MedicNEET

NEET 2024 — Previous Year Question Paper

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Physics · 50 Qs

1. A force defined by $F = \alpha t + \beta t^2$ acts on a particle at a given time t. The factor which is dimensionless, if α and β are constants, is:

   (1) $\alpha/(\beta t)$ **(2)** $\alpha\beta/t$

   (3) $\alpha\beta t$ **(4)** $\beta t/\alpha$

2. In a vernier callipers, (N+1) divisions of the vernier scale coincide with N divisions of the main scale. If 1 MSD represents 0.1 mm, the vernier constant (in cm) is:

   (1) 1/[100(N+1)] **(2)** 100N

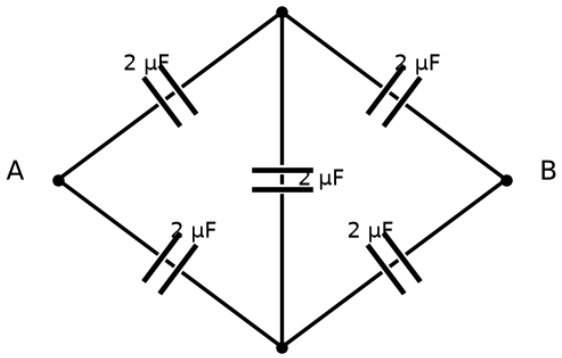
   (3) 10/(N+1) **(4)** 10N

3. The quantities which have the same dimensions as those of solid angle are:

   (1) Stress and angle **(2)** Strain and arc

   (3) Angular speed and stress **(4)** Strain and angle

4. In the following circuit, the equivalent capacitance between terminal A and terminal B is:



(1) 1 μF

(2) 0.5 μF

(3) 4 μF

(4) 2 μF

5. Assertion A: The potential (V) at any axial point, at 2m distance (r) from the centre of the dipole of dipole moment vector P of magnitude 4×10^{-6} Cm, is $\pm 9 \times 10^3$ V (Take $1/4\pi\varepsilon_0 = 9 \times 10^9$ SI units). Reason R: $V = \pm 2P/(4\pi\varepsilon_0 r^2)$, where r is the distance of any axial point situated at 2m from the centre of the dipole.

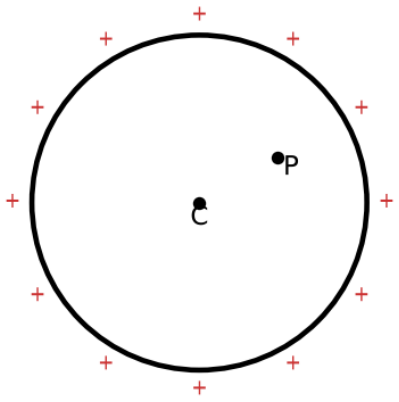
(1) Both A and R are true and R is NOT the correct explanation of A.

(2) A is true but R is false

(3) A is false but R is true

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

6. A thin spherical shell is charged by some source. The potential difference between the two points C and P (in V) shown in the figure is (Take $1/4\pi\varepsilon_0 = 9 \times 10^9$ SI units).



(1) 1×10^5

(2) 0.5×10^5

(3) Zero

(4) 3×10^5

7. If the plates of a parallel plate capacitor connected to a battery are moved close to each other, then: A. The charge stored in it increases. B. The energy stored in it decreases. C. Its capacitance increases. D. The ratio of charge to its potential remains the same. E. The product of charge and voltage increases. Choose the most appropriate answer.

(1) A, C and E only

(2) B, D and E only

(3) A, B and C only

(4) A, B and E only

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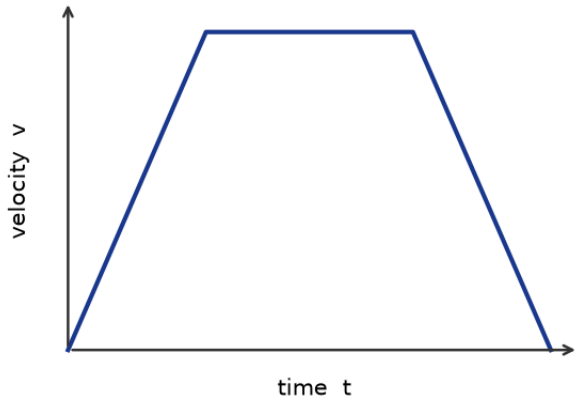
8. The velocity (v)-time (t) graph of a body moving in a straight line is shown. Which of the following acceleration (a)-time (t) graphs best represents the motion?



(1) a constant positive throughout

(2) matches: a>0, then a=0, then a<0

(3) a constant negative throughout

(4) a increases linearly

---

9. A particle moving with uniform speed in a circular path maintains:

(1) Constant acceleration

(2) Constant velocity but varying acceleration

(3) Varying velocity and varying acceleration

(4) Constant velocity

---

10. A bob is suspended by a light string from the roof of a truck. The truck, initially stationary, suddenly moves to the right with acceleration a. The pendulum will tilt:

(1) to the left, with inclination $\sin^{-1}(a/g)$ to the vertical

(2) to the left, with inclination $\tan^{-1}(a/g)$ to the vertical

(3) to the right, with inclination $\sin^{-1}(a/g)$ to the vertical

(4) to the left, with inclination $\tan^{-1}(g/a)$ to the vertical

---

11. Two bodies A and B of the same mass undergo a completely inelastic one-dimensional collision. A moves with velocity v_1 while B is at rest before the collision. The velocity of the combined system after collision is v_2. The ratio $v_1 : v_2$ is:

(1) 2 : 1

(2) 4 : 1

(3) 1 : 4

(4) 1 : 2

---

12. An object flying in air with velocity $(20\hat{i} + 25\hat{j} + 12\hat{k})$ suddenly breaks into two pieces whose masses are in the ratio 1 : 5. The smaller mass flies off with a velocity $(100\hat{i} + 35\hat{j} + 8\hat{k})$. The velocity of the larger piece will be:

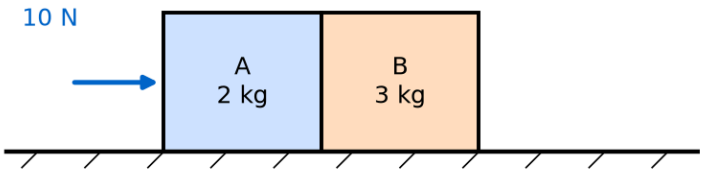
(1) $4\hat{i} + 23\hat{j} + 16\hat{k}$

(2) $-100\hat{i} - 35\hat{j} - 8\hat{k}$

(3) $20\hat{i} + 15\hat{j} - 80\hat{k}$

(4) $-20\hat{i} - 15\hat{j} - 80\hat{k}$

13. A horizontal force of 10 N is applied to block A, which is in contact with and pushes block B on a frictionless horizontal surface. The masses of A and B are 2 kg and 3 kg respectively. The force exerted by block A on block B is:



(1) 4 N

(2) 6 N

(3) 10 N

(4) Zero

14. A bob is whirled in a horizontal circle by a string at an initial angular speed ω, and the tension in the string is T. If the angular speed becomes 2ω at the same radius, the tension becomes:

(1) 4T

(2) T/4

(3) 2T

(4) T

15. A body of mass m is kept on a rough horizontal surface (coefficient of friction μ). A horizontal force is applied but the body does not move. The magnitude of the resultant F of the normal reaction and the frictional force satisfies:

(1) $mg \le |F| \le mg\sqrt{(1+\mu^2)}$

(2) $|F| = mg$

(3) $|F| = \mu mg$

(4) $|F| = mg\sqrt{(1+\mu^2)}$

16. A person standing on the floor of an elevator drops a coin. The coin reaches the floor in time t_1 if the elevator is at rest, and in time t_2 if the elevator is moving uniformly. Then:

(1) $t_1 < t_2$ or $t_1 > t_2$ depending on the direction of motion

(2) $t_1 < t_2$

(3) $t_1 > t_2$

(4) $t_1 = t_2$

17. A tightly wound 100 turns coil of radius 10 cm carries a current of 7 A. The magnitude of the magnetic field at the centre of the coil is (Take permeability of free space as $4\pi \times 10^{-7}$ SI units):

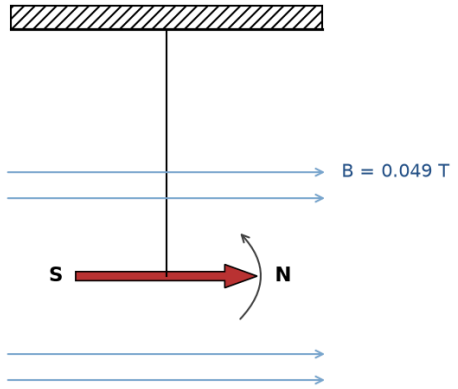
(1) 4.4 T

(2) 4.4 mT

(3) 44 T

(4) 44 mT

18. In a uniform magnetic field of 0.049 T, a magnetic needle performs 20 complete oscillations in 5 seconds. The moment of inertia of the needle is 9.8×10^{-6} kg m^2. If the magnetic moment of the needle is $x \times 10^{-5}$ A m^2, the value of x is:



