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NEET 2025 — Previous Year Question Paper

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Physics · 45 Qs

1. An electric dipole with dipole moment 5×10^{-6} C m is aligned with the direction of a uniform electric field of magnitude 4×10^{5} N/C. The dipole is then rotated through an angle of 60° with respect to the electric field. The change in the potential energy of the dipole is:

   (1) 1.2 J **(2)** 1.5 J

   (3) 0.8 J **(4)** 1.0 J

2. Two identical charged conducting spheres A and B have their centres separated by a certain distance. Charge on each sphere is q and the force of repulsion between them is F. A third identical uncharged conducting sphere is brought in contact with sphere A first and then with B, and finally removed from both. The new force of repulsion between spheres A and B (radii of A and B are negligible compared to the distance of separation, so for calculating the force between them they can be considered as point charges) is best given as:

   (1) F/2 **(2)** 3F/8

   (3) 3F/5 **(4)** 2F/3

3. The diameter of a spherical object is measured with a vernier caliper whose 10 vernier scale divisions (VSD) equal 9 main scale divisions (MSD). The least MSD is 0.1 cm and the zero of the vernier scale is at x = 0.1 cm when the jaws are closed. If the main scale reading for the diameter is M = 5 cm and the coinciding vernier division is 8, the measured diameter after zero-error correction is:

   (1) 4.98 cm **(2)** 5.00 cm

   (3) 5.18 cm **(4)** 5.08 cm

4. A balloon is made of a material of surface tension S and its inflation outlet (from where gas is filled) has small area A. It is filled with a gas of density ρ and takes a spherical shape of radius R. When the gas is allowed to flow freely out of it, its radius r changes from R to 0 in time T. If the speed v(r) of gas coming out depends on r as r^a and $T \propto S^{\alpha} A^{\beta} \rho^{\gamma} R^{\delta}$, then:

   (1) a=-1/2, α=-1/2, β=-1, γ=1/2, δ=7/2 **(2)** a=1/2, α=1/2, β=-1/2, γ=1/2, δ=7/2

   (3) a=1/2, α=1/2, β=-1, γ=+1, δ=3/2 **(4)** a=-1/2, α=-1/2, β=-1, γ=-1/2, δ=5/2

5. A physical quantity P is related to four observations a, b, c and d as $P = a^3b^2/(c \cdot \sqrt{d})$. The percentage errors of measurement in a, b, c and d are 1%, 3%, 2% and 4% respectively. The percentage error in the quantity P is:

   (1) 13% **(2)** 15%

   (3) 10% **(4)** 2%

6. Two identical charged conducting spheres A and B have their centres separated by a certain distance. Charge on each sphere is q and the force of repulsion between them is F. A third identical uncharged conducting sphere is brought in contact with sphere A first and then with B and finally removed from both. New force of repulsion between spheres A and B (radii negligible vs separation, treated as point charges) is best given as:

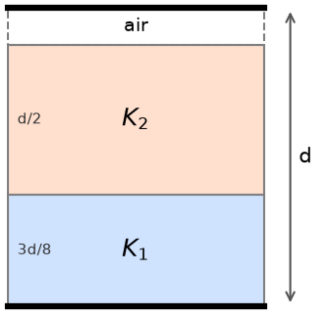
(1) F/2

(2) 3F/8

(3) 3F/5

(4) 2F/3

7. The plates of a parallel plate capacitor are separated by d. Two slabs of different dielectric constant K1 and K2 with thickness 3d/8 and d/2 respectively are inserted in the capacitor. Due to this, the capacitance becomes two times larger than when there is nothing between the plates. If K1/K2 = 1.25, the value of K1 is:



(1) 1.60

(2) 1.33

(3) 2.66

(4) 2.33

8. Buses leave cities X and Y in both directions at regular intervals of T minutes with the same speed. A girl driving from X to Y at 60 km/h notices that a bus moving in her direction passes her every 30 min, while a bus moving in the opposite direction passes her every 10 min. The interval T and the speed of the buses are respectively:

(1) 20 min, 90 km/h

(2) 15 min, 120 km/h

(3) 10 min, 60 km/h

(4) 30 min, 80 km/h

9. Two cities X and Y are connected by a regular bus service with a bus leaving in either direction every T min. A girl is driving scotty with a speed of 60 km/h in the direction X to Y notices that a bus goes past her every 30 minutes in the direction of her motion, and every 10 minutes in the opposite direction. Choose the correct option for the period T of the bus service and the speed (assumed constant) of the buses.

(1) 10 min, 90 km/h

(2) 15 min, 120 km/h

(3) 9 min, 40 km/h

(4) 25 min, 100 km/h

10. The relation between time t and position x of a particle moving along a straight line is given by $t = x^2 + x$. The acceleration of the particle is:

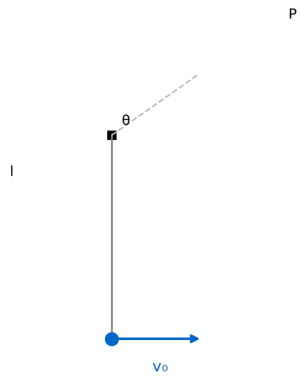
(1) $-\frac{2}{(2x+1)^3}$

(2) $\frac{2}{(2x+1)^3}$

(3) $-\frac{1}{(2x+1)^2}$

(4) $\frac{1}{(2x+1)^2}$

11. A bob of mass m is suspended by a light string of length l and given a horizontal velocity v_0 at the lowest point. The string goes slack at a point P where it makes an angle θ above the horizontal. The ratio of the speed v at P to the initial speed v_0 is:



(1) $\sqrt{(\cos\theta/(2 + 3\sin\theta))}$

(2) $\sqrt{(\sin\theta/(2 + 3\sin\theta))}$

(3) $(1/2)\sin\theta$

(4) $(1/2)\sqrt{(1/(2 + 3\sin\theta))}$

12. A ball of mass 0.5 kg is dropped from a height of 40 m. It hits the ground and rebounds to a height of 10 m. The impulse imparted to the ball during its collision with the ground is ($g = 9.8\ m/s^2$):

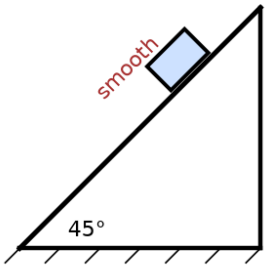
(1) 0

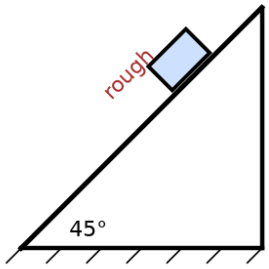
(2) 84 N·s

(3) 21 N·s

(4) 7 N·s

13. There are two inclined surfaces of equal length L and the same inclination 45° with the horizontal; one is rough and the other perfectly smooth. A given body takes 2 times as much time to slide down the rough surface as the smooth surface. The coefficient of kinetic friction (μk) between the body and the rough surface is close to:





(1) 0.5

(2) 0.75

(3) 0.25

(4) 0.40

14. A 2 A current is flowing through two different small circular copper coils having radii ratio 1 : 2. The ratio of their respective magnetic moments will be

(1) 2 : 1

(2) 4 : 1

(3) 1 : 4

(4) 1 : 2

15. An electron (mass 9×10^{-31} kg and charge 1.6×10^{-19} C) moving with speed c/100 (c = speed of light) is injected into a magnetic field B of magnitude 9×10^{-4} T perpendicular to its direction of motion. We wish to apply a uniform electric field E together with the magnetic field so that the electron does not deflect from its path. Then (speed of light $c = 3 \times 10^8\ m\ s^{-1}$)

(1) E is parallel to B and its magnitude is $27 \times 10^2\ V\ m^{-1}$

(2) E is parallel to B and its magnitude is $27 \times 10^4\ V\ m^{-1}$

(3) E is perpendicular to B and its magnitude is $27 \times 10^4\ V\ m^{-1}$

(4) E is perpendicular to B and its magnitude is $27 \times 10^2\ V\ m^{-1}$

16. A model for quantized motion of an electron in a uniform magnetic field B states that the flux passing through the orbit of the electron is n(h/e), where n is an integer, h is Planck's constant and e is the magnitude of electron's charge. According to the model, the magnetic moment of an electron in its lowest energy state will be (m is the mass of the electron)

(1) heB/m

(2) heB/2m

(3) he/m

(4) he/2m

17. The kinetic energies of two similar cars A and B are 100 J and 225 J respectively. On applying brakes, car A stops after 1000 m and car B stops after 1500 m. If F_A and F_B are the braking forces on cars A and B respectively, then the ratio F_A/F_B is

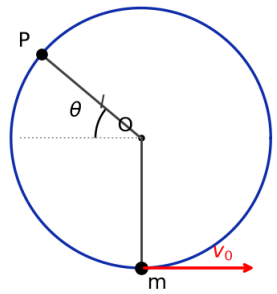
(1) 1/3

(2) 1/2

(3) 3/2

(4) 2/3

18. A bob of heavy mass m is suspended by a light string of length l. The bob is given a horizontal velocity v_0 at the lowest point. If the string goes slack at some point P making an angle θ from the horizontal, the ratio of the speed v of the bob at P to its initial speed v_0 is



