

MP Murlidhar Mohol & APMA initiative

Mission NEET 2025

TIME : 3 HRS.

PAPER - IV

MARKS: 720

DATE : 21.04.2025

PCB : ENTIRE XI + XII NCERT

Note:

- * Every correct answer (+4 Mark)
- * Every wrong answer (-1 Mark)
- * Not attempted question (0 Mark)

1. Bernoulli's principle (or equation) is a consequence of

- 1) Conservation of energy
- 2) Conservation of momentum
- 3) Conservation of angular momentum
- 4) Conservation of charge

2. In an experiment four quantities a, b, c and d are measured with percentage error 1%, 2%, 3% and 4% respectively. Quantity P is calculated as

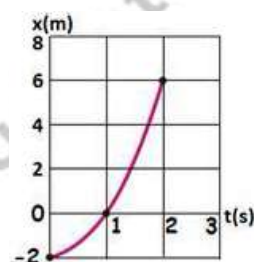
follows $P = \frac{a^3 b^2}{cd}$ then the percentage error in P is:

- 1) 10%
- 2) 7%
- 3) 4%
- 4) 14%

3. A time dependent force $F = 3t^2 + 6t$ acts on a particle of mass 18 kg. If particle starts from rest, the work done by the force during the first 3 second, will be:

- 1) 40.5 J
- 2) 324 J
- 3) 81 J
- 4) 262 J

4. Figure depicts the motion of a particle moving along an x axis with a constant acceleration. What are the magnitude and direction of the particle's acceleration?

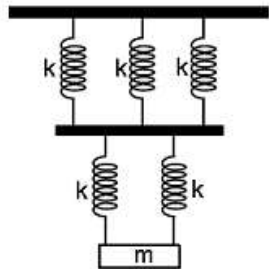


- 1) 4 m/s^2 in the +ve x-direction
- 2) 4 m/s^2 in the -ve x-direction
- 3) 2 m/s^2 in the +ve x-direction
- 4) 2 m/s^2 in the -ve x-direction

5. An alternating voltage $V(t) = 220 \sin 100\pi t$ volt is applied to a purely resistive load of 50Ω . The time taken for the current to rise from half of the peak value to the peak value is :

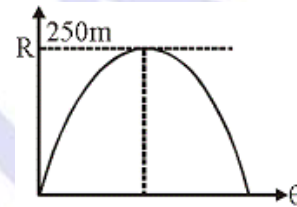
- 1) 5 ms
- 2) 2.2 ms
- 3) 7.2 ms
- 4) 3.3 ms

6. As shown in the figure, a block of mass m is hung from the ceiling by the system of springs consisting of two layers. The force constant of each of the springs is k . The frequency of the vertical oscillations of the block is



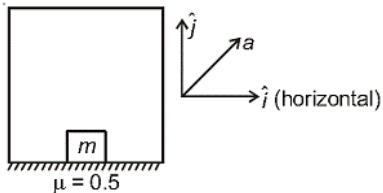
- 1) $\frac{1}{2\pi} \sqrt{\frac{k}{5m}}$ 2) $\frac{1}{2\pi} \sqrt{\frac{4k}{5m}}$
 3) $\frac{1}{2\pi} \sqrt{\frac{5k}{6m}}$ 4) $\frac{1}{2\pi} \sqrt{\frac{6k}{5m}}$
7. A particle thrown up vertically reaches its highest point in time t_1 and returns to the ground in a further time t_2 . The air resistance exerts a constant force on the particle opposite to its direction of motion.
- 1) $t_1 > t_2$
 2) $t_1 = t_2$
 3) $t_1 < t_2$
 4) May be (1) or (3) depending on the ratio of the force of air resistance to the weight of the particle.
8. An object is immersed in a liquid. In order that the object becomes invisible, it should
- 1) behave as a perfect reflector
 2) absorb all the light falling on it
 3) have the same refractive index of the liquid
 4) have refractive index equal to one

9. A particle is projected from a point on the ground surface at different angles keeping the speed of projection as constant, range obtained is plotted as function of the angle of projection with the horizontal ' θ '. Find the range obtained if particle is projected at angle 30° with the horizontal: ($g = 10 \text{ m/s}^2$)



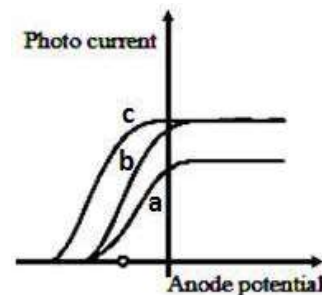
- 1) $125\sqrt{3} \text{ m}$ 2) 125 m
 3) $50\sqrt{3} \text{ m}$ 4) $100\sqrt{3} \text{ m}$
10. An electron moving in a circular orbit of radius r makes n rotations per second. The magnetic field produced at the centre has magnitude
- 1) Zero 2) $\frac{\mu_0 ne}{2\pi r}$
 3) $\frac{\mu_0 ne}{2r}$ 4) $\frac{\mu_0 n^2 e}{2r}$
11. A flat coil of n turns, area A and carrying a current i is placed in a uniform magnetic field of magnitude B . The plane of the coil makes an angle θ with the direction of the field. The torque acting on the coil is
- 1) $BinA \sin \theta$ 2) $\frac{nAi}{B} \sin \theta$
 3) $BinA \cos \theta$ 4) $Bin^2 A \cos \theta$

12. Figure shows a block of mass 2 kg resting on the floor of a box having coefficient of friction $\mu = 0.5$. If the box accelerates with acceleration $= (4\hat{i} + 3\hat{j}) \text{ ms}^{-2}$, the friction force acting on the block would be ($g = 10 \text{ m/s}^2$)



- 1) 10 N 2) 8 N
3) 13 N 4) 6 N
13. There are 10 turns in coil M and 15 turns in coil N. If a current of 2A is passed through coil M then the flux linked with coil N is $1.8 \times 10^{-3} \text{ Wb}$. If a current of 3A is passed through coil N then flux linked with coil M is
- 1) $1.2 \times 10^{-3} \text{ Wb}$ 2) $2.7 \times 10^{-3} \text{ Wb}$
3) $1.8 \times 10^{-3} \text{ Wb}$ 4) $4.05 \times 10^{-3} \text{ Wb}$
14. An electromagnetic wave in vacuum has the electric and magnetic fields are $\vec{E}$ and $\vec{B}$, which are always perpendicular to each other. The direction of polarization is given by $\vec{X}$ and that of wave propagation by $\vec{k}$. Then
- 1) $\vec{X} \parallel \vec{B}$ and $\vec{k} \parallel \vec{B} \times \vec{E}$
2) $\vec{X} \parallel \vec{E}$ and $\vec{k} \parallel \vec{E} \times \vec{B}$
3) $\vec{X} \parallel \vec{B}$ and $\vec{k} \parallel \vec{E} \times \vec{B}$
4) $\vec{X} \parallel \vec{E}$ and $\vec{k} \parallel \vec{B} \times \vec{E}$

15. Two waves of wavelength λ and $(\lambda + \Delta\lambda)$ produce 5 beats per second. If $\frac{\Delta\lambda}{\lambda} = \frac{\lambda + \Delta\lambda}{65}$, find the speed of sound waves in gas in which these waves produced beats.
- 1) 325 m/s 2) 324 m/s
3) 334 m/s 4) 335 m/s
16. The third overtone of an open organ pipe of length l_0 has the same frequency as the third overtone of a closed pipe of length l_c . The ratio l_0 / l_c is equal to
- 1) 2 2) 3/2
3) 5/3 4) 8/7
17. The figure shows the variation of photo current with anode potential for a photo-sensitive surface for three different radiations. Let I_a , I_b and I_c be the intensities and f_a , f_b and f_c be the frequencies for the curves a, b and c respectively.