(1) $128\pi^2$ **(2)** $50\pi^2$

(3) $1280\pi^2$ **(4)** $5\pi^2$

19. An iron bar of length L has magnetic moment M. It is bent at the middle of its length such that the two arms make an angle 60° with each other. The magnetic moment of this new magnet is:

(1) M/2 **(2)** 2M

(3) $M/\sqrt{3}$ **(4)** M

20. Match List-I with List-II:

List-I (Material)
A. Diamagnetic
B. Ferromagnetic
C. Paramagnetic
D. Non-magnetic

List-II (Susceptibility χ)
I. $\chi = 0$
II. $0 > \chi \geq -1$
III. $\chi >> 1$
IV. $0 < \chi < \varepsilon$ (a small positive number)

Choose the correct answer:

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

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

21. A sheet is placed on a horizontal surface in front of a strong magnetic pole. A force is needed to:

A. hold the sheet there if it is magnetic

B. hold the sheet there if it is non-magnetic

C. move the sheet away from the pole with uniform velocity if it is conducting

D. move the sheet away from the pole with uniform velocity if it is both non-conducting and non-polar

Choose the correct statement(s):

(1) A and C only

(2) A, C and D only

(3) C only

(4) B and D only

22. Two bodies A and B of the same mass undergo a completely inelastic one-dimensional collision. Body A moves with velocity v_1 while body B is at rest before the collision. The velocity of the system after collision is v_2. The ratio $v_1:v_2$ is

(1) 2 : 1

(2) 4 : 1

(3) 1 : 4

(4) 1 : 2

23. At any instant of time t, the displacement of a particle is given by x=2t-1 (SI units), under the influence of a force of 5 N. The value of the instantaneous power is (in SI units)

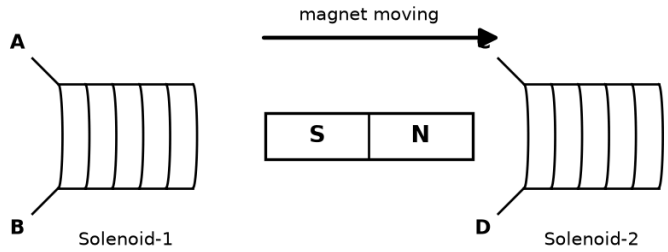
(1) 5

(2) 7

(3) 6

(4) 10

24. In the above diagram, 1 strong bar magnet is moving towards solenoid - 2 from solenoid - 1. The direction of induced current in solenoid - 1 and that in solenoid - 2, respectively, are through the directions:



(1) BA and CD

(2) AB and CD

(3) BA and DC

(4) AB and DC

25. The moment of inertia of a thin rod about an axis through its mid-point and perpendicular to its length is 2400 g·cm². The length of the 400 g rod is nearly:

(1) 17.5 cm

(2) 20.7 cm

(3) 72.0 cm

(4) 8.5 cm

26. In an ideal transformer, the turns ratio is N_p/N_s = 1/2. The ratio V_s : V_p is equal to (the symbols carry their usual meaning):

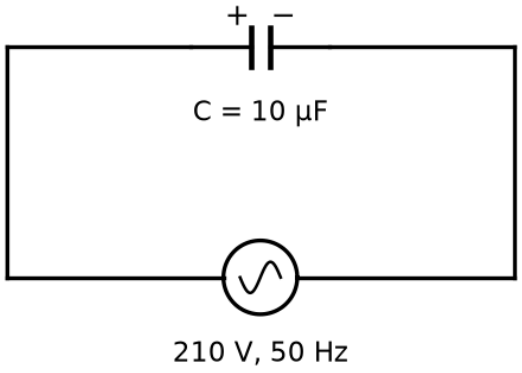
(1) 2 : 1

(2) 1 : 1

(3) 1 : 4

(4) 1 : 2

27. A 10 μF capacitor is connected to a 210 V, 50 Hz source as shown in figure. The peak current in the circuit is nearly (π = 3.14):



(1) 0.93 A

(2) 1.20 A

(3) 0.35 A

(4) 0.58 A

28. The minimum energy required to launch a satellite of mass m from the surface of the earth (mass M, radius R) into a circular orbit at an altitude 2R from the surface is:

(1) 3GmM/2R

(2) GmM/2R

(3) GmM/3R

(4) 5GmM/6R

29. The mass of a planet is 1/10th that of the earth and its diameter is half that of the earth. The acceleration due to gravity on that planet is:

(1) 9.8 m s^{-2}

(2) 4.9 m s^{-2}

(3) 3.92 m s^{-2}

(4) 19.6 m s^{-2}

30. A parallel plate capacitor is charged by connecting it to a battery through a resistor. If I is the current in the circuit, then in the gap between the plates,

(1) Displacement current of magnitude equal to I flows in the same direction as I

(2) Displacement current of magnitude equal to I flows in a direction opposite to that of I

(3) Displacement current of magnitude greater than I flows but can be in any direction

(4) There is no current

31. The property which is NOT of an electromagnetic wave travelling in free space is that

(1) The energy density in the electric field is equal to the energy density in the magnetic field

(2) They travel with a speed equal to $1/\sqrt{(\mu_0\varepsilon_0)}$

(3) They originate from charges moving with uniform speed

(4) They are transverse in nature

32. A metallic bar of Young's modulus 0.5×10^{11} N m^{-2} and coefficient of linear thermal expansion 10^{-5} °C^{-1}, length 1 m and area of cross-section 10^{-3} m^2 is heated from 0 °C to 100 °C without expansion or bending. The compressive force developed in it is:

(1) 50×10^3 N

(2) 100×10^3 N

(3) 2×10^3 N

(4) 5×10^3 N

33. The maximum elongation of a steel wire of 1 m length if the elastic limit of steel and its Young's modulus respectively are 8×10^8 N m^{-2} and 2×10^{11} N m^{-2}, is

(1) 0.4 mm

(2) 40 mm

(3) 8 mm

(4) 4 mm

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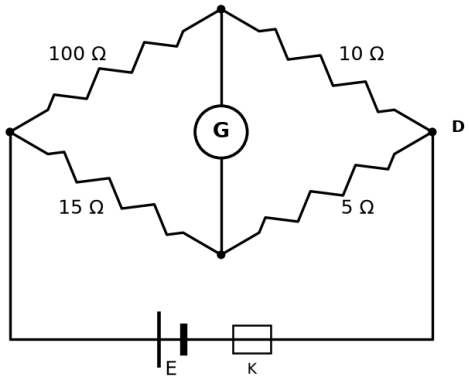
34. Choose the correct circuit which can achieve the bridge balance. (Arms 100 Ω, 10 Ω, 15 Ω, 5 Ω with galvanometer G and cell E + key K.)

(correct: option 4)



(1) diamond, G & cell mis-paired on same side

(2) distorted (offset sub-diamond holds G & 5 Ω)

(3) diamond, G/cell diagonals mis-paired

(4) clean diamond: G on one diagonal, cell+key on the other

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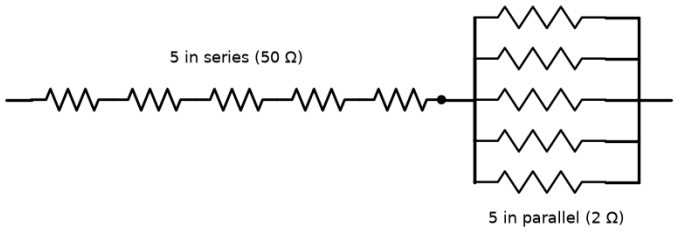
35. A wire of resistance 100 Ω is divided into 10 equal parts. The first 5 are connected in series, the next 5 in parallel; the two combinations are then in series. The resistance of the final combination is:



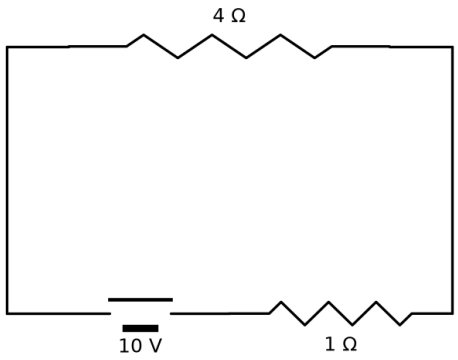
(1) 52 Ω

(2) 55 Ω

(3) 60 Ω

(4) 26 Ω

36. The terminal voltage of a battery of emf 10 V and internal resistance 1 Ω, connected to an external resistance of 4 Ω, is:



(1) 6 V

(2) 8 V

(3) 10 V

(4) 4 V

37. Two heaters A and B rated 1 kW and 2 kW are connected first in series and then in parallel to a fixed source. The ratio of power outputs (series : parallel) is:

(1) 2 : 9

(2) 1 : 2

(3) 2 : 3

(4) 1 : 1

38. A thin flat circular disc of radius 4.5 cm is placed gently over the surface of water. If the surface tension of water is 0.07 N m^{-1}, then the excess force required to take it away from the surface is:

(1) 198 N

(2) 1.98 mN

(3) 99 N

(4) 19.8 mN

39. A small telescope has an objective of focal length 140 cm and an eyepiece of focal length 5.0 cm. The magnifying power of the telescope for viewing a distant object is:

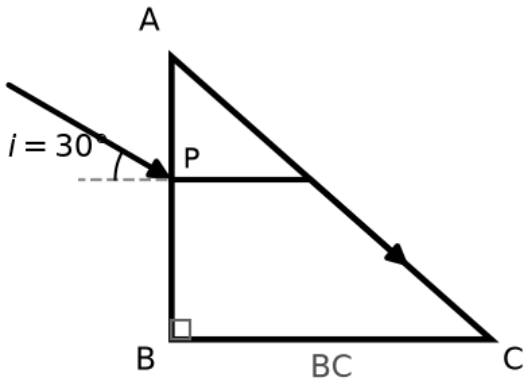
(1) 28

(2) 17

(3) 32

(4) 34

40. A light ray enters through a right-angled prism at point P with the angle of incidence 30° as shown in the figure. It travels through the prism parallel to its base BC and emerges along the face AC. The refractive index of the prism is:



(1) $\sqrt{5}/2$

(2) $\sqrt{3}/4$

(3) $\sqrt{3}/2$

(4) $\sqrt{5}/4$

41. A metallic bar (Young's modulus $Y = 0.5 \times 10^{11}$ N m^{-2}, coefficient of linear expansion $\alpha = 10^{-5}$ $°C^{-1}$, length 1 m, area of cross-section 10^{-3} m^2) is heated from 0 °C to 100 °C while clamped so it cannot expand or bend. The compressive force developed in it is:

(1) 50×10^3 N

(2) 100×10^3 N

(3) 2×10^3 N

(4) 5×10^3 N

42. If the monochromatic source in Young's double slit experiment is replaced by white light, then

(1) There will be a central dark fringe surrounded by a few coloured fringes

(2) There will be a central bright fringe surrounded by a few coloured fringes

(3) All bright fringes will be of equal width

(4) Interference pattern will disappear

43. An unpolarized light beam strikes a glass surface at Brewster's angle. Then

(1) The refracted light will be completely polarised

(2) Both the reflected and refracted light will be completely polarised

(3) The reflected light will be completely polarized but the refracted light will be partially polarized

(4) The reflected light will be partially polarized

44. If c is the velocity of light in free space, the correct statements about a photon among the following are:

A. The energy of a photon is E = hv.
B. The velocity of a photon is c.
C. The momentum of a photon, p = hv/c.
D. In a photon–electron collision, both total energy and total momentum are conserved.
E. A photon possesses positive charge.
Choose the correct answer from the options given below:

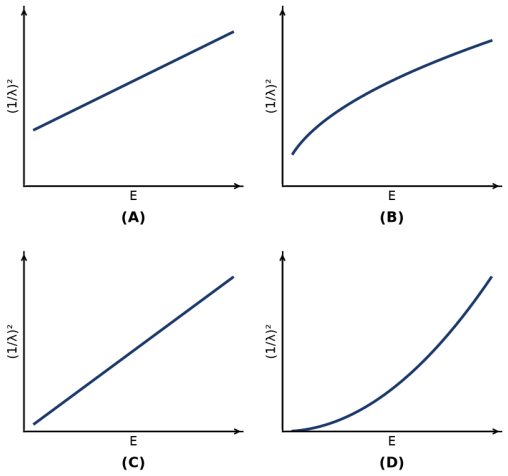
(1) A, B, C and D only

(2) A, C and D only

(3) A, B, D and E only

(4) A and B only

45. The graph which shows the variation of $(1/\lambda)^2$ and the kinetic energy E of a free particle (where λ is the de Broglie wavelength of the particle) is:



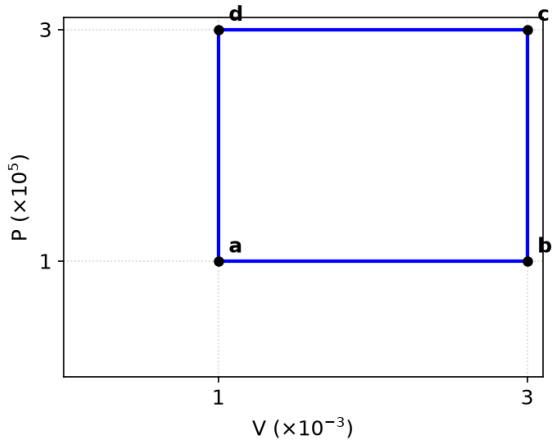
(1) (see figure)

(2) (see figure)

(3) (see figure)

(4) (see figure)

46. A thermodynamic system is taken through the cycle $abcda$. The work done by the gas along the path bc is



(1) 30 J

(2) -90 J

(3) -60 J

(4) Zero

47. Given below are two statements:

Statement I: Atoms are electrically neutral as they contain equal number of positive and negative charges.

Statement II: Atoms of each element are stable and emit their characteristic spectrum.

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

(1) Both Statement I and Statement II are incorrect

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

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

(4) Both Statement I and Statement II are correct

48. Match List I with List II:

List I (Spectral Lines of Hydrogen for transitions from)
(A) $n_2 = 3$ to $n_1 = 2$
(B) $n_2 = 4$ to $n_1 = 2$
(C) $n_2 = 5$ to $n_1 = 2$
(D) $n_2 = 6$ to $n_1 = 2$

List II (Wavelengths (nm))
(I) 410.2
(II) 434.1
(III) 656.3
(IV) 486.1

Choose the correct answer from the options given below:

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

49. The values of Cp/Cv for hydrogen, helium and another ideal diatomic gas X (whose molecules are not rigid but have an additional vibrational mode) are respectively equal to:

(1) 7/5, 5/3, 9/7
(2) 5/3, 7/5, 9/7
(3) 5/3, 7/5, 7/5
(4) 7/5, 5/3, 7/5

50. The volume occupied by 1.8 g of water vapour at 374 °C and 1 bar pressure will be: [Use R = 0.083 bar L K^{-1} mol^{-1}]

(1) 96.66 L
(2) 55.87 L
(3) 3.10 L
(4) 5.37 L

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51. The Henry's law constant (K_H) values of three gases (A, B, C) in water are 145, 2×10^{-5} and 35 kbar, respectively. The solubility of these gases in water follow the order:

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

52. The plot of osmotic pressure (π) vs concentration (mol L^{-1}) for a solution gives a straight line with slope 25.73 L bar mol^{-1}. The temperature at which the osmotic pressure measurement is done is: (Use $R = 0.083$ L bar mol^{-1} K^{-1})

(1) 310 °C
(2) 25.73 °C
(3) 12.05 °C
(4) 37 °C

53. The highest number of helium atoms is present in

(1) 4 u of helium
(2) 4 g of helium
(3) 2.271098 L of helium at STP
(4) 4 mol of helium

54. 1 gram of NaOH is treated with 25 mL of 0.75 M HCl solution. The mass of NaOH left unreacted is

(1) 250 mg

(2) Zero mg

(3) 200 mg

(4) 750 mg

---

55. A compound X contains 32\% of A, 20\% of B and the remaining percentage of C. The empirical formula of X is (atomic masses: A = 64, B = 40, C = 32 u)

(1) $\mathrm{ABC_3}$

(2) $\mathrm{AB_2C_2}$

(3) $\mathrm{ABC_4}$

(4) $\mathrm{A_2BC_2}$

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56. Match List-I with List-II:

List-I (Conversion)
(A) 1 mol of $\mathrm{H_2O}$ to $\mathrm{O_2}$
(B) 1 mol of $\mathrm{MnO_4^-}$ to $\mathrm{Mn^{2+}}$
(C) 1.5 mol of Ca from molten $\mathrm{CaCl_2}$
(D) 1 mol of FeO to $\mathrm{Fe_2O_3}$

List-II (No. of Faraday required)
(i) $3\,F$
(ii) $2\,F$
(iii) $1\,F$
(iv) $5\,F$

Choose the correct match:

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

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

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

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

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57. Mass in grams of copper deposited by passing 9.6487 A current through a voltmeter containing copper sulphate solution for 100 seconds is: (Given: Molar mass of $\mathrm{Cu} = 63$ g mol^{-1}, $1\,F = 96487$ C)

(1) 0.315 g

(2) 31.5 g

(3) 0.0315 g

(4) 3.15 g

---

58. The energy of an electron in the ground state ($n = 1$) for the $\mathrm{He^+}$ ion is $-x$ J. Then the energy of an electron in the $n = 2$ state for the $\mathrm{Be^{3+}}$ ion, in J, is:

(1) $-\dfrac{x}{9}$

(2) $-4x$

(3) $-\dfrac{4x}{9}$

(4) $-x$

---

59. Match List-I with List-II:

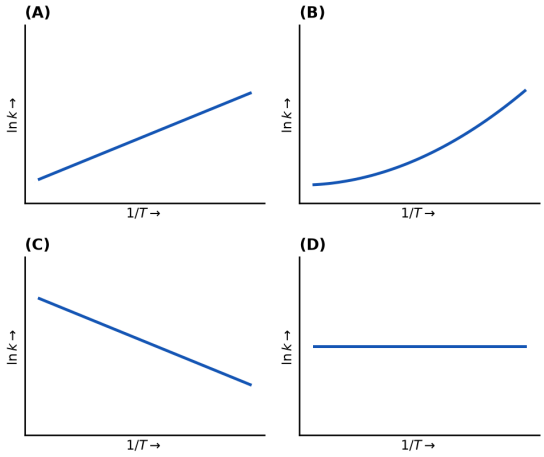
List-I (Quantum Number)
(A) m_l
(B) m_s
(C) l
(D) n

List-II (Information provided)
(I) shape of orbital
(II) size of orbital
(III) orientation of orbital
(IV) orientation of spin of electrons

Choose the correct option:

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

60. Which of the following plots of $\ln k$ versus $\frac{1}{T}$ is consistent with the Arrhenius equation?



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

61. Activation energy of any chemical reaction can be calculated if one knows the value of

(1) Probability of collision.
(2) Orientation of reactant molecules.
(3) rate constants at two different temperatures.
(4) rate constant at standard temperature.