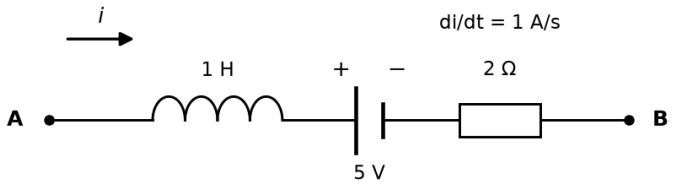
(1) √(cosθ/(2+3sinθ))

(2) √(sinθ/(2+3sinθ))

(3) ½sinθ

(4) ½√(1/(2+3sinθ))

19. AB is a part of an electrical circuit (see figure). The branch contains an inductor of 1 H, a 5 V battery, and a 2 ohm resistor in series between A and B. The potential difference "V_A - V_B", at the instant when current i = 2 A and is increasing at a rate of 1 amp/second is:



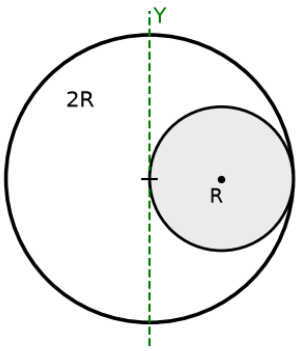
(1) 9 volt

(2) 10 volt

(3) 5 volt

(4) 6 volt

20. A sphere of radius R is carved out of a uniform solid sphere of radius 2R (internally tangent, so its centre is at distance R from the big centre). The ratio of the moment of inertia of the small sphere to that of the remaining part, both about the Y-axis through the big sphere's centre, is:



Sphere radius R carved from solid sphere radius 2R; axis Y through big centre

(1) 7/57 **(2)** 7/64

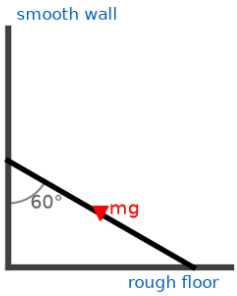
(3) 7/8 **(4)** 7/40

21. The Sun rotates once in 27 days. If it expanded to twice its present radius (uniform-density sphere, no external influence), its new period would be about:

(1) 115 days **(2)** 108 days

(3) 100 days **(4)** 105 days

22. A uniform rod of mass 20 kg and length 5 m leans against a smooth vertical wall, making 60° with the wall; its lower end rests on a rough horizontal floor. The friction force exerted by the floor is: ($g = 10\ m/s^2$)



Rod 20 kg, 5 m, 60° to smooth wall; lower end on rough floor

(1) 200 N **(2)** 200 √3 N

(3) 100 N **(4)** 100 √3 N

23. The Sun rotates around its centre once in 27 days. What will be the period of revolution if the Sun were to expand to twice its present radius without any external influence? Assume the Sun to be a sphere of uniform density.

(1) 115 days **(2)** 108 days

(3) 100 days **(4)** 105 days

24. To an ac power supply of 220 V at 50 Hz, a resistor of 20 Ω, a capacitor of reactance 25 Ω and an inductor of reactance 45 Ω are connected in series. The corresponding current in the circuit and the phase angle between the current and the voltage is, respectively -

(1) 1.56 A and 30° **(2)** 1.56 A and 45°

(3) 7.8 A and 30° **(4)** 7.8 A and 45°

25. A body weighs 48 N on the surface of the earth. The gravitational force on it at a height equal to one-third the radius of the earth from the surface is:

(1) 32 N

(2) 36 N

(3) 16 N

(4) 27 N

26. The radius of the Martian orbit around the Sun is about 4 times the radius of Mercury's orbit. The Martian year is 687 earth days. The length of one year on Mercury is about:

(1) 172 earth days

(2) 124 earth days

(3) 88 earth days

(4) 225 earth days

27. The electric field in a plane electromagnetic wave is given by $E_z = 60 \cos(5x + 1.5\times10^9\ t)$ V/m. Then the expression for the corresponding magnetic field is (subscripts denote field direction)

(1) $B_z = 60 \cos(5x + 1.5\times10^9\ t)$ T

(2) $B_z = 60 \sin(5x + 1.5\times10^9\ t)$ T

(3) $B_y = 2\times10^{-7} \cos(5x + 1.5\times10^9\ t)$ T

(4) $B_x = 2\times10^{-7} \cos(5x + 1.5\times10^9\ t)$ T

28. A parallel plate capacitor made of circular plates is being charged such that the surface charge density on its plates is increasing at a constant rate with time. The magnetic field arising due to the displacement current is

(1) Non-zero everywhere with maximum at the imaginary cylindrical surface connecting the peripheries of the plates

(2) Zero between the plates and non-zero outside

(3) Zero at all places

(4) Constant between the plates and zero outside the plates

29. A wire of resistance R is cut into 8 equal pieces. Two sets are made by joining four pieces in parallel each; the two sets are then in series. The net resistance is:

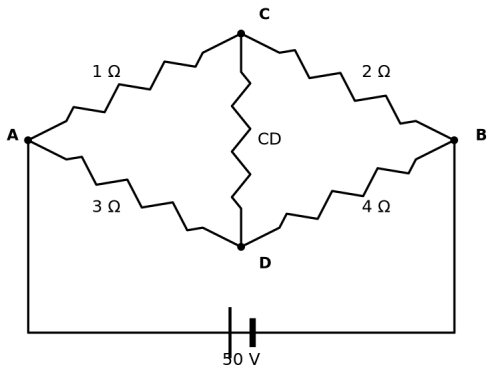
(1) R/16

(2) R/8

(3) R/64

(4) R/32

30. A constant voltage of 50 V is maintained between points A and B of the circuit shown. The current through the branch CD of the circuit is:



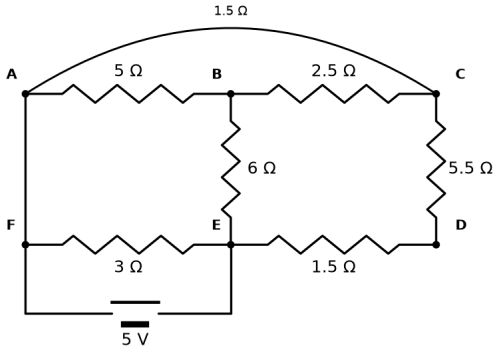
(1) 2.5 A

(2) 3.0 A

(3) 1.5 A

(4) 2.0 A

31. The current passing through the battery in the given circuit is:



(1) 2.5 A

(2) 1.5 A

(3) 2.0 A

(4) 0.5 A

32. A balloon is made of a material of surface tension S and its inflation outlet (from where gas is filled) has small area A. It is filled with a gas of density ρ and takes a spherical shape of radius R. When the gas flows freely out, its radius r changes from R to 0 in time T. If the speed v(r) of gas coming out depends on r as r^{α} and $T \propto S^{\beta} A^{\gamma} R^{\delta} \rho^{\varepsilon}$, then:

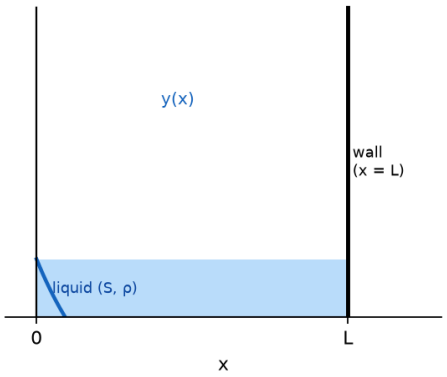
(1) $\alpha = -1/2, \beta = -1/2, \gamma = -1, \delta = 7/2, \varepsilon = 1/2$

(2) $\alpha = 1/2, \beta = 1/2, \gamma = -1/2, \delta = 1/2, \varepsilon = 7/2$

(3) $\alpha = 1/2, \beta = 1/2, \gamma = -1, \delta = 1, \varepsilon = 3/2$

(4) $\alpha = -1/2, \beta = -1/2, \gamma = -1, \delta = -1/2, \varepsilon = 5/2$

33. Consider a water tank with one wall at x = L, very wide in the z-direction. When filled with a liquid of surface tension S and density ρ, the liquid surface makes a small angle θ_0 ($0 < \theta_0 \ll 1$) with the x-axis at x = L. If y(x) is the height of the surface, the equation for y(x) is: (take $\sin\theta(x) \approx \tan\theta(x) = dy/dx$, g = acceleration due to gravity)



(1) $d^2y/dx^2 = \rho g/S$

(2) $dy/dx = \rho g x/S$

(3) $d^2y/dx^2 = \rho g x/S$

(4) $d^2y/dx^2 = \rho g y/S$

34. In a certain camera, a combination of four similar thin convex lenses are arranged axially in contact. Then the power of the combination and the total magnification, in comparison to the power (p) and magnification (m) for each lens, will be respectively:

(1) 4p and m/4

(2) p/4 and m/4

(3) 4p and 4m

(4) p/4 and 4m

35. A microscope has an objective of focal length 2 cm, an eyepiece of focal length 4 cm and a tube length of 40 cm. If the distance of distinct vision of the eye is 25 cm, the magnification of the microscope is:

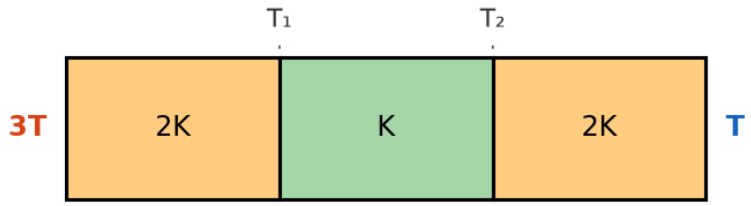
(1) 150

(2) 250

(3) 100

(4) 125

36. Three identical heat-conducting rods are connected in series as shown. The two side rods have thermal conductivity 2K and the middle rod has thermal conductivity K. The left end is maintained at 3T and the right end at T; the rods are insulated from the sides. In steady state the left junction is at T_1 and the right junction is at T_2. The ratio $T_1 : T_2$ is:



(1) 5/3 **(2)** 5/4

(3) 3/2 **(4)** 4/3

37. A polaroid sheet is placed between two crossed polaroids, with its polarization axis at 22.5° from the polarization axis of one of the polaroids. The intensity of the transmitted light is (I_0 is the intensity of polarized light after passing through the first polaroid)

(1) $I_0/8$ **(2)** $I_0/16$

(3) $I_0/2$ **(4)** $I_0/4$

38. An unpolarized light beam travelling in air is incident on a medium of refractive index 1.73 at Brewster's angle. Then

(1) Both reflected and transmitted light are perfectly polarized with angles of reflection and refraction close to 60° and 30°, respectively

(2) Transmitted light is completely polarized with angle of refraction close to 30°

(3) Reflected light is completely polarized and the angle of reflection is close to 60°

(4) Reflected light is partially polarized and the angle of reflection is close to 30°

39. A photon and an electron (mass m) have the same energy E. The ratio λ_photon/λ_electron of their de Broglie wavelengths is: (c is the speed of light)

(1) $c\cdot\sqrt{(2m/E)}$ **(2)** $(1/2c)\cdot\sqrt{(E/m)}$

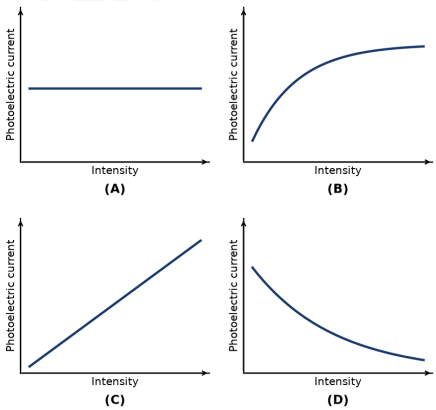
(3) $\sqrt{(2E/m)}$ **(4)** $2c/\sqrt{(mE)}$

40. The de Broglie wavelength of an electron in the n = 2 state of the hydrogen atom is close to (Given Bohr radius a_0 = 0.052 nm):

(1) 1.67 nm **(2)** 2.67 nm

(3) 0.067 nm **(4)** 0.67 nm

41. Which of the following options represents the variation of photoelectric current with the property of light (intensity) shown on the x-axis?



(1) (see figure) **(2)** (see figure)

(3) (see figure) **(4)** (see figure)

42. Two gases A and B are filled at the same pressure in separate cylinders with movable pistons of radius r_A and r_B, respectively. On supplying an equal amount of heat to both gases reversibly at constant pressure, the pistons of A and B are displaced by 16 cm and 9 cm, respectively. If the change in their internal energy is the same, then the ratio $\frac{r_A}{r_B}$ is

(1) $\frac{2}{3}$ **(2)** $\frac{3}{2}$

(3) $\frac{4}{3}$ **(4)** $\frac{3}{4}$

43. A particle of mass m is moving around the origin with a constant force F pulling it towards the origin. If Bohr's model is used to describe its motion, the radius of the nth orbit and the particle's speed v in the orbit depend on n as:

(1) r ∝ n^(2/3) ; v ∝ n^(1/3) **(2)** r ∝ n^(4/3) ; v ∝ n^(-1/3)

(3) r ∝ n^(1/3) ; v ∝ n^(1/3) **(4)** r ∝ n^(1/3) ; v ∝ n^(2/3)

44. The de Broglie wavelength of an electron in the n = 2 state of hydrogen atom is close to: (Given Bohr radius = 0.052 nm)

(1) 1.67 nm **(2)** 2.67 nm

(3) 0.067 nm **(4)** 0.67 nm

45. A container has two chambers of volumes V_1 = 2 litres and V_2 = 3 litres separated by a partition made of a thermal insulator. The chambers contain n_1 = 5 and n_2 = 4 moles of ideal gas at pressures p_1 = 1 atm and p_2 = 2 atm, respectively. When the partition is removed, the mixture attains an equilibrium pressure of:

(1) 1.4 atm **(2)** 1.8 atm

(3) 1.3 atm **(4)** 1.6 atm

Chemistry · 45 Qs

46. Match List-I with List-II List-I (Example) List-II (Type of Solution) A. Humidity I. Solid in solid B. Alloys II. Liquid in gas C. Amalgams III. Solid in gas D. Smoke IV. Liquid in solid Choose the correct answer from the options given below :

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

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

47. Which of the following aqueous solution will exhibit highest boiling point?

(1) 0.01 M Na_2SO_4 **(2)** 0.015 M $C_6H_{12}O_6$

(3) 0.01 M Urea **(4)** 0.01 M KNO_3

48. 5 moles of liquid X and 10 moles of liquid Y make a solution having a vapour pressure of 70 torr. The vapour pressures of pure X and Y are 63 torr and 78 torr respectively. Which of the following is true regarding the described solution?

(1) The solution is ideal. **(2)** The solution has volume greater than the sum of individual volumes.

(3) The solution shows positive deviation. **(4)** The solution shows negative deviation.

49. Among the following, choose the ones with an equal number of atoms.

A. 212 g of Na_2CO_3(s) [molar mass = 106 g]
B. 248 g of Na_2O(s) [molar mass = 62 g]
C. 240 g of $NaOH$(s) [molar mass = 40 g]
D. 12 g of H_2(g) [molar mass = 2 g]
E. 220 g of CO_2(g) [molar mass = 44 g]

Choose the correct answer from the options given below:

(1) B, C and D only **(2)** B, D and E only

(3) A, B and C only **(4)** A, B and D only

50. Dalton's atomic theory could \emph{not} explain which of the following?

(1) Law of multiple proportions

(2) Law of gaseous volumes

(3) Law of conservation of mass

(4) Law of constant proportions

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51. If the molar conductivity (Λ_m) of a $0.050\ \text{mol L}^{-1}$ solution of a monobasic weak acid is $90\ \text{S cm}^2\ \text{mol}^{-1}$, its extent (degree) of dissociation will be [Assume $\lambda^\circ_+ = 349.6\ \text{S cm}^2\ \text{mol}^{-1}$ and $\lambda^\circ_- = 50.4\ \text{S cm}^2\ \text{mol}^{-1}$]

(1) 0.225

(2) 0.215

(3) 0.115

(4) 0.125

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52. The ratio of the wavelengths of the light absorbed by a hydrogen atom when it undergoes $n = 2 \rightarrow n = 3$ and $n = 4 \rightarrow n = 6$ transitions, respectively, is:

(1) $\frac{1}{9}$

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

(3) $\frac{1}{36}$

(4) $\frac{1}{16}$

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53. Energy and radius of the ground-state Bohr orbit of He^+ and Li^{2+} are: [Given $R_H = 2.18 \times 10^{-18}$ J, $a_0 = 52.9$ pm]

(1) $E_n(\ce{Li^2+}) = -19.62 \times 10^{-16}$ J, $r_n(\ce{Li^2+}) = 17.6$ pm; $E_n(\ce{He+}) = 8.72 \times 10^{-16}$ J, $r_n(\ce{He+}) = 26.4$ pm

(2) $E_n(\ce{Li^2+}) = -8.72 \times 10^{-16}$ J, $r_n(\ce{Li^2+}) = 17.6$ pm; $E_n(\ce{He+}) = -19.62 \times 10^{-16}$ J, $r_n(\ce{He+}) = 17.6$ pm

(3) $E_n(\ce{Li^2+}) = -19.62 \times 10^{-18}$ J, $r_n(\ce{Li^2+}) = 17.6$ pm; $E_n(\ce{He+}) = -8.72 \times 10^{-18}$ J, $r_n(\ce{He+}) = 26.4$ pm

(4) $E_n(\ce{Li^2+}) = -8.72 \times 10^{-18}$ J, $r_n(\ce{Li^2+}) = 26.4$ pm; $E_n(\ce{He+}) = -19.62 \times 10^{-18}$ J, $r_n(\ce{He+}) = 17.6$ pm

---

54. Dalton's atomic theory could not explain which of the following?

(1) Law of multiple proportion

(2) Law of gaseous volume

(3) Law of conservation of mass

(4) Law of constant proportion

---

55. Which among the following electronic configurations belong to main-group elements?

A. $[\ce{Ne}]3s^1$
B. $[\ce{Ar}]3d^3\ 4s^2$
C. $[\ce{Kr}]4d^{10}\ 5s^2\ 5p^5$
D. $[\ce{Ar}]3d^{10}\ 4s^1$
E. $[\ce{Rn}]5f^0\ 6d^2\ 7s^2$

(1) D and E only

(2) A, C and D only

(3) B and E only

(4) A and C only

---

56. If the rate constant of a reaction is $0.03\ \text{s}^{-1}$, how much time does it take for $7.2\ \text{mol L}^{-1}$ concentration of the reactant to get reduced to $0.9\ \text{mol L}^{-1}$? (Given: $\log 2 = 0.301$)

(1) 210 s

(2) 21.0 s

(3) 69.3 s

(4) 23.1 s

---

57. If the half-life $t_{1/2}$ for a first order reaction is 1 minute, then the time required for 99.9% completion of the reaction is closest to

(1) 5 minutes

(2) 10 minutes

(3) 2 minutes

(4) 4 minutes

---

58. Which of the following statements are true?

A. Unlike Ga, that has a very high melting point, Cs has a very low melting point.
B. On the Pauling scale, the electronegativity values of N and Cl are not the same.
C. Ar, K^+, Cl^-, Ca^{2+} and S^{2-} are all isoelectronic species.
D. The correct order of the first ionization enthalpies of Na, Mg, Al and Si is $\text{Si} > \text{Al} > \text{Mg} > \text{Na}$.
E. The atomic radius of Cs is greater than that of Li and Rb.