- 1) $f_a = f_b$ and $I_a \neq I_b$ 2) $f_a = f_c$ and $I_a = I_c$
3) $f_a = f_b$ and $I_a = I_b$ 4) $f_a = f_c$ and $I_b = I_c$

18. Two particles move at right angle to each other. Their de Broglie wavelengths are λ_1 and λ_2 respectively. The particles suffer perfectly inelastic collision. The de Broglie wavelength λ , of the final particle, is given by :

$$\begin{array}{ll} 1) \frac{1}{\lambda^2} = \frac{1}{\lambda_1^2} + \frac{1}{\lambda_2^2} & 2) \lambda = \sqrt{\lambda_1 \lambda_2} \\ 3) \lambda = \frac{\lambda_1 + \lambda_2}{2} & 4) \frac{2}{\lambda} = \frac{1}{\lambda_1} + \frac{1}{\lambda_2} \end{array}$$

19. As an electron makes a transition from an excited state to the ground state of hydrogen-like atom/ion:

- 1) Kinetic energy, potential energy and total energy decrease
- 2) Kinetic energy decreases, potential energy increases and total energy remains same
- 3) Kinetic energy and total energy decrease but potential energy increases
- 4) Its Kinetic energy increases but potential energy and total energy decrease

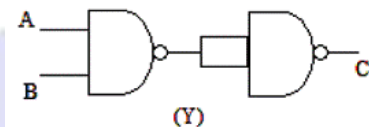
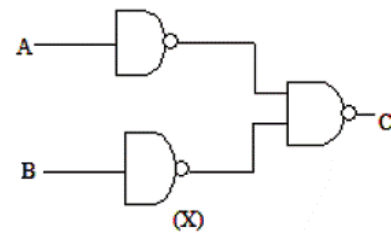
20. Two nucleons are at a separation of 1 fm. The net force between them is F_1 if both are neutrons, F_2 if both are protons, and F_3 if one is a proton and the other is a neutron.

- 1) $F_1 > F_2 > F_3$
- 2) $F_2 > F_1 > F_3$
- 3) $F_1 = F_3 > F_2$
- 4) $F_1 = F_2 > F_3$

21. An automobile of constant power P travels a distance x in time t . Kinetic energy of the automobile is directly proportional to

- 1) $x^{\frac{2}{3}}$
- 2) t^2
- 3) $t^{\frac{1}{2}}$
- 4) x^2

22. The combination of NAND gates shown here under are equivalent to



- 1) X is OR gate and Y is AND gate
- 2) X is AND gate and Y is NOT gate
- 3) X is AND gate and Y is OR gate
- 4) X is OR gate and Y is NOT gate

23. In Young's double – slit interference experiment initially slits of equal width are taken. Later, one slit is made twice as wide as the other. In the resulting interference pattern,

- 1) the intensities of both the maxima and the minima increase
- 2) the intensity of the maxima increases and the minima has zero intensity
- 3) the intensity of the maxima decreases and that of the minima increases
- 4) the intensity of the maxima decreases and the minima has zero intensity

24. The area covered under electric current versus time graph gives

- 1) electric potential
- 2) electric charge
- 3) electric resistance
- 4) electric field strength

25. If two soap bubbles of different radii are connected by a tube,

- 1) Air flows from bigger bubble to the smaller bubble till the sizes become equal
- 2) Air flows from bigger bubble to the smaller bubble till the sizes are interchanged
- 3) Air flows from the smaller bubble to the bigger
- 4) There is no flow of air

26. An insulator container contains 4 moles of an ideal diatomic gas at temperature T . Heat Q is supplied to this gas, due to which 2 moles of the gas are dissociated into atoms but temperature of the gas remains constant. Then

- 1) $Q = 2RT$
- 2) $Q = RT$
- 3) $Q = 3RT$
- 4) $Q = 4RT$

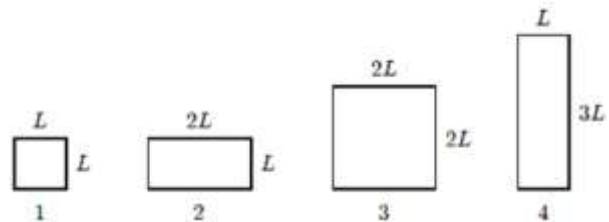
27. Two spherical bodies A of radius 6 cm and B of radius 18 cm are at temperature T_1 and T_2 , respectively. The maximum intensity in the emission spectrum of A is at 500 nm and in that of B is at 1500 nm. Considering them to be black bodies, what will be the ratio of the rate of total energy radiated by A to that of B.

- 1) 3
- 2) 9
- 3) 27
- 4) 81

28. The root-mean-square (rms) speed of oxygen molecules (O_2) at a certain absolute temperature is u . If the temperature is doubled and the oxygen gas dissociates into atomic oxygen, the rms speed would be

- 1) u
- 2) $\sqrt{2} u$
- 3) $2u$
- 4) $2\sqrt{2} u$

29. The diagram shows four rectangular plates and their dimensions. All are made of the same material. The temperature now increases of these Plates



- 1) The vertical dimension of plate 2 increases the most and the area of plate 4 increases the most
- 2) The vertical dimension of plate 3 increases the most and the area of plate 1 increases the most
- 3) The vertical dimension of plate 4 increases the most and the area of plate 3 increases the most
- 4) The vertical dimension of plate 4 increases the most and the area of plate 4 increases the most

30. The radius of gyration of a thin disc of radius 4 cm about a diameter is

- 1) 4 cm
- 2) $2\sqrt{2}$ cm
- 3) 2 cm
- 4) $\sqrt{2}$ cm

31. If the radius of the earth becomes half of its present value, with its mass remaining the same, the duration of one day will become

- 1) 6 h
- 2) 12 h
- 3) 48 h
- 4) 96 h

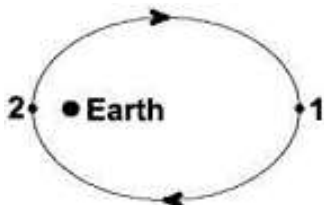
32. Two point masses m and M are separated by a distance L . The distance of the centre of mass of the system from m is

- 1) $L(m/M)$ 2) $L(M/m)$
 3) $L\left(\frac{M}{m+M}\right)$ 4) $L\left(\frac{m}{m+M}\right)$

33. Two steel wires having same length are suspended from a ceiling under the same load. If the ratio of their energy stored per unit volume is 1: 4, the ratio of their diameters is:

- 1) $1:\sqrt{2}$ 2) $1:2$
 3) $2:1$ 4) $\sqrt{2}:1$

34. A small satellite is in elliptical orbit around earth as shown. If L denotes the magnitude of its angular momentum and K denotes kinetic energy:



- 1) $L_2 > L_1$ and $K_2 > K_1$ 2) $L_2 > L_1$ and $K_2 = K_1$
 3) $L_2 = L_1$ and $K_2 = K_1$ 4) $L_2 = L_1$ and $K_2 > K_1$

35. Identical cells, each of emf ε and internal resistance r , are joined in series to form a closed circuit. The potential difference across any one cell is

- 1) Zero 2) ε
 3) $\frac{\varepsilon}{n}$ 4) $\frac{n-1}{n}\varepsilon$

36. A resistance of 2Ω is connected across one gap of a meter-bridge (the length of the wire is 100 cm) and an unknown resistance, greater than 2Ω is connected across the other gap. When these resistances are interchanged, the balance point shifts by 20 cm. Neglecting any corrections, the unknown resistance is

- 1) 3Ω 2) 4Ω
 3) 5Ω 4) 6Ω

37. In a double slit experiment, the two slits are 1 mm apart and the screen is placed 1 m away. A monochromatic light of wavelength 500 nm is used. What should the width of each slit be to obtain 10 maxima of the double slit pattern within the central maximum of the single slit pattern

- 1) 0.1 mm 2) 0.2 mm
 3) 0.3 mm 4) 0.4 mm

38. A light ray falls perpendicular on one face of an equilateral prism, having refractive index $\sqrt{2}$. The angle of deviation is:

- 1) 30° 2) 60°
 3) 90° 4) 120°

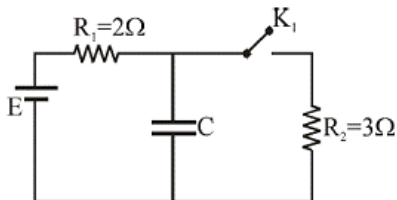
39. In a compound microscope, the focal length of objective lens is 1.2 cm and focal length of eye piece is 3.0 cm. When object is kept at 1.25 cm in front of objective, final image is formed at infinity. Magnifying power of the compound microscope should be:

- 1) 200 2) 100
 3) 400 4) 150

40. A charge 'q' is placed at the centre of the line joining two equal charges 'Q'. The system of the three charges will be in equilibrium if 'q' is equal to

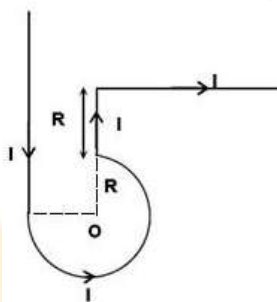
1) $Q/2$ 2) $-Q/4$
3) $Q/4$ 4) $-Q/2$

41. In the circuit shown in the figure K_1 is open. The charge on capacitor C in steady state is q_1 . Now key is closed and at steady state charge on C is q_2 . The ratio of charges q_1/q_2 is



1) $5/3$ 2) $3/5$
3) 1 4) $2/3$

42. A conducting wire carrying a current I is bent into the shape as shown. The net magnetic field at the centre 'O' of the circular arc of radius 'R' is



1) $\frac{\mu_0 I}{2R} \left(\frac{1+3\pi}{\pi} \right)$ 2) $\frac{\mu_0 I}{4R} \left(\frac{1+3\pi}{\pi} \right)$
3) $\frac{\mu_0 I}{8R} \left(\frac{1+3\pi}{\pi} \right)$ 4) $\frac{\mu_0 I}{8R} \left(\frac{2+3\pi}{\pi} \right)$

43. A milliammeter of range 10 mA gives full-scale deflection for a current of 100 mA when a shunt of 0.1Ω is connected in parallel to it. The coil of the milliammeter has a resistance of

1) 0.9Ω 2) 1Ω
3) 1.1Ω 4) 0.11Ω

44. Charge Q is given a displacement $\vec{r} = a\hat{i} + b\hat{j}$ in an electric field $\vec{E} = E_1\hat{i} + E_2\hat{j}$. The work done is

1) $Q(E_1a + E_2b)$
2) $Q\sqrt{(E_1a)^2 + (E_2b)^2}$
3) $Q(E_1 + E_2)\sqrt{a^2 + b^2}$
4) $Q(\sqrt{E_1^2 + E_2^2})\sqrt{a^2 + b^2}$

45. Two spheres of same mass m are moving in opposite directions with speed v and $2v$. They collide with coefficient of restitution $e = \frac{1}{2}$. Loss of kinetic energy of the system in the collision is

1) $\frac{27mv^2}{8}$ 2) $\frac{3mv^2}{8}$
3) $\frac{27mv^2}{16}$ 4) $\frac{3mv^2}{16}$

46. α - D - glucose and β - D-glucose differ from each other due to the difference in one carbon with respect to its

1) Size of hemiacetal ring
2) Number of OH groups
3) Configuration
4) Conformation

47. In molecule C_2 consider the following statements

- I. Bond order is 2.
- II. Both the bonds present in C_2 are π -bond.
- III. The molecule is paramagnetic in nature.
- IV. Double bond in C_2 consists of 1 σ and π -bond.
- V. Bond length of C_2 is greater than that of O_2 molecule.

Select the incorrect statements.

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

48. Match the following

Column - I Name of vitamins		Column - II Deficiency diseases	
A)	Riboflavin	I)	Beriberi
B)	Thiamine	II)	Scurvy
C)	Pyridoxine	III)	Cheilosis
D)	Ascorbic acid	IV)	Convulsions

The correct match is

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

49. Which of the following compound(s) will give HVZ reaction?

- 1) C_6H_5-COOH
- 2) $H-COOH$
- 3) CH_3-COOH
- 4) $(CH_3)_3C-COOH$

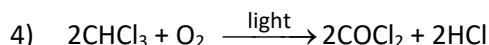
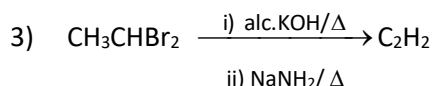
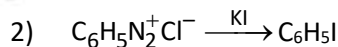
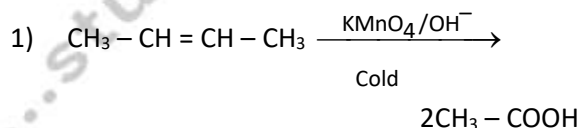
50. Given below are two statements: one is labelled as Assertion (A) while other is labelled as Reason (R)

Assertion (A): Standard enthalpy of formation for $KCl(s) = 0$.

Reason (R): Standard enthalpy of formation of element in its reference state is taken as zero.

- 1) (A) is correct but (R) is not correct
- 2) (A) is not correct but (R) is correct
- 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)

51. The reaction which does not give proper combination of reactant, product, reagent and conditions is

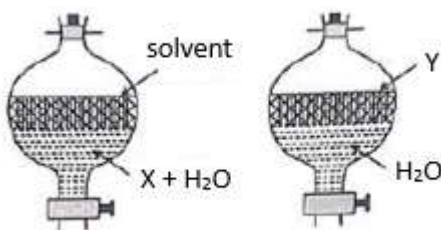


52. Regarding DNA incorrect statement is

- 1) It does not contain uracil
- 2) Hydrogen bonds are formed between adenine and thymine
- 3) It has a double helical structure
- 4) It contains β -D(-)-ribofuranose

53. The correct order of decreasing second ionisation enthalpy of Ti, V, Cr and Mn is
1) $\text{Cr} > \text{Mn} > \text{V} > \text{Ti}$ 2) $\text{Ti} > \text{V} > \text{Cr} > \text{Mn}$
3) $\text{V} > \text{Mn} > \text{Cr} > \text{Ti}$ 4) $\text{Mn} > \text{Cr} > \text{V} > \text{Ti}$
54. P^{H} of the following salt does not depend on its concentration. The salt is
1) $\text{K}_2\text{S}(\text{aq})$ 2) $\text{CH}_3\text{COONa}(\text{aq})$
3) $\text{CuSO}_4(\text{aq})$ 4) $\text{CH}_3\text{COONH}_4(\text{aq})$
55. Which of the following statement is correct?
1) $[\text{Co}(\text{en})_3]^{3+}$ is paramagnetic, inner orbital complex
2) $[\text{Co}(\text{en})_3]^{3+}$ is diamagnetic, outer orbital complex.
3) $[\text{Co}(\text{en})_3]^{3+}$ is paramagnetic, outer orbital complex.
4) $[\text{Co}(\text{en})_3]^{3+}$ is diamagnetic, inner orbital complex.
56. The wave number for the longest wavelength transition in the Paschen series of atomic hydrogen is (R_{H} = Rydberg constant of H atom)
1) $\frac{R_{\text{H}}}{9}$ 2) $\frac{R_{\text{H}}}{16}$
3) $\frac{7}{144}R_{\text{H}}$ 4) $\frac{9}{400}R_{\text{H}}$
57. Fuel cell, using hydrogen and oxygen as fuels,
A. has been used in spaceship
B. has as efficiency of 40% to produce electricity
C. uses aluminium as catalysts
D. is eco-friendly
E. is actually a type of Galvanic cell only
Correct statements are,
1) A,B,C only 2) A,B,D only
3) A,B,D,E only 4) A,D,E only
58. Given below are two statement :
Statement I : Bromination of phenol in solvent with low polarity such as CHCl_3 or CS_2 requires Lewis acid catalyst.
Statement II : The lewis acid catalyst polarises the bromine to generate Br^+ .
In the light of the above statements, choose the correct answer from the options given below :
1) Statement I is true but Statement II is false.
2) Both Statement I and Statement II are true
3) Both Statement I and Statement II are false.
4) Statement I is false but Statement II is true.