62. Arrange the following elements in increasing order of first ionization enthalpy: Li, Be, B, C, N.

(1) $\mathrm{Li} < \mathrm{B} < \mathrm{Be} < \mathrm{C} < \mathrm{N}$
(2) $\mathrm{Li} < \mathrm{Be} < \mathrm{C} < \mathrm{B} < \mathrm{N}$
(3) $\mathrm{Li} < \mathrm{Be} < \mathrm{N} < \mathrm{B} < \mathrm{C}$
(4) $\mathrm{Li} < \mathrm{Be} < \mathrm{B} < \mathrm{C} < \mathrm{N}$

63. Among Group 16 elements, which one does NOT show the -2 oxidation state?

(1) Se
(2) Te
(3) Po
(4) O

64. Arrange the following elements in increasing order of electronegativity: N, O, F, C, Si.

(1) $Si < C < O < N < F$

(2) $O < F < N < C < Si$

(3) $F < O < N < C < Si$

(4) $Si < C < N < O < F$

65. Identify the correct answer.

(1) BF_3 has non-zero dipole moment

(2) Dipole moment of NF_3 is greater than that of NH_3

(3) Three canonical (resonance) forms can be drawn for CO_3^{2-} ion

(4) Three resonance structures can be drawn for ozone (O_3)

66. Match List-I with List-II.

List-I (Molecule): A. ethane; B. ethene; C. carbon molecule, C_2; D. ethyne

List-II (Number and types of bond/s between the two carbon atoms): I. one σ-bond and two π-bonds; II. two π-bonds; III. one σ-bond; IV. one σ-bond and one π-bond

Choose the correct answer from the options given below:

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

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

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

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

67. Match List-I with List-II.

List-I (Compound): A. NH_3; B. BrF_5; C. XeF_4; D. SF_6

List-II (Shape/geometry): I. Trigonal pyramidal; II. Square planar; III. Octahedral; IV. Square pyramidal

Choose the correct answer from the options given below:

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

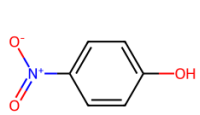
(2) A-III, B-IV, C-I, D-II

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

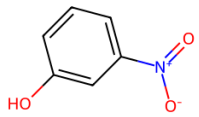
(4) A-I, B-IV, C-II, D-III

68. Intramolecular hydrogen bonding is present in which of the following compounds? (Structures (A), (B) and (D) are shown in the figure; (C) is HF.)

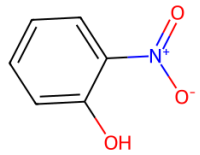
(A)



(B)



(D)



(1) (A)

(2) (B)

(3) HF

(4) (D)

69. 'Spin only' magnetic moment is same for which of the following ions?

A. Ti^{3+}
B. Cr^{2+}
C. Mn^{2+}
D. Fe^{2+}
E. Sc^{3+}

Choose the most appropriate answer from the options given below:

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

70. The E° value for the Mn^{3+}/Mn^{2+} couple is more positive than that of Cr^{3+}/Cr^{2+} or Fe^{3+}/Fe^{2+} due to the change of

(1) d^5 to d^2 configuration
(2) d^4 to d^5 configuration
(3) d^3 to d^5 configuration
(4) d^5 to d^4 configuration

71. The pair of lanthanoid ions which are diamagnetic is

(1) Ce^{3+} and Eu^{2+}
(2) Gd^{3+} and Eu^{3+}
(3) Pm^{3+} and Sm^{3+}
(4) Ce^{4+} and Yb^{2+}

72. Match List-I with List-II:

List-I (Complex)
(a) $[Co(NH_3)_5(NO_2)]Cl_2$
(b) $[Co(NH_3)_5(SO_4)]Br$
(c) $[Co(NH_3)_6][Cr(CN)_6]$
(d) $[Co(H_2O)_6]Cl_3$

List-II (Type of isomerism)
(i) Solvate isomerism
(ii) Linkage isomerism
(iii) Ionization isomerism
(iv) Coordination isomerism

Choose the correct option:

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

73. Given below are two statements:

Statement I: Both $[Co(NH_3)_6]^{3+}$ and $[CoF_6]^{3-}$ complexes are octahedral but differ in their magnetic behaviour.

Statement II: $[Co(NH_3)_6]^{3+}$ is diamagnetic whereas $[CoF_6]^{3-}$ is paramagnetic.

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

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

74. Given below are two statements:

Statement I: $[Co(NH_3)_6]^{3+}$ is a homoleptic complex whereas $[Co(NH_3)_4Cl_2]^{+}$ is a heteroleptic complex.

Statement II: Complex $[Co(NH_3)_6]^{3+}$ has one kind of ligands but $[Co(NH_3)_4Cl_2]^{+}$ has more than one kind of ligands.

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

(1) Both Statement I and Statement II are false

(2) Statement I is true but Statement II is false

(3) Statement I is false but Statement II is true

(4) Both Statement I and Statement II are true.

---

75. The compound that will undergo S_N1 reaction with the fastest rate is

(1) cyclohexyl bromide (bromocyclohexane)

(2) bromobenzene

(3) $C_6H_5-CHBr-CH_3$ (1-bromoethylbenzene)

(4) cyclohexylmethyl bromide ($C_6H_{11}-CH_2Br$)

---

76. The products A and B obtained in the following reactions, respectively are

$3\,ROH + PCl_3 \longrightarrow 3\,RCl + A$

$ROH + PCl_5 \longrightarrow RCl + HCl + B$

(1) $POCl_3$ and H_3PO_4

(2) H_3PO_4 and $POCl_3$

(3) H_3PO_3 and $POCl_3$

(4) $POCl_3$ and H_3PO_3

---

77. Identify the major product C formed in the following reaction sequence:

$CH_3CH_2CH_2I \xrightarrow{NaCN} A \xrightarrow[OH^-]{\text{partial hydrolysis}} B \xrightarrow{NaOH+Br_2} C$ (major)

(1) butylamine

(2) butanamide

(3) α-bromobutanoic acid

(4) propylamine

---

78. Major products A and B formed in the following reaction sequence are:

2-methylcyclohexan-1-ol $\xrightarrow{PBr_3} A$ (major) $\xrightarrow[\Delta]{\text{alc. KOH}} B$ (major)

(1) $A =$ 1-bromo-1-methylcyclohexane; $B =$ 3-methylcyclohexene

(2) $A =$ 1-bromo-2-methylcyclohexane; $B =$ 3-methylcyclohexene

(3) $A =$ 2-methylcyclohexan-1-ol (unchanged); $B =$ 2-methylcyclohexan-1-one

(4) $A =$ 1-bromo-2-methylcyclohexane; $B =$ 1-methylcyclohexene

---

79. In which of the following processes does entropy increase?

A. A liquid evaporates to vapour.

B. Temperature of a crystalline solid is lowered from $130\ K$ to $0\ K$.

C. $2\,NaHCO_3\,(s) \longrightarrow Na_2CO_3\,(s) + CO_2\,(g) + H_2O\,(g)$

D. $Cl_2\,(g) \longrightarrow 2\,Cl\,(g)$

Choose the correct option:

(1) A, B and D

(2) A, C and D

(3) C and D

(4) A and C

80. The work done during the reversible isothermal expansion of one mole of hydrogen gas at $25^{\circ}\mathrm{C}$ from a pressure of 20 atmosphere to 10 atmosphere is: (Given $R = 2.0\ \mathrm{cal\,K^{-1}mol^{-1}}$)

(1) -413.14 calories

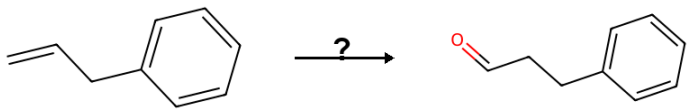
(2) 413.14 calories

(3) 100 calories

(4) 0 calories

---

81. Identify the correct reagents that would bring about the following transformation (an alkene converted, via the anti-Markovnikov primary alcohol, to an aldehyde):



(1) (i) $\mathrm{BH_3}$, (ii) $\mathrm{H_2O_2/OH^-}$, (iii) PCC

(2) (i) $\mathrm{BH_3}$, (ii) $\mathrm{H_2O_2/OH^-}$, (iii) alk. $\mathrm{KMnO_4}$, (iv) $\mathrm{H_3O^+}$