(1) C and D only

(2) A, C, and E only

(3) A, B, and E only

(4) C and E only

59. Which among the following electronic configurations belong to main group elements?

A. $[Ne]3s^1$
B. $[Ar]3d^3\ 4s^2$
C. $[Kr]4d^{10}\ 5s^2\ 5p^5$
D. $[Ar]3d^{10}\ 4s^1$
E. $[Rn]5f^0\ 6d^2\ 7s^2$

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

60. Match List-I with List-II.

List-I: A. XeO_3; B. XeF_2; C. $XeOF_4$; D. XeF_6

List-II: I. sp^3d; linear; II. sp^3; pyramidal; III. sp^3d^3; distorted octahedral; IV. sp^3d^2; square pyramidal

Choose the correct answer from the options given below:

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

61. Identify the correct orders against the property mentioned:

A. $H_2O > NH_3 > CHCl_3$ — dipole moment
B. $XeF_4 > XeO_3 > XeF_2$ — number of lone pairs on central atom
C. $O-H > C-H > N-O$ — bond length
D. $N_2 > O_2 > H_2$ — bond enthalpy

Choose the answer from the options given below:

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

62. Given below are two statements:

Statement I: Ferromagnetism is considered as an extreme form of paramagnetism.

Statement II: The number of unpaired electrons in a Cr^{2+} ion (Z = 24) is the same as that of a Nd^{3+} ion (Z = 60).

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) Statement I is false but Statement II is true
(3) Both Statement I and Statement II are true
(4) Both Statement I and Statement II are false

63. Match List-I with List-II. List-I List-II A. Haber process I. Fe catalyst B. Wacker oxidation II. PdCl2 C. Wilkinson catalyst III. [(PPh3)3RhCl] D. Ziegler catalyst IV. TiCl4 with Al(CH3)3 Choose the correct answer from the options given below:

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

64. Out of the following complex compounds, which compound will have the minimum conductance in solution?

(1) $[Co(NH_3)_6]Cl_3$
(2) $[Co(NH_3)_5Cl]Cl_2$
(3) $[Co(NH_3)_3Cl_3]$
(4) $[Co(NH_3)_4Cl_2]Cl$

65. Which of the following are paramagnetic?

A. $[NiCl_4]^{2-}$
B. $Ni(CO)_4$
C. $[Ni(CN)_4]^{2-}$
D. $[Ni(H_2O)_6]^{2+}$
E. $Ni(PPh_3)_4$

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

66. The correct order of the wavelength of light absorbed by the following complexes is:

A. $[Co(NH_3)_6]^{3+}$
B. $[Co(CN)_6]^{3-}$
C. $[Cu(H_2O)_4]^{2+}$
D. $[Ti(H_2O)_6]^{3+}$

(1) C < D < A < B

(2) C < A < D < B

(3) B < D < A < C

(4) B < A < D < C

67. Given below are two statements: one labelled Assertion (A) and the other Reason (R).
Assertion (A): $CH_3CH_2CH_2I$ (n-propyl iodide) undergoes S_N2 reaction faster than $CH_3CH_2CH_2Cl$ (n-propyl chloride).
Reason (R): Iodine is a better leaving group because of its large size.
In the light of the above statements, choose the correct answer from the options given below.

(1) A is true but R is false

(2) A is false but R is true

(3) Both A and R are true and R is the correct explanation of A

(4) Both A and R are true but R is not the correct explanation of A

68. Given below are two statements:
Statement I: Benzenediazonium salt is prepared by the reaction of aniline with acid at 273-278 K. It decomposes easily in the dry state.
Statement II: Insertion of iodine into the benzene ring is difficult and hence iodobenzene is prepared through the reaction of benzenediazonium salt with KI.
In the light of the above statements, choose the most appropriate answer from the options given below:

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

(2) Statement I is incorrect but Statement II is correct

(3) Both Statement I and Statement II are correct

(4) Both Statement I and Statement II are incorrect

69. The standard heat of formation, in $kcal\,mol^{-1}$, of Ba^{2+} is: [Given: standard heat of formation of $SO_4{}^{2-}$ ion (aq) $= -216\ kcal\,mol^{-1}$, standard heat of crystallisation of $BaSO_4\,(s) = -4.5\ kcal\,mol^{-1}$, standard heat of formation of $BaSO_4\,(s) = -349\ kcal\,mol^{-1}$]

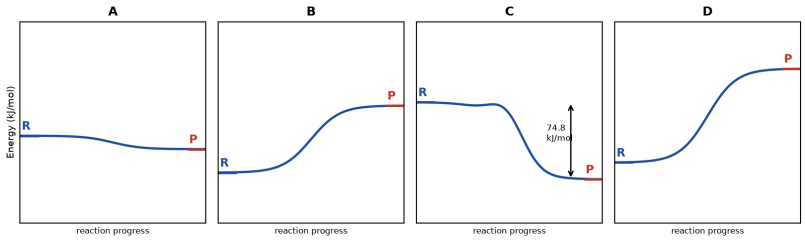
(1) $+133.0$

(2) $+220.5$

(3) -128.5

(4) -133.0

70. $C\,(s) + 2\,H_2\,(g) \longrightarrow CH_4\,(g);\ \Delta H = -74.8\ kJ\ mol^{-1}$. Which of the following diagrams gives an accurate representation of the above reaction? [R → reactants; P → products]



(1) Energy-level diagram: reactants (R) and products (P) at nearly the same level with P only marginally below R.

(2) Energy-level diagram: products (P) at higher energy than reactants (R), endothermic.

(3) Energy-level diagram: reactants (R) at higher energy, an activation hump, and products (P) at lower energy than R — exothermic.

(4) Energy-level diagram: products (P) at a higher peak than reactants (R).

71. The total number of possible isomers (both structural as well as stereoisomers) of cyclic ethers of molecular formula C_4H_8O is:

(1) 10

(2) 11

(3) 6

(4) 8

72. Identify the suitable reagent for the following conversion:
$C_6H_5COOCH_3 \longrightarrow C_6H_5CHO$
(methyl benzoate to benzaldehyde)

(1) (i) $NaBH_4$, (ii) H^+/H_2O

(2) $H_2/Pd{-}BaSO_4$

(3) (i) $LiAlH_4$, (ii) H^+/H_2O

(4) (i) $AlH(iBu)_2$, (ii) H_2O

73. The correct order of decreasing acidity of the following aliphatic acids is

(1) $HCOOH > CH_3COOH > (CH_3)_2CHCOOH > (CH_3)_3CCOOH$

(2) $HCOOH > (CH_3)_3CCOOH > (CH_3)_2CHCOOH > CH_3COOH$

(3) $(CH_3)_3CCOOH > (CH_3)_2CHCOOH > CH_3COOH > HCOOH$

(4) $CH_3COOH > (CH_3)_2CHCOOH > (CH_3)_3CCOOH > HCOOH$

74. The major product of the following reaction is: 4-oxo-4-phenylbutanenitrile $C_6H_5-CO-CH_2-CH_2-CN$ is treated with (i) CH_3MgBr (excess) and then (ii) H_3O^+.

(1) $C_6H_5-CH(OH)-CH_2-C(CH_3)_2-OH$

(2) $C_6H_5-CO-CH_2-CH_2-CO-CH_3$ (a diketone)

(3) $C_6H_5-C(CH_3)(OH)-CH_2-CN$

(4) $C_6H_5-C(CH_3)(OH)-CH_2-CH_2-CN$

75. For the reaction A(g) ⇌ 2B(g), the backward reaction rate constant is higher than the forward reaction rate constant by a factor of 2500, at 1000 K. [Given: R = 0.0831 L atm mol–1 K–1] Kp for the reaction at 1000 K is

(1) 0.033

(2) 0.021

(3) 83.1

(4) 2.077 ×105

76. Higher yield of NO in N2(g) + O2(g) ⇌ 2NO(g) can be obtained at [ΔH of the reaction = +180.7 kJ mol–1] A. highest temperature B. lower temperature C. higher concentration of N2 D. higher concentration of O2 Choose the correct answer from the options given below.