59. Observe the diagrams regarding differential solvent extraction and select the proper option for 'X' and 'Y'.

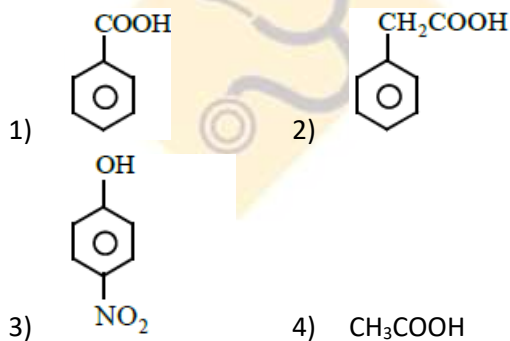


Before extraction

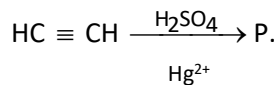
After extraction

	Column – I (X)	Column – II (Y)
1)	Organic compound	Organic compound + solvent
2)	Organic compound	Organic compound + H ₂ O + solvent
3)	Organic compound	Decomposed Organic compound
4)	Organic compound	Pure Organic compound

60. Least acidic among the following is



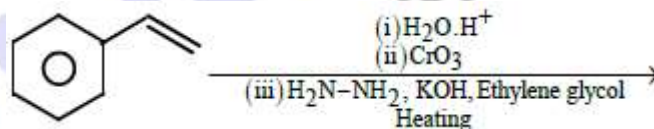
61. In the following reaction,



Product P will not give

- 1) Tollen's reagent test
- 2) 2,4-DNP test
- 3) Lucas reagent test
- 4) Iodoform test

62. The final product A formed in the following multistep reaction sequence is



- 1)
- 2)
- 3)
- 4)

63. **Assertion (A):** During nitration of aniline, significant amount of meta derivative is formed

Reason (R): In strongly acidic medium, aniline is protonated to form the anilinium ion which is meta directing.

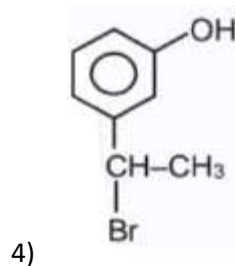
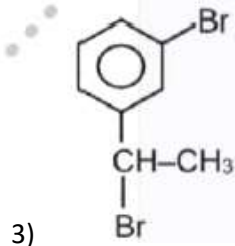
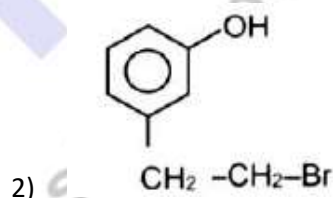
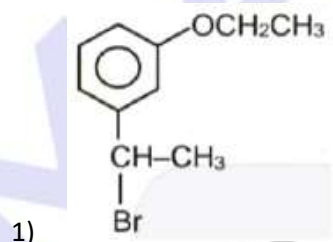
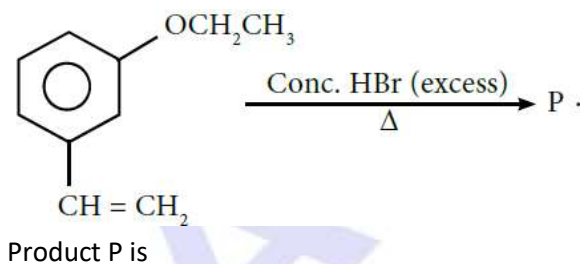
- 1) If both A and R are true and R is the correct explanation of A
- 2) If both A and R are true but R is not the correct explanation of A
- 3) If A is true but R is false
- 4) If both A and R are false

64. Match the following

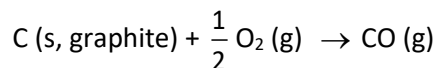
Column - I (organic compound)		Column - II (Classification)	
I)	Furan	A)	Homocyclic, aromatic
II)	Aniline	B)	Homocyclic, non-benzenoid aromatic
III)	Tetra hydro furan (THF)	C)	Heterocyclic, aromatic
IV)	Tropone	D)	Heterocyclic, non - aromatic

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

65.



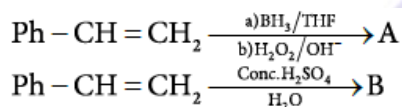
66. Consider the given reaction



If the enthalpy change for the given reaction is $-a$ J/mol at T K temperature, then the value of change in internal energy will be

- 1) $(-a + 8.314 T)$ KJ/mol
 - 2) $-(a + 4.157 T)$ J/mol
 - 3) $(a + 4.157 T)$ J/mol
 - 4) $(a - 8.314 T)$ J/mol
67. The number of ions from the following that have the ability to liberate hydrogen from a dilute acid is _____ Ti^{2+} , Cr^{2+} and V^{2+}
- 1) 0
 - 2) 2
 - 3) 3
 - 4) 1

68.



'A' and 'B' are respectively

A B

- 1) ;
- 2) ;
- 3) ;
- 4) ;

69. The fusion of chromite ore with sodium carbonate in the presence of air leads to the formation of products A and B along with the evolution of CO_2 . The sum of spin-only magnetic moment values of A and B is ___ B.M. (Nearest integer)

- 1) 2
- 2) 4
- 3) 6
- 4) 8

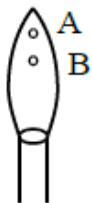
70. Match the List-I with List-II.

List-I (Electronic configuration)		List-II (Electronegativity of element)	
A)	$1s^2, 2s^2, 2p^5$	(i)	3.04
B)	$1s^2, 2s^2, 2p^4$	(ii)	2.58
C)	$1s^2, 2s^2, 2p^3$	(iii)	3.98
D)	$1s^2, 2s^2, 2p^6, 3s^2, 3p^4$	(iv)	3.44

Choose the correct answer from the options given below.

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

71.



In a borax bead test under hot condition, a metal salt (one from the given) is heated at point B of the flame, resulted in green colour salt bead. The spin-only magnetic moment value of the salt is _____ BM (Nearest integer)

- 1) 6 2) 5
3) 4 4) 3

72. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A) Oxidation involves loss of electrons and reduction involves gain of electrons.

Reason (R) The overall reaction in which oxidation and reduction occurs simultaneously is called redox reaction.

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

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

73. Match List I with List II :

List-I (Precipitating reagent and conditions)		List-II (Cation)	
A)	$\text{NH}_4\text{Cl} + \text{NH}_4\text{OH}$	(I)	Mn^{2+}
B)	$\text{NH}_4\text{OH} + \text{Na}_2\text{CO}_3$	(II)	Pb^{2+}
C)	$\text{NH}_4\text{OH} + \text{NH}_4\text{Cl} + \text{H}_2\text{S gas}$	(III)	Al^{3+}
D)	dilute HCl	(IV)	Sr^{2+}

Choose the correct answer from the options given below :

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

74. Coordination compounds have great importance in biological systems. In this context which of the following statements is incorrect?

- 1) Chlorophylls are green pigments in plants and contains calcium.
2) Carboxypeptidase-A is an enzyme and contains zinc.
3) Haemoglobin is the red pigment of blood and contains iron.
4) Cyanocobalamin is B_{12} and contains cobalt.

75. The enthalpy of formation of ethane (C_2H_6) from ethylene by addition of hydrogen where the bond-energies of C – H, C – C, C = C, H – H are 414 kJ, 347 kJ, 615 kJ and 435 kJ respectively is _____ kJ.