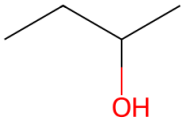
(3) (i) $\mathrm{H_2O/H^+}$, (ii) PCC

(4) $\mathrm{H_2O/H^+}$

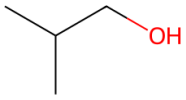
---

82. Which one of the following alcohols reacts instantaneously with Lucas reagent?

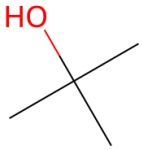
(A)



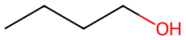
(B)



(C)



(D)



(1) (A)

(2) (B)

(3) (C)

(4) (D)

---

83. Identify the correct reagents that would bring about the following transformation:

$$\mathrm{C_6H_5-CH_2-CH{=}CH_2 \longrightarrow C_6H_5-CH_2-CH_2-CHO}$$

(allylbenzene is converted to 3-phenylpropanal)

(1) (i) $\mathrm{BH_3}$, (ii) $\mathrm{H_2O_2/OH^-}$, (iii) PCC

(2) (i) $\mathrm{BH_3}$, (ii) $\mathrm{H_2O_2/OH^-}$, (iii) alk. $\mathrm{KMnO_4}$, (iv) $\mathrm{H_3O^+}$

(3) (i) $\mathrm{H_2O/H^+}$, (ii) PCC

(4) $\mathrm{H_2O/H^+}$

84. Fehling's solution 'A' is:

(1) alkaline copper sulphate

(2) alkaline solution of sodium potassium tartrate (Rochelle's salt)

(3) aqueous sodium citrate

(4) aqueous copper sulphate

---

85. Match List-I with List-II:

List-I (Reaction)
(a) $C_6H_6 \longrightarrow C_6H_5-CO-C_6H_5$ (benzophenone)
(b) Alkene $\longrightarrow$ carbonyl (oxidative cleavage)
(c) $C_6H_5-OH \longrightarrow$ carbonyl (oxidation)
(d) $C_6H_5-CH_2-CH_3 \longrightarrow C_6H_5-COOH$

List-II (Reagents/Condition)
(i) C_6H_5COCl, anhyd. $AlCl_3$
(ii) CrO_3
(iii) $KMnO_4/KOH, \Delta$
(iv) (1) O_3, (2) $Zn-H_2O$

Choose the correct option:

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

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

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

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

---

86. Identify the correct reagents that would bring about the transformation $C_6H_5-CH_2-CH=CH_2 \longrightarrow C_6H_5-CH_2-CH_2-CHO$ (allylbenzene to 3-phenylpropanal).

(1) (i) BH_3, (ii) H_2O_2/OH^-, (iii) PCC

(2) (i) BH_3, (ii) H_2O_2/OH^-, (iii) alk. $KMnO_4$, (iv) H_3O^+

(3) (i) H_2O/H^+, (ii) PCC

(4) H_2O/H^+

---

87. Which reaction is NOT a redox reaction?

(1) $2\,KClO_3 + I_2 \longrightarrow 2\,KIO_3 + Cl_2$

(2) $H_2 + Cl_2 \longrightarrow 2\,HCl$

(3) $BaCl_2 + Na_2SO_4 \longrightarrow BaSO_4 + 2\,NaCl$

(4) $Zn + CuSO_4 \longrightarrow ZnSO_4 + Cu$

---

88. Given below are two statements:
Statement I: Aniline does not undergo Friedel-Crafts alkylation reaction.
Statement II: Aniline cannot be prepared through Gabriel synthesis.
In the light of the above statements, choose the correct answer from the options given below:

(1) Both Statement I and Statement II are false

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

(3) Statement I is incorrect but Statement II is true

(4) Both Statement I and Statement II are true

---

89. Identify the major product C formed in the following reaction sequence:

$$CH_3CH_2CH_2I \xrightarrow{NaCN} A \xrightarrow[\text{partial hydrolysis}]{OH^-/NaOH} B \xrightarrow{Br_2/NaOH} C$$

(1) butylamine

(2) butanamide

(3) α-bromobutanoic acid

(4) propylamine

90. The reagents with which glucose does NOT react to give the corresponding test/product are:

A. Tollen's reagent

B. Schiff's reagent

C. HCN

D. NH_2OH

E. $NaHSO_3$

Choose the correct option from those given below:

(1) A and D

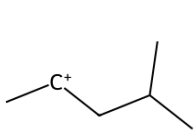
(2) B and E

(3) E and D

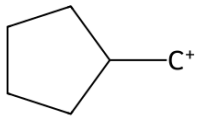
(4) B and C

91. The most stable carbocation among the following is:

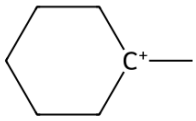
(A)



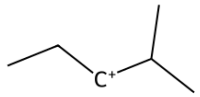
(B)



(C)



(D)



(1) (A)

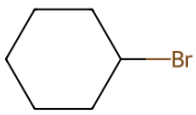
(2) (B)

(3) (C)

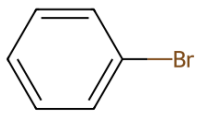
(4) (D)

92. The compound that will undergo SN1 reaction with the fastest rate is:

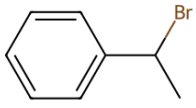
(A)



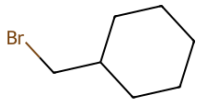
(B)



(C)



(D)



(1) (A)

(2) (B)

(3) (C)

(4) (D)

93. A compound with a molecular formula C_6H_{14} has two tertiary carbons. Its IUPAC name is:

(1) 2-methylpentane

(2) 2,3-dimethylbutane

(3) 2,2-dimethylbutane

(4) n-hexane

---

94. On heating, some solid substances change from the solid to the vapour state without passing through the liquid state. The technique used for the purification of such substances based on the above principle is known as:

(1) Sublimation

(2) Distillation

(3) Chromatography

(4) Crystallization

---

95. A compound X contains 32% of A, 20% of B and the remaining percentage of C. The empirical formula of X is (given atomic masses A = 64, B = 40, C = 32 u):

(1) ABC_3

(2) AB_2C_2

(3) ABC_4

(4) A_2BC_2

---

96. A compound with a molecular formula of C_6H_{14} has two tertiary carbons. Its IUPAC name is:

(1) 2-methylpentane

(2) 2,3-dimethylbutane

(3) 2,2-dimethylbutane

(4) n-hexane

---

97. Given below are two statements:

Statement I: The boiling point of three isomeric pentanes follows the order n-pentane > isopentane > neopentane.

Statement II: When branching increases, the molecule attains a shape of sphere. This results in smaller surface area for contact, due to which the intermolecular forces between the spherical molecules are weak, thereby lowering the boiling point.

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

(1) Both statement I and statement II are incorrect

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

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

(4) Both statement I and statement II are correct

98. Match List-I with List-II.

List-I (Reaction):

A. Cyclohexene (cyclic alkene) $\rightarrow$ open-chain dicarbonyl compound

B. Benzene $\rightarrow$ benzophenone (diphenyl ketone, $C_6H_5-CO-C_6H_5$)

C. Cyclohexanol ($-OH$) $\rightarrow$ cyclohexanone ($C=O$)

D. Ethylbenzene ($C_6H_5-CH_2CH_3$) $\rightarrow$ benzoic acid (C_6H_5-COOH)

List-II (Reagents/Condition):

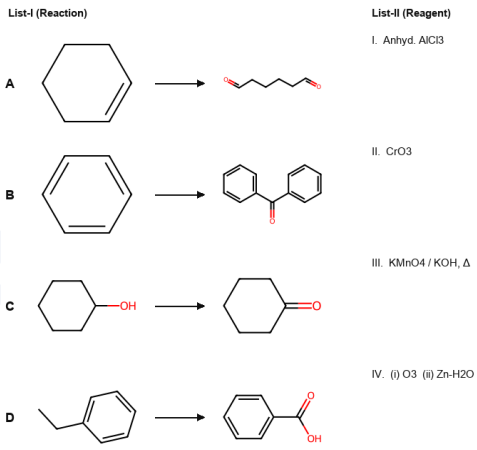
I. Anhyd. $AlCl_3$

II. CrO_3

III. $KMnO_4/KOH,\ \Delta$

IV. (i) O_3, (ii) $Zn-H_2O$

Choose the correct answer from the options given below:



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

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

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

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

99. For the given reaction, 'P' is:

$$C_6H_5-CH=CH-C_6H_5 \xrightarrow{KMnO_4/H^+} P \text{ (major product)}$$

(stilbene undergoes oxidation with hot acidic potassium permanganate)

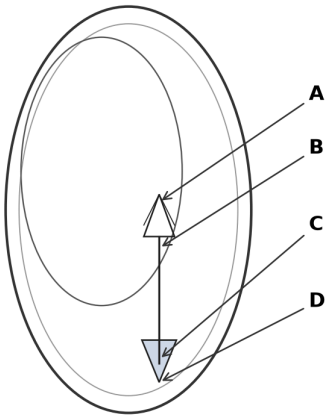
(1) C_6H_5-COOH (benzoic acid)