(1) B, C, D only

(2) A, C, D only

(3) A, D only

(4) B, C only

77. Consider the following compounds: KO_2, H_2O_2 and H_2SO_4. The oxidation states of the underlined elements (K in KO_2, O in H_2O_2, S in H_2SO_4) in them are, respectively,

(1) $+1$, -2 and $+4$

(2) $+4$, -4 and $+6$

(3) $+1$, -1 and $+6$

(4) $+2$, -2 and $+6$

78. Phosphoric acid ionizes in three steps with their ionization constant values K a1 , K a 2 and K a 3 , respectively while K is the overall ionization constant. Which of the following statements are true? A. log K = log K a1 + K a 2 + K a3 B. H3PO4 is a stronger acid than H2PO4– and HPO42– C. K a1 □ K a 2 □ K a 3 D. K a1 = K a3 +K a 2 2 Choose the correct answer from the options given below:

(1) B, C and D only

(2) A, B and C only

(3) A and B only

(4) A and C only

79. The correct order of decreasing basic strength of the given amines is:
(N-ethylethanamine $= (C_2H_5)_2NH$; ethanamine $= C_2H_5NH_2$; N-methylaniline $= C_6H_5NH(CH_3)$; benzenamine/aniline $= C_6H_5NH_2$)

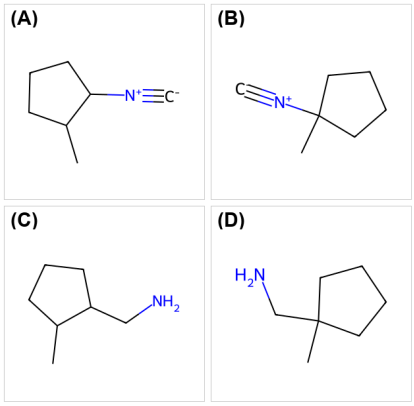
(1) N-ethylethanamine > ethanamine > N-methylaniline > benzenamine

(2) Benzenamine > ethanamine > N-methylaniline > N-ethylethanamine

(3) N-methylaniline > benzenamine > ethanamine > N-ethylethanamine

(4) N-ethylethanamine > ethanamine > benzenamine > N-methylaniline

80. Predict the major product P in the following sequence of reactions. The starting material is 1-methylcyclopent-1-ene:
(i) HBr, benzoyl peroxide; (ii) KCN; (iii) $\mathrm{Na(Hg)/C_2H_5OH} \rightarrow P$ (major).
The structures of the options (A)-(D) are shown in the image below:



(1) (A)
(2) (B)
(3) (C)
(4) (D)

81. Given below are two statements.
Statement I: Benzenediazonium salt is prepared by the reaction of aniline with acid at 273-278 K. It decomposes easily in the dry state.
Statement II: Insertion of iodine into the benzene ring is difficult, and hence iodobenzene is prepared through the reaction of the benzenediazonium salt with KI.
In the light of the above statements, choose the most appropriate 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

82. Sugar 'X':
A. is found in honey
B. is a keto sugar
C. exists in α and β anomeric forms
D. is laevorotatory
'X' is

(1) Maltose
(2) Sucrose
(3) D-Glucose
(4) D-Fructose

83. Match List I with List II.
List I (Name of Vitamin)
A. Vitamin B12
B. Vitamin D
C. Vitamin B2
D. Vitamin B6
List II (Deficiency disease)
I. Cheilosis
II. Convulsions
III. Rickets
IV. Pernicious anaemia
Choose the correct answer from the options given below:

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

84. Which one of the following reactions does NOT belong to Lassaigne's test?

(1) $\mathrm{Na + X \longrightarrow NaX}$
(2) $\mathrm{2\,CuO + C \longrightarrow 2\,Cu + CO_2}$
(3) $\mathrm{Na + C + N \longrightarrow NaCN}$
(4) $\mathrm{2\,Na + S \longrightarrow Na_2S}$

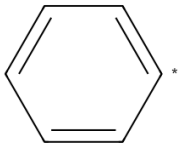
85. How many products (including stereoisomers) are expected from the monochlorination of 2-methylbutane, $(CH_3)_2CH-CH_2-CH_3$?

(1) 5 **(2)** 6

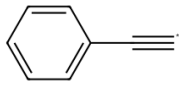
(3) 2 **(4)** 3

86. Among the given compounds I-III, the correct order of bond dissociation energy of the C-H bond marked with an asterisk (*) is:

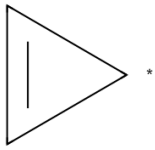
(I)



(II)



(III)



(1) III > II > I **(2)** II > III > I

(3) II > I > III **(4)** I > II > III

87. The correct order of decreasing basic strength of the given amines is:

(1) N-ethylethanamine > ethanamine > N-methylaniline > benzenamine

(2) Benzenamine > ethanamine > N-methylaniline > N-ethylethanamine

(3) N-methylaniline > benzenamine > ethanamine > N-ethylethanamine

(4) N-ethylethanamine > ethanamine > benzenamine > N-methylaniline

88. Match List I (Mixture) with List II (Method of Separation).

List I
A. $CHCl_3$ + $C_6H_5NH_2$
B. Crude oil in the petroleum industry
C. Glycerol from spent-lye
D. Aniline-water

List II
I. Distillation under reduced pressure
II. Steam distillation
III. Fractional distillation
IV. Simple distillation

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

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

89. Which one of the following compounds can exist as cis-trans isomers?

(1) 1,1-Dimethylcyclopropane **(2)** 1,2-Dimethylcyclohexane

(3) Pent-1-ene **(4)** 2-Methylhex-2-ene

90. Which one of the following reactions does NOT give benzene as the product?

(1) $HC\equiv CH$ passed through red-hot iron tube at 873 K **(2)** Benzenediazonium chloride ($C_6H_5N_2^+Cl^-$) warmed with H_2O

(3) Sodium benzoate (C_6H_5COONa) heated with soda lime (Δ) **(4)** n-hexane heated over Mo_2O_3 at 773 K, 10-20 atm

91. [NEET 2022 · NEET 2023 Phase 1 · NEET 2023 Phase 2 · NEET 2024 · NEET 2025] Given below are two statements:

Assertion (A): Cells of the tapetum possess dense cytoplasm and generally have more than one nucleus.

Reason (R): Presence of more than one nucleus in the tapetum increases the efficiency of nourishing the developing microspore mother cells.

In the light of the above statements, choose the correct answer:

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

92. Given below are two statements:

Assertion (A): A typical unfertilized, angiosperm embryo sac at maturity is 8 nucleate and 7-celled.

Reason (R): The egg apparatus has 2 polar nuclei.

In the light of the above statements, choose the correct answer:

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

93. Given below are two statements:

Assertion (A): Both wind and water pollinated flowers are not very colourful and do not produce nectar.

Reason (R): The flowers produce enormous amount of pollen grains in wind and water pollinated flowers.

In the light of the above statements, choose the correct answer:

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

94. Match List I with List II:

List I
A. Scutellum
B. Non-albuminous seed
C. Epiblast
D. Perisperm

List II
I. Persistent nucellus
II. Cotyledon of Monocot seed
III. Groundnut
IV. Rudimentary cotyledon

Choose the option with all correct matches:

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

95. In the seeds of cereals, the outer covering of endosperm separates the embryo by a protein-rich layer called :

(1) Integument
(2) Aleurone layer
(3) Coleoptile
(4) Coleorhiza

96. How many meiotic and mitotic divisions need to occur for the development of a mature female gametophyte from the megaspore mother cell in an angiosperm plant?

(1) 1 Meiosis and 3 Mitosis

(2) No Meiosis and 2 Mitosis

(3) 2 Meiosis and 3 Mitosis

(4) 1 Meiosis and 2 Mitosis

---

97. Which one of the following statements refers to Reductionist Biology?

(1) Chemical approach to study and understand living organisms.

(2) Behavioural approach to study and understand living organisms.

(3) Physico-chemical approach to study and understand living organisms.

(4) Physiological approach to study and understand living organisms.

---

98. Each of the following characteristics represent a Kingdom proposed by Whittaker. Arrange the following in increasing order of complexity of body organization.

A. Multicellular heterotrophs with cell wall made of chitin.

B. Heterotrophs with tissue/organ/organ system level of body organization.

C. Prokaryotes with cell wall made of polysaccharides and amino acids.

D. Eukaryotic autotrophs with tissue/organ level of body organization.

E. Eukaryotes with cellular body organization.

Choose the correct answer from the options given below :

(1) A, C, E, D, B

(2) C, E, A, B, D

(3) A, C, E, B, D

(4) C, E, A, D, B

---

99. Twins are born to a family that lives next door to you. The twins are a boy and a girl. Which of the following must be true?

(1) They were conceived through in vitro fertilization.

(2) They have 75% identical genetic content.

(3) They are monozygotic twins.

(4) They are fraternal twins.