- 1) 125 2) – 125
3) 100 4) – 100

76. The resistance of a conductivity cell containing 0.02 M solution of NaCl at 298 K is 80Ω . If the conductivity of 0.02 M NaCl solution is 0.008 S cm^{-1} , then cell constant of the cell will be
- 0.064 cm^{-1}
 - 1.82 cm^{-1}
 - 0.034 cm^{-1}
 - 0.64 cm^{-1}
77. If the rate constant of a first order reaction is $1.8424 \times 10^{-4} \text{ s}^{-1}$ then the time required for the completion of 20% of the reaction will be
- 750 s
 - 650 s
 - 1550 s
 - 1250 s
78. Given below are two statements.
- Statement I** Be and Al form the amphoteric oxides.
- Statement II** Be and Al are metalloids.
- In the light of the above statements, choose the correct answer from the options given below.
- Statement I is false but Statement II is true.
 - Both Statement I and Statement II are true.
 - Both Statement I and Statement II are false.
 - Statement I is true but Statement II is false.
79. The de-Broglie's wavelength of an electron in the 4th orbit of hydrogen atom is _____. (a_0 = Bohr's radius)
- $4\pi a_0$
 - $8\pi a_0$
 - πa_0
 - $16\pi a_0$
80. Consider the following reactions.
- $$2\text{KClO}_3 \xrightarrow{\Delta} 2\text{KCl} + 3\text{O}_2$$
- $$2\text{Mg} + \text{O}_2 \xrightarrow{\Delta} 2\text{MgO}$$
- The number of moles of MgO formed when oxygen produced by 0.5 mole of KClO_3 is completely reacted with Mg is
- 0.5 mole
 - 1 mole
 - 1.5 moles
 - 2 moles
81. Number of molecules/species from the following having one unpaired electron is _____.
- $\text{O}_2, \text{O}_2^{-1}, \text{NO}, \text{CN}^{-1}, \text{O}_2^{2-}$
- 1
 - 2
 - 3
 - 4
82. Given below are two statements. One is labelled Assertion (A) and the other is labelled Reason (R).
- Assertion (A):** CCl_4 does not undergo hydrolysis
- Reason (R):** CCl_4 does not contain lone pair on carbon atom
- In light of the above statements, choose the correct answer from the options given below.
- Both (A) and (R) are true and (R) is the correct explanation of (A).
 - Both (A) and (R) are true but (R) is not the correct explanation of (A).
 - (A) is true but (R) is false.
 - Both (A) and (R) are false

83. Match List I with List II :

List-I (Compound)		List-II (Uses)	
A)	Iodoform	(I)	Fire extinguisher
B)	Carbon tetrachloride	(II)	Insecticide
C)	CFC	(III)	Antiseptic
D)	DDT	(IV)	Refrigerants

Choose the correct answer from the options given below :

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

84. Molecular formula of an organic compound is C_2H_6O . The types of isomerism exhibited with this formula are

- A) Chain isomerism
- B) Positional isomerism
- C) Functional isomerism
- D) Metamerism

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

85. For which of the following reaction $K_p > K_c$?

- 1) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$
- 2) $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
- 3) $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$
- 4) $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$

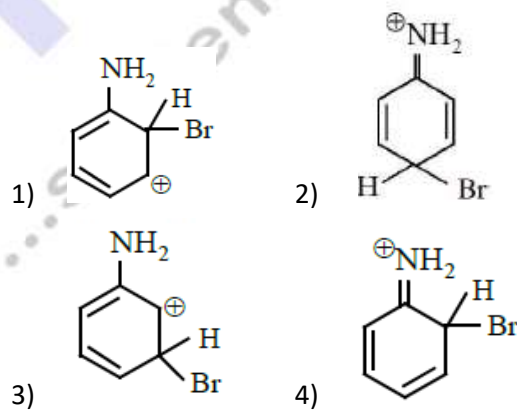
86. If equal volume of HCl with pH = 3 and pH = 4 are mixed together, then pH of the resultant solution will be nearly $[\log(5.5) = 0.74]$

- 1) 6.52
- 2) 2.26
- 3) 3.26
- 4) 1.63

87. Conjugate acid of HPO_4^{2-} and conjugate base of H_2O respectively are

- 1) PO_4^{3-} , H_3O^+
- 2) $H_2PO_4^-$, H_3O^+
- 3) $H_2PO_4^-$, OH^-
- 4) H_3PO_4 , OH^-

88. The ion which is not involved in the bromination of Aniline is



89. Given below are the two statements

Statement I : Unit of rate constant of zero order reaction is $\text{mol}^{-1} \text{L s}^{-1}$.

Statement II : All natural and artificial radioactive decay of unstable nuclei take place by zero order kinetics.

In the light of above statements, choose the correct answer

- 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

90. Match List I with List II.

List-I (Salt with percentage dissociation)		List-II (van't Hoff factor)	
a)	NaCl, 100% dissociation	(i)	4
b)	CaCl_2 , 25% dissociation	(ii)	2.5
c)	Na_3PO_4 , 100% dissociation	(iii)	2
d)	AlCl_3 , 50% dissociation	(iv)	1.5

Choose the correct option

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

91. Chrysophytes include

- 1) Diatoms & desmids (golden algae)
- 2) Diatoms, desmids and Dinoflagellates
- 3) Euglenoids and Dinoflagellates
- 4) Slime moulds and Desmids

92. I. It includes unicellular as well as multicellular fungi

II. In multicellular forms hyphae are branched and septate

III. Conidiophore produces conidia (spores) exogenously in chain

IV. Sexual spores are ascospores produced endogenously in Ascus

V. Fruiting body is called ascocarp

The above characters may be seen in.

- 1) Claviceps and Trichoderma
- 2) Claviceps and Aspergillus
- 3) Ustilago and Puccinia
- 4) Mucor and Rhizopus

93. The brown algae have pigments

- 1) Chl a, Chl c, Carotenoid and xanthophyll
- 2) Chl a, chl c and xanthophyll only
- 3) Chl a, chl d and fucoxanthin
- 4) Chl a, Chl d and phycoerythrin

94. Opposite phyllotaxy is seen in

- 1) Guava, Mustard
- 2) Guava, calotropis
- 3) Calotropin, China rose
- 4) Sunflower, China rose

95. Gemmae are multicellular green structures for vegetative propagation. These are found in gemma cups in

- 1) Sphagnum thallus
- 2) Marchantia thallus
- 3) Funaria protonema
- 4) Fern prothallus

96. Match Column I with Column II

	Column I		Column II
A.	Entire or incised lamina of leaf	I.	Palmately compound leaf
B.	Rachis	II.	Thalamus
C.	Receptacle	III.	Midrib
D.	Leaflets attached at a common point	IV.	Simple leaf
E.	Leaflets on a common axis	V.	Pinnately compound leaf

- 1) A – I, B – II, C – III, D – IV, E – V
- 2) A – V, B – IV, C – III, D – II, E – I
- 3) A – IV, B – III, C – II, D – I, E – V
- 4) A – IV, B – II, C – III, D – I, E – V

97. Which one is correct about the nuclear envelope?

- 1) It consists of two parallel membranes with perinuclear space of 5 to 10 nm.
- 2) The inner membrane is continuous with endoplasmic reticulum.
- 3) The outer membrane bears ribosomes on it.
- 4) Inner outer membrane gives rise to Golgi apparatus.

98. Go through the following statements

- I. Medullary rays are seen in dicot stem.
- II. The stele consists of endodermis, pericycle, vascular bundle and pith.
- III. In dicot and monocot stem, central portion is occupied by parenchymatous cells which constitute pith.
- IV. Maize is a monocot plant so it does not increase in girth.
- V. The Book 'Anatomy of Seed Plants' by Katherine Esau is referred to as Webster's of plant biology.

How many of the above statements are correct ?

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

99. Select the characters which are not applicable to the anatomy of dicot roots.

- A. Conjunctive tissue present
- B. Deposition of waxy lignin in the form of casparian strips on endodermis.
- C. Polyarch xylem bundles
- D. Presence of pericycle

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

100. The usual axonemal arrangement of microtubules in a flagellum is :
- 1) 6 pairs of doublets radially arranged at periphery and a pair of centrally located microtubules
 - 2) 6 pairs of doublets radially arranged at periphery and a single centrally located microtubule
 - 3) 9 pairs of doublets radially arranged at periphery and a pair of centrally located microtubules
 - 4) 9 pairs of doublets radially arranged at periphery and a single centrally located microtubule
101. Which of the following stages of meiosis involves division of centromere?
- 1) Telophase
 - 2) Metaphase I
 - 3) Metaphase II
 - 4) Anaphase II
102. The process of appearance of recombination nodules occurs at which sub stage of prophase I in meiosis ?
- 1) Diakinesis
 - 2) Zygotene
 - 3) Pachytene
 - 4) Diplotene
103. Read the following statements and select the correct option.
- Statement I:** C_4 plants are twice as efficient as C_3 plants in terms of fixing carbon.
- Statement II:** C_4 plants lose double the amount of water than a C_3 plant for the same amount of CO_2 fixed.
- 1) Statement I is false but Statement II is true
 - 2) Statement I is true but Statement II is false.
 - 3) Both Statement I and Statement II are true
 - 4) Both Statement I and statement II are false
104. During photorespiration in plants RuBP forms :
- 1) Two compounds each of 3C
 - 2) Two compounds each of 2C
 - 3) Two compounds, one of 3C and one of 2C
 - 4) Sugar and phosphoglycolate
105. Cytochrome C is a small protein attached to the outer surface of the inner membrane of mitochondrion and acts as a mobile carrier for transfer of electrons between:
- 1) Complex III and IV
 - 2) Complex II and III
 - 3) Complex I and II
 - 4) Complex I and III

