above characters refer to

A Chlorophyceae

B Rhodophyceae

C Phaeophyceae

D Liverworts

Question: 61
The spores having true cell wall is present in -

A Trypanosoma

B Slime moulds

C Both (A) and (B)

D Amoeba

Question: 62
Analyze the following statement and identify the correct option given below
I. In diatoms, the walls are embedded with silica and thus, the walls are indestructible
II. Diatoms have left behind large amount of cell wall deposits in their habitat, this accumulation over billions of years is referred to as diatomaceous deposition or

diatomaceous earth

A I is true, but II is false

B I is false, but II is true

C I and II are true

D I and II are false

Question: 63
Which of the following shows oogamous type of sexual reproduction?

A Porphyra and Gelidium

B Fucus and Volvox

C Ulothrix and Eudorina

D Both (A) and (B)

Question: 64
Mark the incorrectly matched pair-

A Homosporous pteridophyte - Free living gametophyte and sporophyte

B Gymnosperm - Multicellular dependent gametophyte

C Bryophyte - Independent sporophyte

D Algae - Unicellular sporophyte

Question: 65
Which of the following statement is incorrect for prions?

A Consists of abnormally folded protein

B Related to neurological diseases

C Larger than Viroids

D Larger than Viruses

Question: 66
Disease caused by Viroids is-

A Mosaic disease

B Potato spindle tuber disease

C Bovine spongiform encephalopathy

D Citrus canker

Question: 67
Select the list of items of column I with Column II and select the correct option from the codes given below:

	Column I		Column II
A.	Selaginella	i.	Macrophylls
B.	Prothallus	ii.	Free-living
C.	Ferns	iii.	Heterosporous

A A-ii, B-i, C-iii

B A-ii, B-iii, C-i

C A-iii, B-ii, C-i

D A-i, B-ii, C-iii

Question: 68
Zoospores are present in all except-

A Volvox
B Ulothrix

C Dictyota
D Polysiphonia

Question: 69
Which one is the character of Chondrichthyes?

A Terminal mouth

B Gills with operculum

C Body covered by placoid scales

D Air bladder regulate buoyancy

Question: 70
Assertion: The body of reptiles is covered by dry and cornified skin, epidermal scales or scutes.
Reason: Reptiles are mostly terrestrial animals.

A If both Assertion & Reason are True &the Reason is a correct explanation of the Assertion.

B If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.

C If Assertion is True but the Reason is False.

D If both Assertion & Reason are false.

Question: 71
Which phylum have diploblastic level of organization?

A Chordata

B Coelenterates

C Platyhelminthes

D Reptiles

Question: 72
Choose the odd one w.r.t location of non- striated, involuntary muscle

A Wall of blood vessels

B Stomach

C Intestine

D Heart

Question: 73
A rudimentary structure in the collar region of Hemichordates which is similar to notochord in chordates is?

A Stomochord

B Vertebral column

C Gill slits

D Scutes

Question: 74
Which of the following is an incorrectly matched pair of a body feature and the animal possessing it?

A Operculum - Carcharodon

B 6-15 pairs of gill slits - Hagfish

C Epidermal scales - Garden Lizard

D Poikilothermic - Chelone

Question: 75
Which of the following is incorrect statement for the simple columnar epithelium:

A It is composed of a single layer of tall and slender cells

B Their nuclei are located at the base

C Packed surface may have microvilli

D They are found in the walls of lining of stomach and intestine.

Question: 76
Assertion: Some of the cuboidal and columnar cells get specialized for secretion and are called glandular epithelium
Reason: On the basis of secretion glands are only exocrine in nature

A If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.

B If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.

C If Assertion is True but the Reason is False.

D If both Assertion & Reason are false.

Question: 77
Match the following

	Column-I		Column-II
A.	Pennatula	(i),	Sea anemone.
B.	Meandrina	(ii)	Sea-pen
C.	Gorgonia	(iii)	Brain coral
D.	Adamsia	(iv)	Sea-fan

A A-(ii), B-(iii), C- (iv), D-((i),

B A-(iv), B-(i), C- (ii), D-(iii),

C A-(i), B-(ii), C-(iv), D-(iii),

D A-(iv), B-(i), C-(iii), D-(ii),

Question: 78
Which one of the following pair is not correctly matched?