---

100. Match List-I and List-II.

List-I (A. Head; B. Middle piece; C. Acrosome; D. Tail)

List-II (I. Enzymes; II. Sperm motility; III. Energy; IV. Genetic material)

Choose the correct answer from the options given below:

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

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

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

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

---

101. The first menstruation is called:

(1) Diapause

(2) Ovulation

(3) Menopause

(4) Menarche

---

102. Consider the following:

A. The reductive division for the human female gametogenesis starts earlier than that of the male gametogenesis.

B. The gap between the first meiotic division and the second meiotic division is much shorter for males compared to females.

C. The first polar body is associated with the formation of the primary oocyte.

D. Luteinizing Hormone (LH) surge leads to disintegration of the endometrium and onset of menstrual bleeding.

Choose the correct answer from the options given below:

(1) B and D are true

(2) B and C are true

(3) A and B are true

(4) A and C are true

---

103. Find the correct statements:

A. In human pregnancy, the major organ systems are formed at the end of 12 weeks.

B. In human pregnancy, the major organ systems are formed at the end of 8 weeks.

C. In human pregnancy heart is formed after one month of gestation.

D. In human pregnancy, limbs and digits develop by the end of second month.

E. In human pregnancy the appearance of hair is usually observed in the fifth month.

Choose the correct answer from the options given below:

(1) B, C, D and E only

(2) A, C, D and E only

(3) A and E only

(4) B and C only

104. Given below are the stages in the life cycle of pteridophytes. Arrange the following stages in the correct sequence.

A. Prothallus stage
B. Meiosis in spore mother cells
C. Fertilisation
D. Formation of archegonia and antheridia in gametophyte.
E. Transfer of antherozoids to the archegonia in presence of water.
Choose the correct answer from the options given below:

(1) D, E, C, A, B
(2) E, D, C, B, A
(3) B, A, D, E, C
(4) B, A, E, C, D

105. The correct sequence of events in the life cycle of bryophytes is

A. Fusion of antherozoid with egg.
B. Attachment of gametophyte to substratum.
C. Reduction division, to produce haploid spores.
D. Formation of sporophyte.
E. Release of antherozoids into water.
Choose the correct answer from the options given below:

(1) B, E, A, D, C
(2) D, E, A, B, C
(3) D, E, A, C, B
(4) B, E, A, C, D

106. Which one of the following is the characteristic feature of gymnosperms?

(1) Seeds are absent
(2) Gymnosperms have flowers for reproduction
(3) Seeds are enclosed in fruits
(4) Seeds are naked

107. In bryophytes, the gemmae help in which one of the following?

(1) Nutrient absorption
(2) Gaseous exchange
(3) Sexual reproduction
(4) Asexual reproduction

108. Match List I with List II.

List I (Plant group)
A. Pteridophyte
B. Bryophyte
C. Angiosperm
D. Gymnosperm
List II (Example)
I. Salvia
II. Ginkgo
III. Polytrichum
IV. Salvinia
Choose the option with all correct matches.

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

109. What are the potential drawbacks in adoption of the IVF method?

A. High fatality risk to mother
B. Expensive instruments and reagents
C. Husband/wife necessary for being donors
D. Less adoption of orphans
E. Not available in India
F. Possibility that the early embryo does not survive

Choose the correct answer from the options given below:

(1) A, B, C, D only
(2) A, B, C, E, F only
(3) B, D, F only
(4) A, C, D, F only

110. While trying to find out the characteristic of a newly found animal, a researcher did the histology of adult animal and observed a cavity with presence of mesodermal tissue towards the body wall but no mesodermal tissue was observed towards the alimentary canal. What could be the possible coelom of that animal?

(1) Schizocoelomate
(2) Spongocoelomate
(3) Acoelomate
(4) Pseudocoelomate

111. Role of the water vascular system in Echinoderms is:

A. Respiration and Locomotion
B. Excretion and Locomotion
C. Capture and transport of food
D. Digestion and Respiration
E. Digestion and Excretion

Choose the correct answer from the options given below:

(1) B and C Only
(2) B, D and E Only
(3) A and B Only
(4) A and C Only

112. All living members of the class Cyclostomata are:

(1) Symbiotic
(2) Ectoparasite
(3) Free living
(4) Endoparasite

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

Assertion (A): All vertebrates are chordates but all chordates are not vertebrate.

Reason (R): The members of subphylum vertebrata possess notochord during the embryonic period, the notochord is replaced by a cartilaginous or bony vertebral column in adults.

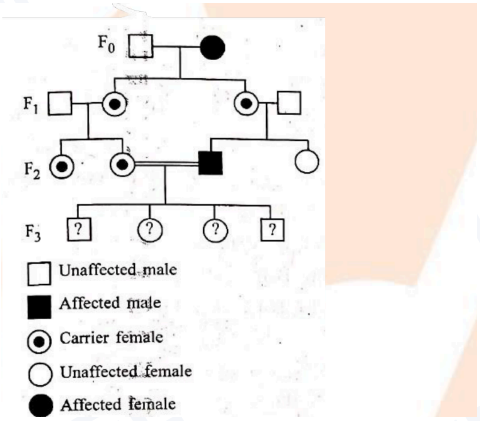
In the light of the above statements, choose the correct answer from the options given below:

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

114. Genes R and Y follow independent assortment. If RRYY produce round yellow seeds and rryy produce wrinkled green seeds, what will be the phenotypic ratio of the F2 generation?

(1) Phenotypic ratio - 9 : 3 : 3 : 1
(2) Phenotypic ratio - 9 : 7
(3) Phenotypic ratio - 1 : 2 : 1
(4) Phenotypic ratio - 3 : 1

115. With the help of given pedigree, find out the probability for the birth of a child having no disease and being a carrier (has the disease mutation in one allele of the gene) in F3 generation.



(1) 1/8
(2) Zero
(3) 1/4
(4) 1/2

116. What is the pattern of inheritance for polygenic trait?

(1) Autosomal dominant pattern

(2) X-linked recessive inheritance pattern

(3) Mendelian inheritance pattern

(4) Non-mendelian inheritance pattern

---

117. Which of the following are the post-transcriptional events in an eukaryotic cell?

A. Transport of pre-mRNA to cytoplasm prior to splicing

B. Removing of introns and joining of exons

C. Addition of methyl group at 5′ end of hnRNA.

D. Addition of adenine residues at 3′ end of hnRNA.

E. Base pairing of two complementary RNAs.

Choose the correct answer from the options given below:

(1) B, C, E only

(2) C, D, E only

(3) A, B, C only

(4) B, C, D only

---

118. Who proposed that the genetic code for amino acids should be made up of three nucleotides?

(1) Jacque Monod

(2) Franklin Stahl

(3) George Gamow

(4) Francis Crick

---

119. Which factor is important for termination of transcription?

(1) rho

(2) gamma

(3) alpha

(4) sigma

---

120. Given below are two statements:

Statement I: Transfer RNAs and ribosomal RNA do not interact with mRNA.

Statement II: RNA interference (RNAi) takes places in all eukaryotic organisms as a method of cellular defence.

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

(1) Statement I is correct but statement II is incorrect

(2) Statement I is incorrect but statement II is correct

(3) Both statement I and statement II are correct

(4) Both statement I and statement II are incorrect

---

121. Histones are enriched with -

(1) Phenylalanine & Leucine

(2) Phenylalanine & Arginine

(3) Lysine & Arginine

(4) Leucine & Lysine

---

122. Given below are two statements:

Statement I: In the RNA world, RNA is considered the first genetic material evolved to carry out essential life processes, RNA acts as a genetic material and also as a catalyst for some important biochemical reactions in living systems. Being reactive, RNA is unstable.

Statement II: DNA evolved from RNA and is a more stable genetic material. Its double helical strands being complementary, resist changes by evolving repairing mechanism.

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

(1) Statement I is correct but statement II is incorrect

(2) Statement I is incorrect but statement II is correct

(3) Both statement I and statement II are correct

(4) Both statement I and statement II are incorrect

---

123. Which chromosome in the human genome has the highest number of genes?

(1) Chromosome 1

(2) Chromosome 10

(3) Chromosome X

(4) Chromosome Y

---

124. Silencing of specific mRNA is possible via RNAi because of -

(1) Complementary tRNA

(2) Non-complementary ssRNA

(3) Complementary dsRNA

(4) Inhibitory ssRNA

125. Match List-I with List-II.

List-I:

A. Alfred Hershey and Martha

B. Euchromatin

C. Frederick Griffith

D. Heterochromatin

List-II:

I. Streptococcus pneumoniae

II. Densely packed and dark-stained

III. Loosely packed and light-stained

IV. DNA as genetic material confirmation

Choose the correct answer from the options given below:

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

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

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

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

---

126. From the statements given below choose the correct option:

A. The eukaryotic ribosomes are 80S and prokaryotic ribosomes are 70S.

B. Each ribosome has two sub-units.

C. The two sub-units of 80S ribosome are 60S and 40S while that of 70S are 50S and 30S.

D. The two sub-units of 80S ribosome are 60S and 20S and that of 70S are 50S and 20S.

E. The two sub-units of 80S are 60S and 30S and that of 70S are 50S and 30S.

(1) A, B, E are true

(2) B, D, E are true

(3) A, B, C are true

(4) A, B, D are true

---

127. Given below are two statements:

Statement I : In a floral formula the symbol [percentage/division-type symbol] stands for zygomorphic nature of the flower, and G with a bar above it stands for inferior ovary.