106. Identify the correct and incorrect statements from the following.

- (i) More than 17,500 new cells are produced per hour by one single maize root apical meristem cell.
 - (ii) Growth of pollen tube is measured, In terms of length
 - (iii) The growth of dorsiventral leaf is measured in terms of volume
 - (iv) Cells in a watermelon may increase in size by up 3,50,000 times per hour.
- 1) (i), (ii), (iii) are correct and (iv) is incorrect.
 - 2) (i), (ii), (iv) are correct and (iii) is incorrect
 - 3) (ii), (iii) are correct and (i), (iv) are incorrect
 - 4) (i), (iv) are correct and (ii), (iii) are incorrect

107. The event which is not included in pollen pistil interaction is –

- 1) dehiscence of anther
- 2) deposition of pollen on the stigma.
- 3) entry of pollen-tube in the ovule.
- 4) entry of pollen-tube inside the ovule through filiform apparatus of one of the synergids.

108. Which one of the following statements is correct?

- 1) Geitonogamy involves the pollen and stigma of flowers of different plants
- 2) Cleistogamous flowers are always autogamous
- 3) Xenogamy occurs only by wind pollination
- 4) Chasmogamous flowers do not open at all

109. Match the following :

A.	Collenchyma	(i)	Specialized epidermal cells
B.	Subsidiary cells	(ii)	Hypodermis of dicot stem
C.	Casparian strips	(iii)	Mesophyll tissue of dicot leaf
D.	Spongy parenchyma	(iv)	Deposition in the radial walls of endodermis of root

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

110. Chemiosmosis is responsible for production of ATP in chloroplast during light reaction.

Read the following list and select the components required for this process.

- (a) ATPase
- (b) an electron channel for facilitated transport
- (c) a proton gradient
- (d) a proton pump
- (e) a membrane
- (f) ATP synthase

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

111. Regarding the pairs of dominant and recessive trait studied by Mendel which of the following combination is wrong in sequence of dominant and recessive in a pea plant:

- 1) Flower colour - Violet / white
- 2) Flower position- Axial / terminal
- 3) Pod shape - Inflated/ constricted
- 4) Pod colour - Yellow / Green

112. The frequency of Yyrr genotype in F_2 generation of Mendelian dihybrid cross is:

- 1) $\frac{4}{16}$
- 2) $\frac{3}{16}$
- 3) $\frac{2}{16}$
- 4) $\frac{1}{16}$

113. Match the Column I and Column II.

	Column I		Column II
A.	Auxin	I.	Adenine derivatives
B.	Gibberellin	II.	Carotenoid derivatives
C.	Cytokinin	III.	Terpenes
D.	ABA	IV.	Indole compounds

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

114. The DNA bands separated by gel electrophoresis are cut out of the agarose gel and extracted from the gel piece. This step is called

- 1) spooling
- 2) biolistic
- 3) elution
- 4) southern blotting

115. Recombinant DNA technology involves several steps in specific sequence. Find out the correct sequence.

- a. Fragmentation of DNA
- b. Culturing the host cells in a medium at large scale
- c. Ligation of DNA fragment into a vector
- d. Extraction of the desired product
- e. Isolation of DNA
- f. Isolation of desired DNA fragment
- g. Transferring the recombinant DNA into the host

- 1) $e \rightarrow a \rightarrow f \rightarrow c \rightarrow b \rightarrow d \rightarrow g$
- 2) $e \rightarrow f \rightarrow a \rightarrow c \rightarrow g \rightarrow b \rightarrow d$
- 3) $a \rightarrow e \rightarrow c \rightarrow f \rightarrow g \rightarrow d \rightarrow b$
- 4) $e \rightarrow a \rightarrow f \rightarrow c \rightarrow g \rightarrow b \rightarrow d$

116. Decomposition is one of the important functional aspect of ecosystem. Which of the following statements is not correct for decomposition?

- 1) Rate of decomposition is controlled by chemical composition of detritus and climatic factors
- 2) Nitrogen and sugar component favour decomposition
- 3) Low temperature and anaerobiosis favour decomposition
- 4) Decomposition rate is slower if detritus is rich in lignin and chitin

117. Match the following columns.

	Column A		Column B
A.	Natural ecosystem	1.	Producer
B.	Decomposer	2.	Consumer
C.	Primary productivity	3.	Forest
D.	Secondary productivity	4.	Bacteria

Code

- 1) A – 1, B – 2, C – 3, D – 4
- 2) A – 2, B – 3, C – 4, D – 1
- 3) A – 3, B – 4, C – 1, D – 2
- 4) A – 3, B – 4, C – 2, D – 1

118. Detrivores in ecosystem carry out the process of

- 1) catabolism 2) leaching
- 3) fragmentation 4) humification

119. Inheritance of starch grains size in pea shows:

- 1) Complete dominance
- 2) Codominance
- 3) Incomplete dominance
- 4) Multiple allelism

120. The given floral formula belongs to family

$$\oplus \quad \text{♀} \quad \text{Epi}_3 \rightarrow 8 \quad K_{(5)} \quad C_5 \quad A_{(\infty)} \quad \underline{G}_{(5)}$$

- 1) Malvaceae 2) Compositae
- 3) Solanaceae 4) Brassicaceae

121. Mandel published his work in 1865 but it remained unrecognised till 1900. Which of the following reason was not responsible for it

- 1) Communication was not easy
- 2) His concept of genes (factors) as stable and discrete unit was not accepted by his contemporaries as an explanation for apparently continuous variations
- 3) Use of mathematics to explain biological phenomenon
- 4) Use of emasculation technique

122. Which of the following statements is incorrect regarding gibberellins?

- 1) It increases the length of the sugarcane stem
- 2) It causes an increase in the length of the grape's stalk
- 3) It promotes rapid elongation of internodes in submerged rice plants.
- 4) It hastens maturity period in juvenile conifers.

123. Which one is incorrect about the Lysosomes

- 1) These are membrane bound vesicular structures formed by the process of packaging in the golgi apparatus.
- 2) The isolated lysosomal vesicles have been found to be very rich in almost all types of hydrolytic enzymes
- 3) they are optimally active at the alkaline pH.
- 4) These enzymes are capable of digesting carbohydrates, proteins, lipids and nucleic acids.

124. Prothallus in pteridophyte is

- 1) Haploid, multicellular small mostly photosynthetic thalloid gametophyte
- 2) Diploid, Photosynthetic, Multicellular sporophyte
- 3) Diploid, photosynthetic, inconspicuous, Free-living gametophyte
- 4) Haploid unicellular, small, photosynthetic gametophyte

125. In mango and coconut, the fruit (drupe) develops from

- 1) Monocarpellary superior ovaries and are one seeded
- 2) Monocarpellary inferior ovaries and are one seeded
- 3) Polycarpellary superior ovaries and is one seeded
- 4) Polycarpellary superior ovaries and are many seeded

126. Among eukaryotes, replication of DNA takes place

- 1) Between G_2 and m phase
- 2) In M phase
- 3) Between G_1 and G_2 phase
- 4) Between M and G_1 phase

127. In monohybrid cross the allele do not show any blending and that both the characters are recovered as such in F_2 generation. This statement is explained on the basis of :

- (i) Dominance (ii) Segregation
(iii) Independent assortment

- | | |
|-----------------|-------------------|
| 1) (i) only | 2) (ii) only |
| 3) (i) and (ii) | 4) (ii) and (iii) |