(2) $C_6H_5-CH(OH)-CH(OH)-C_6H_5$ (a 1,2-diol)

(3) $C_6H_5-CO-CO-C_6H_5$ (a 1,2-diketone)

(4) C_6H_5-CHO (benzaldehyde)

100. Identify the part seed from the given figure which is destined to form root when the seed germinates.



(1) B

(2) C

(3) D

(4) A

101. Identify the set of correct statements:

A. The flowers of Vallisneria are colorful and produce nectar.
B. The flowers of waterlily are not pollinated by water.
C. In most of water pollinated species, the pollen grains are protected from wetting.
D. Pollen grains of some hydrophytes are long and ribbon like.
E. In sumo hydrophytes, the pollen grains are carried passively inside water.
Choose the correct answer from the options given below:

(1) A, B, C and D only

(2) A, C, D and E only

(3) B, C, D and E only

(4) C, D and E only

102. [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:

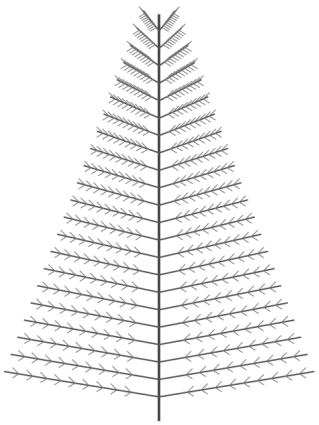
(1) A is true but R is false

(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

103. Identify the correct description about given figure.



(1) Water pollinated flowers showing stamens with mucilaginous covering.

(2) Cleistogamous flowers showing Endogamy.

(3) Compact inflorescence showing complete autogamy

(4) Wind pollinated plant inflorescence showing flowers with well exposed stamens.

104. Which one of the following is not a criterion for classification of fungi?

(1) Mode of nutrition

(2) Mode of spore formation

(3) Fruiting body

(4) Morphology of mycelium

105. Match List I with List II:

List I
A. Rhizopus
B. Ustilago
C. Puccinia
D. Agaricus

List II
I. Mushroom
II. Smut fungus
III. Bread mould
IV. Rust fungus

Choose the correct answer from the options given below:

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

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

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

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

106. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: Breast-feeding during initial period of infant growth is recommended by doctors for bringing a healthy baby.
Reason R: Colostrum contains several antibodies absolutely essential to develop resistance for the new-born baby.
In the light of the above statements, choose the most appropriate answer from the options given below:

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

(2) A is correct but R is not correct.

(3) A is not correct but R is correct.

(4) Both A and R are correct, and R is the correct explanation of A.

107. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:
Assertion A: FSH acts upon ovarian follicles in female and Leydig cells in male.
Reason R: Growing ovarian follicles secrete estrogen in female while interstitial cells secrete androgen in male human being.
In the light of the above statements, choose the correct answer from the options given below:

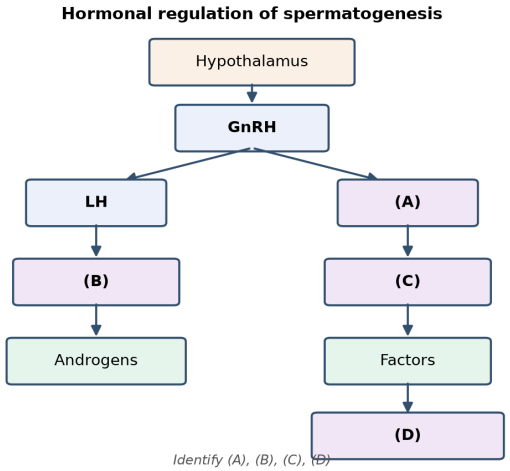
(1) Both A and R true but R is NOT the correct explanation of A.

(2) A is true but R is false

(3) A is false but R is true

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

108. Identify the correct option (A), (B), (C), (D) with respect to spermatogenesis.



(1) ICSH, Interstitial cells, Leydig cells, spermatogenesis

(2) FSH, Sertoli cells, Leydig cells, spermatogenesis

(3) ICSH, Leydig cells, Sertoli cells, spermatogenesis

(4) FSH, Leydig cells, Sertoli cells, spermatogenesis

109. Read the following statements and choose the set of correct statements:
In the members of Phaeophyceae,
A. Asexual reproduction occurs usually by biflagellate zoospores.
B. Sexual reproduction is in oogamous method only.
C. Stored food is in the form of carbohydrates which is either mannitol or laminarin.
D. The major pigments found are chlorophyll a, c and carotenoids and xanthophyll.
E. Vegetative cells have a cellulosic wall, usually covered on the outside by gelatinous coating of algin.
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, B, C and E only

(4) A, B, C and D only

110. Which of the following is not a natural/traditional contraceptive method?

(1) Periodic abstinence
(2) Lactational amenorrhea
(3) Vaults
(4) Coitus interruptus

---

111. Match List I with List II:

List I
(A) Non-medicated IUD
(B) Copper releasing IUD
(C) Hormone releasing IUD
(D) Implants

List II
(i) Multiload 375
(ii) Progestogens
(iii) Lippes loop
(iv) LNG-20

Choose the correct answer from the options given below:

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

---

112. The following are the statements about non-chordates:

A. Pharynx is perforated by gill slits.
B. Notochord is absent.
C. Central nervous system is dorsal.
D. Heart is dorsal if present.
E. Post anal tail is absent.

Choose the most appropriate answer from the options given below:

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

---

113. Match List I with List II:

List I
A. Pterophyllum
B. Myxine
C. Pristis
D. Exocoetus

List II
I. Hag fish
II. Saw fish
III. Angel fish
IV. Flying fish

Choose the correct answer from the options given below:

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

114. Match List I with List II:

List I
A. Pleurobrachia
B. Radula
C. Stomochord
D. Air bladder

List II
I. Mollusca
II. Ctenophora
III. Osteichthyes
IV. Hemichordata

Choose the correct answer from the options given below:

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

115. Consider the following statements:

A. Annelids are true coelomates
B. Poriferans are pseudocoelomates
C. Aschelminthes are acoelomates
D. Platyhelminthes are pseudocoelomates

Choose the correct answer from the options given below:

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

116. A pink flowered Snapdragon plant was crossed with a red flowered Snapdragon plant. What type of phenotype/s is/are expected in the progeny?

(1) Red flowered as well as pink flowered plants

(2) Only pink flowered plants

(3) Red, Pink as well as white flowered plants

(4) Only red flowered plants

---

117. In a plant, black seed color (BB/bb) is dominant, over white seed color (bb). In order to find out the genotype of the black seed plant, which of the following genotype will you cross it?

(1) bb

(2) Bb

(3) BB/Bb

(4) BB

---

118. As per ABO blood grouping system, the blood group of father is B+, mother is A+ and child is O+. Their respective genotype can be

A. IBi / IAi / ii

B. IBIB / IAIA / ii

C. IAIB / iIA / iBi

D. IAi / IBi / IAi

E. iIB / iIA / IAIB

Choose the most appropriate answer from the options given below.

(1) B only

(2) C & B

(3) D & E only

(4) A only

---

119. Match List I with List II:

List I

A. Down's syndrome

B. α-Thalassemia

C. β-Thalassemia

D. Klinefelter's syndrome

List II

I. 11th chromosome

II. 'X' chromosome

III. 21st chromosome

IV. 16th chromosome

Choose the correct answer from the options given below:

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

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

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

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

---

120. Match List I with List II.

List I

A. Two or more alternative forms of a gene

B. Cross of F1 progeny with homozygous recessive parent

C. Cross of F1 progeny with any of the parents

D. Number of chromosome sets in plant.

List II

I. Back cross

II. Ploidy

III. Allele

IV. Test cross

Choose the correct answer from the options given below.

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

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

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

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

121. Which one of the following can be explained on the basis of Mendel's law of Dominance?

A. Out of one pair of factors one is dominant and the other is recessive.

B. Alleles do not show any expression and both the character appear as such in F2 generation.

C. Factors occur in pairs in normal diploid plants.

D. The discrete unit controlling a particular character is called factor.

E. The expression of only one of the parental characters is found in a monohybrid cross.

Choose the correct answer from the options given below:

(1) A, C, D and E only

(2) B, C, and D only

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

(4) A, B and C only

122. Match List I with List II.

List I:

A. Frederick Griffith

B. Francois Jacob & Jacque Monod

C. Har Gobind Khorana

D. Meselson & Stahl

List II:

I. Genetic code

II. Semi-conservative mode of DNA replication

III. Transformation

IV. Lac operon

Choose the correct answer from the options given below.

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

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

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

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

123. A transcription unit in DNA is defined primarily by the three regions in DNA and these are with respect to upstream and down stream end.

(1) Structural gene, Transposons, Operator gene

(2) Inductor, Repressor, Structural gene

(3) Promotor, Structural gene, Terminator

(4) Repressor, Operator gene, Structural gene

124. Which of the following statements is correct regarding the process of replication in E.coli ?

(1) The DNA dependent RNA polymerase catalyses polymerization in one direction, that is 5′ → 3′.