A Myxine - Hagfish

B Clarias - Magur

C Neophron -Vulture

D Calotes - Flying fox

Question: 79
The unique features of mammals are the presence of:

A Mammary glands and hairs on the skin

B Respiration is by lungs

C Sexes are separate and fertilization is internal

D Both (A) and (C)

Question: 80
Read the following statements.
(i) It is made of more than one layer (multi-layered) of cells.
(ii) It has a limited role in secretion and absorption.
(iii) Their main function is to provide protection against chemical and mechanical stress
(iv) It covers the dry surface of the skin and the moist surface of buccal cavity.
How many of the above statements are correct for compound epithelium?

A Four
B Three

C Two
D One

Question: 81
Which phylum is exclusively marine, radially symmetrical, diploblastic organisms with tissue level of organization.

A Platyhelminthes

B Coelenterate

C Ctenophore

D Porifera

Question: 82
Match the phylum with there Distinctive Features;

A	Chordata	(i)	Worm-like with proboscis, collar and trunk.
B	Hemichordate	(ii)	A, notochord is present only in larval tail.
C	Urochordata	(iii)	Presence of Notochord, dorsal Hollow nerve cord, paired Pharyngeal gills.

A A-iii, B-ii, C-i,

B A-ii, B-iii, C-i

C A-iii, B-i, C-ii

D A-ii, B-i, C-iii

Question: 83
Aschelminthes are

A Bilaterally symmetrical, triploblastic

B Bilaterally symmetrical, diploblastic

C Radially symmetrical, triploblastic

D Radially symmetrical, diploblastic

Question: 84
Match the Column-I with the column-II and find out the correct answer:

Column-I		Column-II	
(A)	Spongocoel	(i)	Arthropoda
(B)	Dorso-ventrally flattened body	(ii)	Cnidaria
(C)	Coelenteron cavity	(iii)	Porifera
(D)	Chitinous exoskeleton	(iv)	Platyhelminthes

A A-iii, B-iv, C-i, D-ii

B A-iv, B-iii, C-ii, D-i

C A-iii, B-iv, C-ii, D-i

D A-ii, B-iv, C-iii, D-i

Question: 85
In some animals, the body is externally and internally divided into segments with a serial repetition this phenomenon is called as:

A Metamerism

B Metamorphosis

C Metagenesis

D Metastasis

Question: 86
How many statements are incorrect?
(A) All vertebrates are chordates but all chordates are not vertebrates.
(B) Subphyla Urochordata and Cephalochordata are often referred to as protochordates.

(C) In Urochordata, notochord is present only in larval tail.
(D) Member of subphylum Vertebrata possess notochord during the embryonic period.
How many statements are correct:

A One
B Three

C Two
D zero

Question: 87
Which among the following statements is/are correct regarding frog.
(A) External ear is absent in frogs and only tympanum can be seen externally.
(B) The ear is an organ of hearing as well as balancing (equilibrium).
(C) Male reproductive organs of frog consist of pair of yellowish ovoid testes
(D) Female reproductive organs include 7 to 8 ovaries.

A a and b only
B a, b, c

C d only
D All of these

Question: 88
In females, cockroaches the 7^{th} sternum is boat shaped and together with the 8^{th} and 9^{th} sterna forms genital pouch whose anterior part contains female_____.

A Gonopore, dorsal anus and collateral glands

B Gonopore, spermathecal pores and ventral genital pore

C Gonapophysis, spermathecal pores and collateral glands

D Gonopore, spermathecal pores and collateral glands

Question: 89
Exoskeleton of cockroach is made up of

A Cartilage
B Cuticle

C Chitin
D Amino acids

Question: 90
Malpighian tubules of cockroach help in:

A Fertilization

B Absorption and excretion of nitrogenous waste products

C Copulation

D Formation of fat body