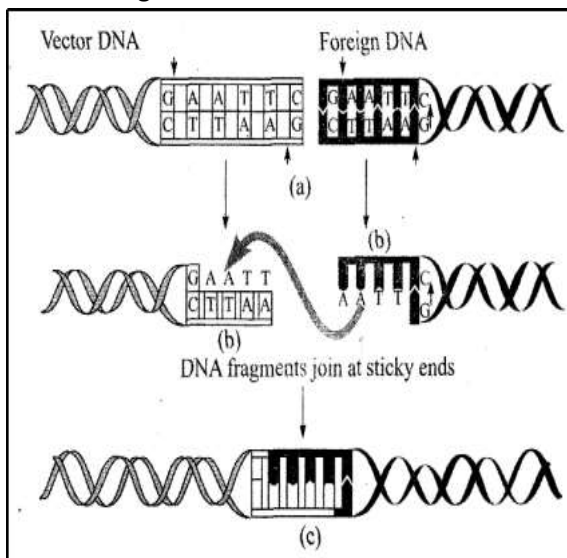
128. Number of nuclei involved in double fertilization is:

- | | |
|------|------|
| 1) 2 | 2) 3 |
| 3) 4 | 4) 5 |

129. During lactic acid fermentation, in conversion of pyruvic acid to lactic acid. The reducing agent is –

- | | |
|--------|-------------|
| 1) NAD | 2) $NADH_2$ |
| 3) ATP | 4) FP |

130. Recognise the figure and find out the correct matching.



- 1) a - Hind II, b - blunt end, c - Hybrid DNA
 - 2) a - BamH I, b - sticky end, c - recombinant DNA
 - 3) a - EcoR I, b - sticky end, c - hybrid DNA
 - 4) a - EcoR I, b - sticky end, c - recombinant DNA
131. Arrange the order of development in sexual reproduction in Angiosperms.
- 1) Pollination → Spore formation → Fertilization → Embryo formation
 - 2) Spore formation → Pollination → Fertilization → Embryo formation
 - 3) Spore formation → Pollination → Embryo formation → Fertilization
 - 4) Pollination → Spore formation → Embryo formation → Fertilization

132. If tetraploid male is plant crossed with hexaploid female plant what will be the ploidy of the zygote?

- 1) 8n
- 2) 5n
- 3) 4n
- 4) 3n

133. The site of EMP pathway reactions is

- 1) Mitochondrial ETS
- 2) Mitochondrial matrix
- 3) Cell cytoplasm
- 4) Stroma of chloroplast

134. Number of meiotic divisions required to produce 100 angiospermic eggs is ____

- 1) 25
- 2) 50
- 3) 100
- 4) 200

135. Who provided the evidence for the production of glucose when plant grows?

- 1) Julius von Sachs
- 2) Stephen Hales
- 3) Lavoisier
- 4) von Helmont

136. A seminiferous tubule contains:

- (a) male germ cells
 - (b) sertoli cells
 - (c) Sperms
 - (d) Leyding cells
- 1) (a), (b), (d)
 - 2) (b), (c), (d)
 - 3) (a), (c), (d)
 - 4) (a), (b), (c)

137. Identify protochordates from the following:

- 1) Ascidia, Scoliodon
- 2) Ascidia, Petromyzon
- 3) Branchiostoma, Petromyzon
- 4) Branchiostoma, Ascidia

138. Which of the following statements about classification is/are not true?

- I. Members of a family have less similar characteristics than members of an included genus.
- II. An order has more members than the number of members in a genus of the same hierarchy
- III. Family has more members than phylum to the same hierarchy
- IV. Taxonomists have developed sub categories in the hierarchy of broad categories to facilitate more sound and scientific placement of taxa.
- V. The taxonomic groups/categories are distinct biological entities.

- 1) Only III 2) III, IV
- 3) Only I, II 4) III, V

139. The hepatic portal vein carries blood to liver from

- 1) Intestine before it is delivered to systemic circulation
- 2) Stomach before it is delivered to systemic circulation
- 3) Intestine after it is delivered to systemic circulation
- 4) Heart after it is delivered to systemic circulation

140. Read the following statements and select the correct option.

Statement I: The unfertilized eggs of cockroach are encased in capsules called oothecae in which they get fertilized

Statement II: The development in cockroach is paurometabolous.

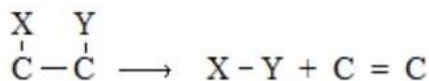
- 1) Statement I is false but Statement II is true
- 2) Statement I is true but Statement II is false.
- 3) Both Statement I and Statement II are true
- 4) Both Statement I and statement II are false

141. Select the correct statements regarding Oxytocin :

- (A) It causes vigorous contractions of the uterus at the time of child birth
- (B) It causes contraction of the smooth muscles of our body
- (C) It acts on the mammary gland and causes milk ejection
- (D) It is synthesized by hypothalamus and transported by portal circulatory system to neurohypophysis

- 1) A, B, C, D 2) A, C, D only
- 3) A, B, D only 4) A, B, C only

142. Identify the category of enzyme catalysing following reaction



- 1) Transferases 2) Lyases
3) Ligases 4) Oxidoreductases
143. In rocky intertidal communities removal of which of the following predator became the cause of destruction of 10 species of invertebrates?
- 1) Barnacle Balanus
2) Starfish pisater
3) Chathamalus
4) Abingdon tortoise
144. Regarding to Meselson and Stahl experiment for semi conservative nature of DNA replication select out the wrong statement:
- 1) ^{15}N of $^{15}\text{NH}_4\text{Cl}$ was incorporated in DNA and other compounds
2) ^{15}N & ^{14}N can be differentiated on the basis of radioactive activity
3) Heavy and normal DNA molecules could be distinguished by CsCl density gradient centrifugation
4) ^{15}N used in $^{15}\text{NH}_4\text{Cl}$ was not a radioactive isotope

145. Identify true (T) and false (F) statements and choose the correct option :

- a) Distal convoluted tubule – obligatory reabsorption of Na^+
b) Afferent arteriole – Carries blood away from glomerulus
c) Reabsorption of nitrogenous waste – Passive transport
d) Henle's loop – Most reabsorption of major nutrient substances

- 1) F, F, T, T 2) F, F, T, F
3) T, F, T, F 4) T, T, F, F

146. Match the column with respect to the animal and its excretory organ:

	Animal		Excretory organ
A	Planaria	I	Antennal gland
B	Vertebrates	II	Nephridia
C	Earthworm	III	Kidney
D	Prawns	IV	Protonephridia

The correct match is :

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

147. Chemical evolution refers to:

- 1) Formation of diverse inorganic molecules from organic constituents
2) Formation of diverse organic molecules from radioactive constituents
3) Formation of diverse organic molecules from inorganic constituents
4) Formation of diverse non-reducing molecules from inorganic constituents

148. Which is applicable to crack?

- (a) Its receptors are in the central nervous system and gastro intestinal tract.
- (b) It is obtained from coke by acetylation
- (c) It is usually snorted
- (d) Its excessive usage can cause hallucination

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

149. The neural system of all animal is composed of highly specialized cells called neurons which can ____, ____ and ____ different kinds of stimuli.

- 1) detect, receive and amplify
- 2) detect, modify and amplify
- 3) conduct, modify and amplify
- 4) detect, receive and transmit

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

Assertion (A): Ovaries are the primary sex organs.

Reason (R): Ovaries produce the female gamete.

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

151. The neurotransmitter released in the synapse binds to:

- 1) Receptors on the post synaptic membrane
- 2) receptors on the pre synaptic membrane
- 3) synaptic vesicles
- 4) receptors of both pre and post synaptic membrane.

152. Vasopressin is:

- 1) A hormone synthesized and released by neurohypophysis that has constrictor effects on blood vessels.
- 2) A hormone stored and released by pars nervosa that promotes reabsorption of water from glomerular filtrate
- 3) Hormone whose hyposecretion causes antidiuresis
- 4) Enzyme secreted by cells of intestine which hydrolyses dipeptides into amino acids

153. The correct order of chemical composition of living tissues / cells in term of % of the total cellular mass is :

- 1) Nucleic acid > Proteins > H₂O > Carbohydrate > Ions > Lipid
- 2) H₂O > Proteins > Nucleic acid > Carbohydrate > Lipid > Ions
- 3) H₂O > Proteins > Carbohydrate > Nucleic acid > Lipid > Ions
- 4) Lipid > Ions > Carbohydrate > H₂O > Proteins > Nucleic acid

154. Consider the following statements:

- In India, family planning program was initiated in 1971.
- Improved programmes covering wider reproduction related areas are currently in operation under the popular name reproductive and Child Health Care (RCH) program

Select the correct option.