Statement II : In a floral formula the symbol [same symbol] stands for actinomorphic nature of the flower and G with a bar below it stands for superior ovary.

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

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

(2) Statement I is incorrect but Statement II is correct

(3) Both Statement I and Statement II are correct

(4) Both Statement I and Statement II are incorrect

---

128. Which of the following is an example of a zygomorphic flower?

(1) Pea

(2) Chilli

(3) Petunia

(4) Datura

---

129. Which of the following is an example of actinomorphic flower?

(1) Cassia

(2) Pisum

(3) Sesbania

(4) Datura

---

130. Find the statement that is NOT correct with regard to the structure of monocot stem.

(1) Vascular bundles are conjoint and closed

(2) Phloem parenchyma is absent.

(3) Hypodermis is parenchymatous.

(4) Vascular bundles are scattered

---

131. Sweet potato and potato represent a certain type of evolution. Select the correct combination of terms to explain the evolution.

(1) Homology, convergent

(2) Analogy, divergent

(3) Analogy, convergent

(4) Homology, divergent

132. Which are correct:

A. Computed tomography and magnetic resonance imaging detect cancers of internal organs.
B. Chemotherapeutics drugs are used to kill non-cancerous cells.
C. α-interferon activate the cancer patients' immune system and helps in destroying the tumour.
D. Chemotherapeutic drugs are biological response modifiers.
E. In the case of leukemia blood cell counts are decreases.
Choose the correct answer from the options given below:

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

133. After maturation, in primary lymphoid organs, the lymphocytes migrate for interaction with antigens to secondary lymphoid organ(s)/tissue(s) like:

A. thymus
B. bone marrow
C. spleen
D. lymph nodes
E. Peyer's patches
Choose the correct answer from the options given below:

(1) E, A, B only
(2) C, D, E only
(3) B, C, D only
(4) A, B, C only

134. Which of the following type of immunity is present at the time of birth and is a non-specific type of defence in the human body?

(1) Cell-mediated Immunity
(2) Humoral Immunity
(3) Acquired Immunity
(4) Innate Immunity

135. Identify the statement that is NOT correct.

(1) Antigen binding site is located at C-terminal region of antibody molecules.
(2) Constant region of heavy and light chains are located at C-terminus of antibody molecules.
(3) Each antibody has two light and two heavy chains.
(4) The heavy and light chains are held together by disulfide bonds.

136. Neoplastic characteristics of cells refer to:

A. A mass of proliferating cell
B. Rapid growth of cells
C. Invasion and damage to the surrounding tissue
D. Those confined to original location
Choose the correct answer from the options given below

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

137. Which of the following statement is correct about location of the male frog copulatory pad?

(1) Second digit of fore limb
(2) First digit of the fore limb
(3) First and Second digit of fore limb
(4) First digit of hind limb

138. In frog, the Renal system is a special venous connection that acts to link:

(1) Kidney and intestine
(2) Kidney and lower part of body
(3) Liver and intestine
(4) Liver and Kidney

139. What is the name of the blood vessel that carries deoxygenated blood from the body to the heart in a frog?

(1) Pulmonary vein
(2) Vena cava
(3) Aorta
(4) Pulmonary artery

140. Frogs respire in water by skin and buccal cavity and on land by skin, buccal cavity and lungs.

Choose the correct answer from the following:

(1) The statement is false for water and but true for land

(2) The statement is false for both the environment

(3) The statement is true for water but false for land

(4) The statement is true for both the environment

141. A specialised membranous structure in a prokaryotic cell which helps in cell wall formation, DNA replication and respiration is :

(1) Cristae

(2) Endoplasmic Reticulum

(3) Mesosome

(4) Chromatophores

142. Match List-I with List-II:

List I
A. Centromere
B. Cilium
C. Cristae
D. Cell membrane

List II
I. Mitochondrion
II. Cell division
III. Cell movement
IV. Phospholipid Bilayer

Choose the correct answer from the options given below:

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

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

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

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

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

Assertion (A): The primary function of the Golgi apparatus is to package the materials made by the endoplasmic reticulum and deliver it to intracellular targets and outside the cell.
Reason (R): Vesicles containing materials made by the endoplasmic reticulum fuse with the cis face of the Golgi apparatus, and they are modified and released from the trans face of the Golgi apparatus.

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

(1) A is true but R is false

(2) A is false but R is true

(3) Both A and R are true and R is the correct explanation of A

(4) Both A and R are true but R is not the correct explanation of A

144. Which of the following microbes is NOT involved in the preparation of household products?
A. Aspergillus niger
B. Lactobacillus
C. Trichoderma polysporum
D. Saccharomyces cerevisiae
E. Propionibacterium sharmanii
Choose the correct answer from the options given below:

(1) C and D only

(2) C and E only

(3) A and B only

(4) A and C only

145. Streptokinase produced by bacterium Streptococcus is used for

(1) Liver disease treatment

(2) Removing clots from blood vessels

(3) Curd production

(4) Ethanol production

146. Which of following organisms cannot fix nitrogen?

A. Azotobacter
B. Oscillatoria
C. Anabaena
D. Volvox
E. Nostoc
Choose the correct answer from the options given below:

(1) B only
(2) E only
(3) A only
(4) D only

147. The protein portion of an enzyme is called:

(1) Apoenzyme
(2) Prosthetic group
(3) Cofactor
(4) Coenzyme

148. Which one of the following enzymes contains 'Haem' as the prosthetic group?

(1) Succinate dehydrogenase
(2) Catalase
(3) RuBisCo
(4) Carbonic anhydrase

149. Match List-I with List-II.
List-I: A. Adenosine; B. Adenylic acid; C. Adenine; D. Alanine
List-II: I. Nitrogen base; II. Nucleotide; III. Nucleoside; IV. Amino acid
Choose the option with all correct matches.

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

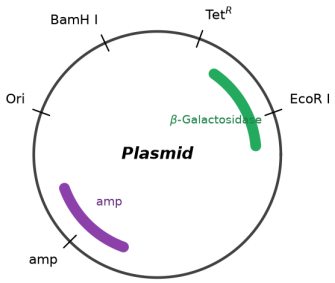
150. Name the class of enzyme that usually catalyze the following reaction:
S–G + S# → S + S#–G
Where, G → a group other than hydrogen; S → a substrate; S# → another substrate

(1) Transferase
(2) Ligase
(3) Hydrolase
(4) Lyase

151. Identify the part of a bio-reactor which is used as a foam braker from the given figure.

(1) D
(2) C
(3) A
(4) B

152. In the above represented plasmid an alien piece of DNA is inserted at EcoRI site. Which of the following strategies will be chosen to select the recombinant colonies?



(1) White color colonies will be selected
(2) Blue color colonies grown on ampicillin
(3) Using ampicillin & tetracyclin containing medium plate.
(4) Blue color colonies will be selected.

153. Polymerase chain reaction (PCR) amplifies DNA following the equation

(1) 2n + 1 **(2)** 2N2

(3) N2 **(4)** 2n

154. Given below are two statements :
Statement I : The DNA fragments extracted from gel electrophoresis can be used in construction of recombinant DNA.
Statement II : Smaller size DNA fragments are observed near anode while larger fragments are found near the wells in an agarose gel.
In the light of the above statements, choose the most appropriate answer from the options given below :

(1) Statement I is correct but statement II is incorrect **(2)** Statement I is incorrect but statement II is correct

(3) Both statement I and statement II are correct **(4)** Both statement I and statement II are incorrect

155. Which of the following enzyme(s) are NOT essential for gene cloning?
A. Restriction enzymes
B. DNA ligase
C. DNA mutase
D. DNA recombinase
E. DNA polymerase
Choose the correct answer from the options given below :

(1) D and E only **(2)** B and C only

(3) C and D only **(4)** A and B only

156. The blue and white selectable markers have been developed which differentiate recombinant colonies from non-recombinant colonies on the basis of their ability to produce colour in the presence of a chromogenic substrate.
Given below are two statements about this method:
Statement I : The blue coloured colonies have DNA insert in the plasmid and they are identified as recombinant colonies.
Statement II : The colonies without blue colour have DNA insert in the plasmid and are identified as recombinant colonies.
In the light of the above statements, choose the most appropriate answer from the options given below :

(1) Statement I is correct but Statement II is incorrect **(2)** Statement I is incorrect but Statement II is correct

(3) Both Statement I and Statement II are correct **(4)** Both Statement I and Statement II are incorrect

157. Which of the following genetically engineered organisms was used by Eli Lilly to prepare human insulin?

(1) Virus **(2)** Phage

(3) Bacterium **(4)** Yeast

158. What is the main function of the spindle fiber during mitosis?

(1) To repair damaged DNA **(2)** To regulate cell growth

(3) To separate the chromosomes **(4)** To synthesize new DNA

159. Epiphytes that are growing on a mango branch is an example of which of the following?

(1) Predation **(2)** Amensalism

(3) Commensalism **(4)** Mutualism

160. Given below are two statements:

Statement I: Fig fruit is a non-vegetarian fruit as it has enclosed fig wasps in it.
Statement II: Fig wasp and fig tree exhibit a mutual relationship, as the fig fruit provides the wasp a place to lay eggs and the fig gets pollinated by the fig wasp.