(2) The DNA dependent DNA polymerase catalyses polymerization in 5′ → 3′ as well as 3′ → 5′ direction.

(3) The DNA dependent DNA polymerase catalyses polymerization in 5′ → 3′ direction.

(4) The DNA dependent DNA polymerase catalyses polymerization in one direction that is 3′ → 5′.

125. Which one is the correct product of DNA dependent RNA polymerase to the given template?
3'TACATGGCAAATATCCATTCA5'

(1) 5’AUGUAAAGUUUAUAGGUAAGU3’

(2) 5’AUGUACCGUUUAUAGGGAAGU3’

(3) 5’ATGTACCCTTTATAGGTAAGT3’

(4) 5’AUGUACCGUUUAUAGGUAAGU3’

126. Match List I with List II.
List I:
A. RNA polymerase III
B. Termination of transcription
C. Splicing of Exons
D. TATA box
List II:
I. snRNP's
II. Promotor
III. Rho factor
IV. SnRNAs, tRNA
Choose the correct answer from the options given below.

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

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

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

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

127. The lactose present in the growth medium of bacteria is transported to the cell by the action of:

(1) Acetylase

(2) Permease

(3) Polymerase

(4) Beta-galactosidase

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

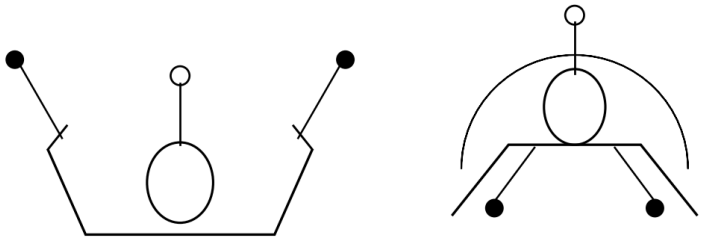
(1) Pea

(2) Chilli

(3) Petunia

(4) Datura

129. Identify the type of flowers based on the position of calyx, corolla and androecium with respect to the ovary from the given figures (a) and (b).



(a) Perigynous

(b) Hypogynous

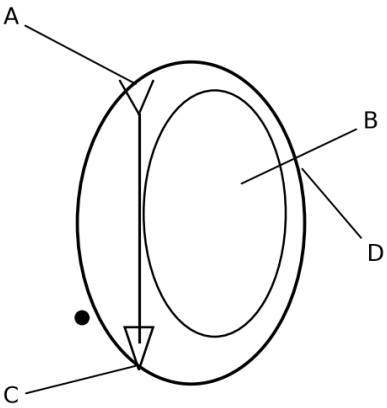
(1) Hypogynous; (b) Epigynous

(2) Perigynous; (b) Epigynous

(3) Perigynous; (b) Hypogynous

(4) Epigynous; (b) Perigynous

130. Identify the part of seed from the given figure which is destined to form root when the seed germinates.



L.S. of a dicot seed

(1) B

(2) C

(3) D

(4) A

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

(1) Cassia

(2) Pisum

(3) Sesbania

(4) Datura

132. Match List I with List II.
List I (A. Rose, B. Pea, C. Cotton, D. Mango)
List II (I. Twisted aestivation, II. Perigynous flower, III. Drupe, IV. Marginal placentation)
Choose the correct answer from the options given below.

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

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

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

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

133. Match List I with List II.
List I (Types of Stamens) (A. Monadelphous, B. Diadelphous, C. Polyadelphous, D. Epiphyllous)
List II (Example) (I. Citrus, II. Pea, III. Lily, IV. China-rose)
Choose the correct answer from the options given below.

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

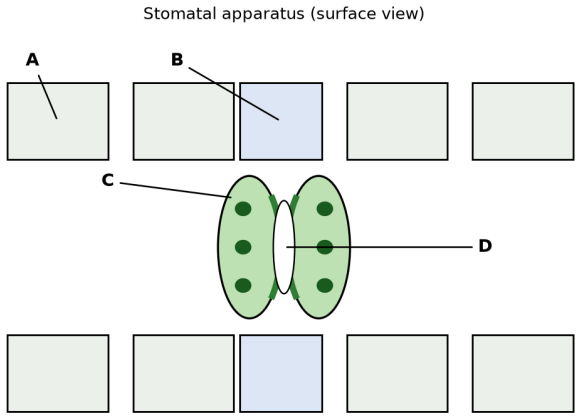
134. Bulliform cells are responsible for

(1) Protecting the plant from salt stress.
(2) Increased photosynthesis in monocots.
(3) Providing large spaces for storage of sugars.
(4) Inward curling of leaves in monocots.

135. (Out of syllabus but asked in last 3 years) Formation of interfascicular cambium from fully developed parenchyma cells is an example for

(1) Redifferentiation
(2) Dedifferentiation
(3) Maturation
(4) Differentiation

136. In the given figure of the stomatal apparatus, which component has thin outer walls and highly thickened inner walls?



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

137. Given below are two statements.

Statements:
Statement I: Parenchyma is living but collenchyma is dead tissue.
Statement II: Gymnosperms lack xylem vessels but presence of xylem vessels is the characteristic of angiosperms.

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

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

138. Flippers of Penguins and Dolphins are examples of:

(1) Industrial melanism
(2) Natural selection
(3) Adaptive radiation
(4) Convergent evolution

139. The flippers of the Penguins and Dolphins are the example of the

(1) Natural selection

(2) Convergent evolution

(3) Divergent evolution

(4) Adaptive radiation

140. Given below are some stages of human evolution. Arrange them in correct sequence. (Past to Recent)

A. Homo habilis
B. Homo sapiens
C. Homo neanderthalensis
D. Homo erectus

Choose the correct sequence of human evolution from the options given below:

(1) B-A-D-C

(2) C-B-D-A

(3) A-D-C-B

(4) D-A-C-B

141. Which of the following factors will not affect the Hardy-Weinberg equilibrium?

(1) Genetic drift

(2) Gene migration

(3) Constant gene pool

(4) Genetic recombination

142. Match List I with List II:

List I
List II

A. Common cold
B. Haemozoin
C. Widal test
D. Allergy

I. Plasmodium
II. Typhoid
III. Rhinoviruses
IV. Dust mites

Choose the correct answer from the options given below:

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

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

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

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

143. Which of the following are Autoimmune disorders?

A. Myasthenia gravis
B. Rheumatoid arthritis
C. Gout
D. Muscular dystrophy
E. Systemic Lupus Erythematosus (SLE)

Choose the most appropriate answer from the options given below

(1) A, B and E only

(2) B, C and E only

(3) C, D and E only

(4) A, B and D only

144. Match List I with List II:

List I

List II

A. Cocaine

B. Heroin

C. Morphine

D. Marijuana

I. Effective sedative in surgery

II. Cannabis sativa

III. Erythroxylum

IV. Papaver somniferum

Choose the correct answer from the options given below:

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

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

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

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

145. Match List I with List II:

List I

List II

A. Typhoid

B. Leishmaniasis

C. Ringworm

D. Filariasis

I. Fungus

II. Nematode

III. Protozoa

IV. Bacteria

Choose the correct answer from the options given below:

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

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

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

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

146. Given below are two statements:

Statement I: Bone marrow is the main lymphoid organ where all blood cells including lymphocytes are produced.

Statement II: Both Bone marrow and thymus provide micro environments for the development and maturation of T-lymphocytes.

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

(1) Both Statement I and Statement II are incorrect.

(2) Statement I is Correct but Statement II is incorrect.

(3) Statement I is incorrect but Statement II is correct.

(4) Both Statement I and Statement II are correct.

147. Match List I with List II.

List I
A. Unicellular glandular epithelium
B. Compound epithelium
C. Multicellular glandular epithelium
D. Endocrine glandular epithelium

List II
I. Salivary Glands
II. Pancreas
III. Goblet cells of alimentary canal
IV. Moist surface of buccal cavity

Choose the correct answer from the options given below:

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

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

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

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

148. In both sexes of cockroach, a pair of jointed filamentous structures called anal cerci are present on:

(Out of syllabus but asked in last 3 years)

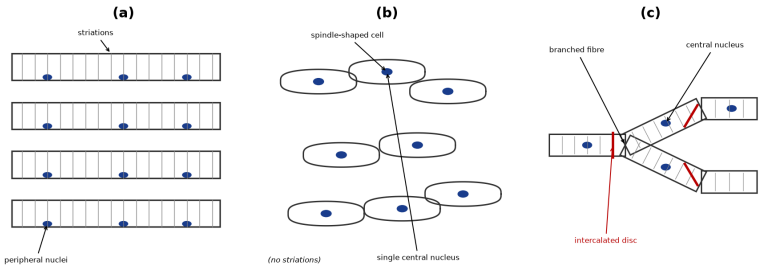
(1) 10th segment

(2) 8th and 9th segment

(3) 11th segment

(4) 5th segment

149. Three types of muscles are given as a, b and c. Identify the correct matching pair along with their location in the human body.