- (a) is true, (b) is false
- Both (a) and (b) are false
- (a) is false, (b) is true
- Both (a) and (b) are true

155. Match Column-I with Column-II and choose the correct option from the codes given below.

	Column I		Column II
(A)	Chorionic villi	(1)	Secretes progesterone
(B)	Placenta	(2)	Finger-like projections on the trophoblast
(C)	Umbilical cord	(3)	Structural and functional unit between foetus and mother
(D)	Corpus luteum	(4)	Connects embryo to placenta

Codes

- A – 2, B – 3, C – 4, D – 1
- A – 3, B – 2, C – 4, D – 1
- A – 2, B – 3, C – 1, D – 4
- A – 4, B – 1, C – 3, D – 2

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

Assertion (A): Viruses having RNA genome and having shorter life span mutate and evolve faster.

Reason (R): RNA being unstable, mutate at a faster rate.

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

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

Assertion (A): Evolution of modern man appears to parallel evolution of human brain and language.

Reason (R): Homo habilis had the smallest brain capacity of 650-800cc.

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

158. Which of the following is a character common between *Psittacula* and *Pterophyllum*?

- 1) Both are oviparous
- 2) Both are warm blooded
- 3) Both have more than two chambered heart
- 4) Both have four pairs of gills

159. Choose the incorrect statement.

- 1) Due to intercalated discs cardiac cells contract as one unit
- 2) Tissue with pliable matrix resisting compression is present at the tip of nose
- 3) Free border of columnar epithelium may have microvilli which help in moving the particle in specific direction
- 4) Non-striated fusiform muscles are seen in the wall of blood vessel

160. Choose correct statements.

- A) As to the same α - carbon, amino & carboxyl group are attached, amino acids are referred as α - amino acids
- B) proteins are homopolymers
- C) Beta – plated sheet is a tertiary structure
- D) Amino acid at right end is N-terminal amino acid whereas that of left end as C-terminal amino acid in a polypeptide chain

- 1) A only
- 2) A & C
- 3) A, C, & D
- 4) A & B

161. Match the following species with their numbers:

(a)	Ants	(i)	Nearly 20,000 species
(b)	Beetles	(ii)	More than 28,000 species
(c)	Fishes	(iii)	More than 3,00,000 species
(d)	Orchids	(iv)	More than 20,000 species

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

162. Erythroblastosis foetalis can be avoided by:

- 1) administering Rh antigen to mother immediately after 1st delivery
- 2) administering anti Rh antibodies in new born baby
- 3) administering other with anti Rh antibodies immediately after first delivery
- 4) giving anti jaundice treatment to new born baby

163. Nitrogenous waste in human body is excreted through:

- | | |
|--------------|------------|
| (i) Urine | (ii) Sweat |
| (iii) Saliva | (iv) Tears |

- 1) (i), (ii), (iii), (iv)
- 2) (i) only
- 3) (i), (ii) only
- 4) (i), (ii), (iii) only

164. Which of the following occurs in template independent manner?
- (a) synthesis of RNA by polynucleotide phosphorylase
 - (b) Tailing of hn RNA
 - (c) Synthesis of t-RNA by RNA polymerase III.
- 1) (a), (b), (c) 2) (b) only
3) (a), (b) 4) (b), (c)
165. Transgenic models of animals exist for investigation of which of the following human diseases
- a. HIV
 - b. Cystic fibrosis
 - c. Rheumatoid arthritis
 - d. Alzheimer's disease e. Emphysema
- 1) a, b and c 2) b, c and d
3) b, c, d and e 4) a, b, d, c and e
166. In the context of amniocentesis, which of the following statement is incorrect?
- 1) There is a statutory ban in India on amniocentesis is for fetal sex determination.
 - 2) Amniocentesis can be used for detection of Down's syndrome.
 - 3) Amniocentesis can determine survivability of the fetus.
 - 4) It analyses fetal cells and dissolved substances in the blood of the fetus
167. Which of the following is not the reason for India reaching its population to the billion made by the year 2000.
- 1) Rapid decline in death rate.
 - 2) Rapid decline in MMR
 - 3) Rapid decline in IMR
 - 4) Decreased member of people in reproducible age.
168. In the resting state of muscle, ____ masks the active binding site for myosin on actin filaments
- 1) actin protein 2) meromyosin
 - 3) troponin 4) tropomyosin
169. Choose the correct statements about diseases.
- (I) Disease adversely affects the functioning of one or more organs.
 - (II) A disease is characterized by the appearance of various signs and symptoms.
 - (III) AIDS is a fatal non-infectious disease.
 - (IV) Cancer is an infectious disease.
- 1) (I) and (II) 2) (II) and (III)
3) (III) and (IV) 4) (I) and (IV)
170. Read the following and find out the correct match:
- 1) Ball and socket joint – Between humerus and pelvic girdle
 - 2) Hinge joint – Between Radius- ulna
 - 3) Pivot joint – Between atlas and skull
 - 4) Saddle joint – Between carpal and metacarpal of thumb

171. Match the columns of respiratory structures and corresponding animal.

A)	gills.	1)	aquatic arthropods
B)	cuticle	2)	Frog
C)	skin	3)	Earthworm
D)	tracheal tubes	4)	insects

- 1) A-1, B-3, C-2, D-4
- 2) A-1, B-2, C-3, D-4
- 3) A-4, B-3, C-2, D-1
- 4) A-4, B-2, C-3, D-1

172. In India, how many genetically different strains of rice and mango varieties are present:

- 1) <50,000 and 1,0000 respectively
- 2) 1000 and 50000 respectively
- 3) >50,000 and 1,000 respectively
- 4) >50,000 and 5,000 respectively.

173. Choose the incorrect statement from the following regarding acquired immunity

- 1) Primary immune response is of low intensity.
- 2) The primary and secondary immune responses are carried out with the help of B-lymphocytes and T-lymphocytes.
- 3) B-cells themselves do not secrete antibodies but help T-cells to produce them.
- 4) Antibodies are found in blood, therefore it is called humoral immune response.

174. Muscles form about ____ % of the total body weight in humans:

- 1) 20-30 2) 30-40
- 3) 40-50 4) 80-90

175. Using rDNA technology Hepatitis B vaccine is produced from:

- 1) Viruses 2) Streptococcus
- 3) Yeast 4) Staphylococcus

176. Which of the following peptide chains are present in mature insulin

- 1) A, B, C 2) A, B
- 3) α , β , δ 4) α , β , γ

177. Identify the correct and incorrect match about respiratory volumes and capacities and mark the correct option:

- (i) $IC = TV + RV$
- (ii) $VC = TV + IRV + ERV$
- (iii) $RV = VC + IRV$
- (iv) $TV = IC - IRV$

(TV - tidal volume, IRV - inspiratory reserve volume, ERV - expiratory reserve volume, RV - residual volume, IC - inspiratory capacity, VC - vital capacity)

- 1) i, ii, iii - incorrect, iv- correct
- 2) i, iii - incorrect, ii, iv – correct
- 3) i, ii, iv - correct, iii – incorrect
- 4) i, iii - correct, ii, iv - incorrect

178. Identify the biggest but now extinct land reptile.

- 1) Ichthyosaurs 2) Archaeopteryx
- 3) Tyrannosaurus 4) Pelycosaurs

179. The genetic defect adenosine deaminase (ADA) deficiency may be cured permanently by

- 1) Introducing gene isolated from bone marrow cells producing ADA into cells at an early embryonic stages
- 2) Administering adenosine deaminase activators
- 3) Periodic infusion of genetically engineered lymphocytes having functional ADA cDNA
- 4) Enzyme replacement therapy

180. Parts of forebrain are:

- (a) Cerebrum (b) Cerebellum
- (c) Pons (d) Thalamus
- (e) Hypothalamus

1) (a), (b), (c) 2) (a), (b), (d)

3) (b), (d), (e) 4) (a), (d), (e)