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

(1) Statement I is correct but statement II is incorrect **(2)** Statement I is incorrect but statement II is correct

(3) Both statement I and statement II are correct **(4)** Both statement I and statement II are incorrect

161. Which one of the following equations represents the Verhulst-Pearl Logistic Growth of population?

(1) dN/dt = rN((N-K)/N)

(2) dN/dt = N((r-K)/K)

(3) dN/dt = r((K-N)/K)

(4) dN/dt = rN((K-N)/K)

---

162. Match List I (Pigment) with List II (Colour) and choose the correct answer:

List I
A. Chlorophyll a
B. Chlorophyll b
C. Xanthophylls
D. Carotenoids

List II
I. Yellow-green
II. Yellow
III. Blue-green
IV. Yellow to Yellow-orange

Choose the correct answer from the options given below:

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

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

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

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

---

163. Which of the following statements about RuBisCO is true?

(1) It is an enzyme involved in the photolysis of water.

(2) It catalyzes the carboxylation of RuBP.

(3) It is active only in the dark.

(4) It has higher affinity for oxygen than carbon dioxide.

---

164. Who is known as the father of Ecology in India?

(1) Ram Udar

(2) Birbal Sahni

(3) S. R. Kashyap

(4) Ramdeo Misra

---

165. Given below are two statements:
Statement I: In an ecosystem, there is a unidirectional flow of energy from the sun through producers to consumers.
Statement II: Ecosystems are exempted from the 2nd law of thermodynamics.
In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Statement I is correct but statement II is incorrect

(2) Statement I is incorrect but statement II is correct

(3) Both statement I and statement II are correct

(4) Both statement I and statement II are incorrect

---

166. Given below are two statements:
Statement I: The primary source of energy in an ecosystem is solar energy.
Statement II: The rate of production of organic matter during photosynthesis in an ecosystem is called net primary productivity (NPP).
In the light of the above statements, choose the most appropriate answer from the options given below:

(1) Statement I is correct but statement II is incorrect

(2) Statement I is incorrect but statement II is correct

(3) Both statement I and statement II are correct

(4) Both statement I and statement II are incorrect

---

167. Which of the following is the unit of productivity of an Ecosystem?

(1) KCal m–3

(2) (KCal m–2)yr–1

(3) gm–2

(4) KCal m–2

---

168. The complex II of mitochondrial electron transport chain is also known as

(1) Cytochrome c oxidase

(2) NADH dehydrogenase

(3) Cytochrome bc1

(4) Succinate dehydrogenase

---

169. Match List I with List II :

List I

A. The Evil Quartet

B. Ex situ conservation

C. Lantana camara

D. Dodo

List II

I. Cryopreservation

II. Alien species invasion

III. Causes of biodiversity losses

IV. Extinction

Choose the option will all correct matches.

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

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

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

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

---

170. Which one of the following is an example of ex-situ conservation?

(1) Zoos and botanical gardens

(2) Protected areas

(3) National Park

(4) Wildlife Sanctuary

---

171. Read the following statements on plant growth and development.

A. Parthenocarpy can be induced by auxins.

B. Plant growth regulators can be involved in promotion as well as inhibition of growth.

C. Dedifferentiation is a pre-requisite for re-differentiation.

D. Abscisic acid is a plant growth promoter.

E. Apical dominance promotes the growth of lateral buds.

Choose the option with all correct statements.

(1) A, D, E only

(2) B, D, E only

(3) A, B, C only

(4) A, C, E only

---

172. Which one of the following phytohormones promotes nutrient mobilization which helps in the delay of leaf senescence in plants?

(1) Gibberellin

(2) Cytokinin

(3) Ethylene

(4) Abscisic acid

---

173. Cardiac activities of the heart are regulated by :

A. Nodal tissue

B. A special neural centre in the medulla oblongata

C. Adrenal medullary hormones

D. Adrenal cortical hormones

Choose the correct answer from the options given below :

(1) A, C and D Only

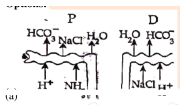
(2) A, B and D Only

(3) A, B and C Only

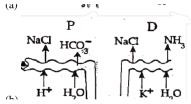
(4) A, B, C and D

174. Which of the following diagrams is correct with regard to the proximal (P) and distal (D) tubule of the Nephron.

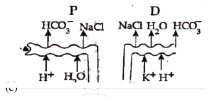
(a)



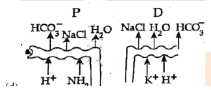
(b)



(c)



(d)



(1) (a) **(2)** (b)

(3) (c) **(4)** (d)

---

175. Match List - I with List - II

List-I
A. Emphysema
B. Angina Pectoris
C. Glomerulo-nephritis
D. Tetany

List-II
I. Rapid spasms in muscle due to low Ca++ in body fluid
II. Damaged alveolar walls and decreased respiratory surface
III. Acute chest pain when not enough oxygen is reaching to heart muscle
IV. Inflammation of glomeruli of kidney

Choose the correct answer from the options given below :

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

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

---

176. Why can't insulin be given orally to diabetic patients?

(1) Because of structural variation **(2)** Its bioavailability will be increased

(3) Human body will elicit strong immune response **(4)** It will be digested in Gastro-Intestinal (GI) tract

---

177. Consider the following statements regarding function of adrenal medullary hormones:
A. It causes pupillary constriction
B. It is a hyperglycemic hormone
C. It causes piloerection
D. It increases strength of heart contraction
Choose the correct answer from the options given below:

(1) A, C and D Only **(2)** D Only

(3) C and D Only **(4)** B, C and D Only

---

178. Which of the following hormones released from the pituitary is actually synthesized in the hypothalamus?

(1) Follicle-stimulating hormone (FSH) **(2)** Adrenocorticotropic hormone (ACTH)

(3) Luteinizing hormone (LH) **(4)** Anti-diuretic hormone (ADH)

---

179. Match List-I with List-II.

List-I:

A. Heart

B. Kidney

C. Gastro-intestinal tract

D. Adrenal Cortex

List-II:

I. Erythropoietin

II. Aldosterone

III. Atrial natriuretic factor

IV. Secretin

Choose the correct answer from the options given below:

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

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

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

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

180. Match List-I with List-II.

List-I:

A. Progesterone

B. Relaxin

C. Melanocyte stimulating hormone

D. Catecholamines

List-II:

I. Pars intermedia

II. Ovary

III. Adrenal Medulla

IV. Corpus luteum

Choose the correct answer from the options given below:

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

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

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

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

Answer Key

1.D	**2**.B	**3**.A	**4**.A	**5**.A	**6**.B	**7**.C	**8**.B	**9**.B	**10**.A	**11**.B	**12**.C	**13**.B
14.C	**15**.D	**16**.D	**17**.D	**18**.B	**19**.B	**20**.A	**21**.B	**22**.D	**23**.B	**24**.D	**25**.D	**26**.C
27.C	**28**.A	**29**.A	**30**.D	**31**.D	**32**.A	**33**.D	**34**.A	**35**.D	**36**.A	**37**.A	**38**.C	**39**.A
40.D	**41**.C	**42**.D	**43**.A	**44**.D	**45**.D	**46**.D	**47**.A	**48**.D	**49**.D	**50**.B	**51**.A	**52**.B
53.C	**54**.B	**55**.C	**56**.C	**57**.B	**58**.D	**59**.C	**60**.C	**61**.C	**62**.A	**63**.A	**64**.C	**65**.A
66.D	**67**.C	**68**.A	**69**.C	**70**.C	**71**.B	**72**.D	**73**.A	**74**.D	**75**.A	**76**.B	**77**.C	**78**.B
79.A	**80**.C	**81**.A	**82**.D	**83**.D	**84**.B	**85**.B	**86**.C	**87**.A	**88**.C	**89**.B	**90**.B	**91**.C
92.A	**93**.D	**94**.C	**95**.B	**96**.A	**97**.C	**98**.D	**99**.D	**100**.C	**101**.D	**102**.C	**103**.B	**104**.C
105.A	**106**.D	**107**.D	**108**.D	**109**.C	**110**.D	**111**.D	**112**.B	**113**.C	**114**.A	**115**.C	**116**.D	**117**.D
118.C	**119**.A	**120**.B	**121**.C	**122**.C	**123**.A	**124**.C	**125**.A	**126**.C	**127**.B	**128**.A	**129**.D	**130**.C
131.C	**132**.B	**133**.B	**134**.D	**135**.A	**136**.D	**137**.B	**138**.B	**139**.B	**140**.A	**141**.C	**142**.B	**143**.C
144.D	**145**.B	**146**.D	**147**.A	**148**.B	**149**.A	**150**.A	**151**.B	**152**.A	**153**.D	**154**.C	**155**.C	**156**.B
157.C	**158**.C	**159**.C	**160**.C	**161**.D	**162**.D	**163**.B	**164**.D	**165**.A	**166**.A	**167**.B	**168**.D	**169**.D
170.A	**171**.C	**172**.B	**173**.C	**174**.D	**175**.B	**176**.D	**177**.D	**178**.D	**179**.B	**180**.C		