(1) Skeletal - Triceps, (b) Smooth - Stomach, (c) Cardiac - Heart

(2) Skeletal - Biceps, (b) Involuntary - Intestine, (c) Smooth - Heart

(3) Involuntary - Nose tip, (b) Skeletal - Bone, (c) Cardiac - Heart

(4) Smooth - Toes, (b) Skeletal - Legs, (c) Cardiac - Heart

150. Match List I with List II.

List I
A. The structures used for storing of food.
B. Ring 6-8 blind tubules at junction of foregut and midgut.
C. Ring of 100-150 yellow coloured thin filaments at junction of midgut and hindgut.
D. The structures used for grinding the food.

List II
I. Gizzard
II. Gastric Caeca
III. Malpighian tubules
IV. Crop

Choose the correct answer from the options given below:

(Out of syllabus but asked in last 3 years)

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

151. Match List I with List II:
List I
A. Axoneme
B. Cartwheel pattern
C. Crista
D. Satellite
List II
I. Centriole
II. Cilia and flagella
III. Chromosome
IV. Mitochondria
Choose the correct answer from the options given below:

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

152. The DNA present in chloroplast is

(1) Circular, double, stranded
(2) Linear, single stranded
(3) Circular, single stranded
(4) Linear, double stranded

153. Given below are two statements :
Statement I : Mitochondria and chloroplasts are both double membrane bound organelles.
Statement II : Inner membrane of Mitochondria is relatively less permeable, as compared to chloroplast.
In the light of the above statements. choose the correct answer from the options given below :

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

154. Match list I with list II.

List I

A. Nucleolus

B. Centriole

C. Leucoplasts

D. Golgi apparatus

List II

I. Site of formation of glycolipid

II. Organisation like the cartwheel

III. Site for active ribosomal RNA synthesis

IV. For storing nutrients

Choose the correct answer from the options given below.

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

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

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

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

155. Match List I with List II.

List I List II

A. Clostridium butylicum I. Ethanol

B. Saccharomyces cerevisiae II. Streptokinase

C. Trichoderma polysporum III. Butyric acid

D. Streptococcus sp. IV. Cyclosporin-A

Choose the correct answer from the options given below.

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

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

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

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

156. Inhibition of Succinic dehydrogenase enzyme by malonate is a classical example of

(1) Feedback inhibition

(2) Competitive inhibition

(3) Enzyme activation

(4) Cofactor inhibition

157. Match list I with list II.

List I: A. GLUT-4; B. Insulin; C. Trypsin; D. Collagen

List II: I. Hormone; II. Enzyme; III. Intercellular ground substance; IV. Enables glucose transport into cells

Choose the correct answer from the options given below.

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

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

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

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

158. Regarding catalytic cycle of an enzyme action, select the correct sequential steps:

A. Substrate enzyme complex formation.

B. Free enzyme ready to bind with another substrate.

C. Release of products.

D. Chemical bonds of the substrate broken.

E. Substrate binding to active site.

Choose the correct answer from the options given below:

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

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

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

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

159. Lecithin, a small molecular weight organic compound found in living tissues, is an example of

(1) Phospholipids

(2) Glycerides

(3) Carbohydrates

(4) Amino acids

160. The cofactor of the enzyme carboxypeptidase is

(1) Niacin

(2) Flavin

(3) Haem

(4) Zinc

161. Match List I with List II:
List I: A. Lipase; B. Nuclease; C. Protease; D. Amylase
List II: I. Peptide bond; II. Ester bond; III. Glycosidic bond; IV. Phosphodiester bond
Choose the correct answer from the options given below:

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

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

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

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

162. The "Ti plasmid" of Agrobacterium tumefaciens stands for

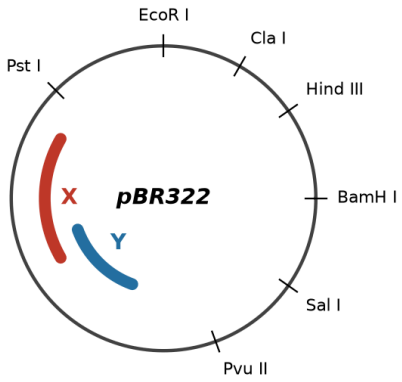
(1) Tumor independent plasmid

(2) Tumor inducing plasmid

(3) Temperature independent plasmid

(4) Tumour inhibiting plasmid

163. The following diagram showing restriction sites in E coli cloning vector pBR322. Find the role of 'X' and 'Y' genes:



(1) The gene 'X' is responsible for controlling the copy number of the linked DNA and 'Y' for protein involved in the replication of plasmid.

(2) The gene 'X' is for protein involved in replication of plasmid and 'Y' for resistance to antibiotics.

(3) Gene 'X' is responsible for recognition sites and 'Y' is responsible for antibiotic resistance.

(4) The gene 'X' is responsible for resistance to antibiotics and 'Y' for protein involved in the replication of plasmid.

164. Given below are two statements:
Statement I: Bt toxins are insect group specific and coded by a gene cry 1Ac.
Statement II: Bt toxin exists as inactive protoxin in B. thuringiensis. However, after ingestion by the insect the inactive protoxin gets converted into active form due to acidic pH of the insect gut.
In the light of the above statements, choose the correct answer from the options given below:

(1) Both Statement I and Statement II are false

(2) Statement I is true but Statement II is false

(3) Statement I is false but Statement II is true

(4) Both Statement I and Statement II are true

165. Match List I with List II.

List I

A. α-1 antitrypsin

B. Cry 1Ab

C. Cry 1Ac

D. Enzyme replacement therapy

List II

I. Cotton bollworm

II. ADA deficiency

III. Emphysema

IV. Corn borer

Choose the correct answer from the options given below.

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

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

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

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

166. Following are the stages of cell division:

A. Gap 2 phase

B. Cytokinesis

C. Synthesis phase

D. Karyokinesis

E. Gap 1 phase

Choose the correct sequence of stages from the options given below:

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

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

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

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

167. Given below are two statements.

Statement 1: Chromosomes become gradually visible under light microscope during leptotene stage.

Statement 2: The beginning of diplotene stage is recognized by dissolution of synaptonemal complex.

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

(1) Both Statement I and Statement II are false

(2) Statement I is true but Statement II is false

(3) Statement I is false but Statement II is true

(4) Both Statement I and Statement II are true

168. Match List-I with List-II:

List-I (Sub Phases of Prophase I)

A. Diakinesis

B. Pachytene

C. Zygotene

D. Leptotene

List-II (Specific characters)

I. Synaptonemal complex formation

II. Completion of terminalisation of chiasmata

III. Chromosomes look like thin threads

IV. Appearance of recombination nodules

Choose the correct answer from the options given below:

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

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

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

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

169. Spindle fibres attach to kinetochores of chromosomes during

(1) Metaphase

(2) Anaphase

(3) Telophase

(4) Prophase

170. The equation of Verhulst-Pearl logistic growth is dN/dt = rN[(K-N)/K]. From this equation, K indicates.

(1) Biotic potential

(2) Carrying capacity

(3) Population density

(4) Intrinsic rate of natural increase

171. Given below are two statements:

Statement I: Gause's competitive exclusion principle states that two closely related species competing for different resources cannot exist indefinitely.
Statement II: According to Gause's principle, during competition, the inferior will be eliminated. This may be true if resources are limiting.

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

(1) Both Statement I and Statement II are false.

(2) Statement I is true but Statement II is false.

(3) Statement I is false but Statement II is true.

(4) Both Statement I and Statement II are true.

172. How many molecules of ATP and NADPH are required for every molecule of CO_2 fixed in the Calvin cycle

(1) 2 molecules of ATP and 2 molecules of NADPH

(2) 3 molecules of ATP and 3 molecules of NADPH

(3) 3 molecules of ATP and 2 molecules of NADPH

(4) 2 molecules of ATP and 3 molecules of NADPH

173. Which of the following are required for the dark reaction of photosynthesis?
A. Light
B. Chlorophyll
C. CO_2
D. ATP
E. NADPH
Choose the correct answer from the options given below:

(1) B, C and D only

(2) C, D and E only

(3) D and E only

(4) A, B and C only

174. Given below are two statements.
Statement 1: in C3 plants, some O_2 binds to RuBisCO, hence CO_2 fixation is decreased.
Statement 2: In C4 plants, mesophyll cells show very little photorespiration while bundle sheath cells do not show photorespiration.
In the light of the above statements, choose the correct answer from the options given below.

(1) Both Statement I and Statement II are false

(2) Statement I is true but Statement II is false

(3) Statement I is false but Statement II is true

(4) Both Statement I and Statement II are true

175. In an ecosystem if the Net primary Productivity (NPP) of first trophic level is 100x kcal m^{-2} yr^{-1}, what would be the GPP (Gross Primary Productivity) of the third trophic level of the same ecosystem?

(1) x kcal m^{-2} yr^{-1}

(2) 10x kcal m^{-2} yr^{-1}

(3) (100/3)x kcal m^{-2} yr^{-1}

(4) (x/10) kcal m^{-2} yr^{-1}

176. Match List I with List II:

List I
A. Citric acid cycle
B. Glycolysis
C. Electron transport system
D. Proton gradient

List II
I. Cytoplasm
II. Mitochondrial matrix
III. Intermembrane space of mitochondria
IV. Inner mitochondrial membrane

Choose the correct answer from the options given below:

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

177. The type of conservation in which the threatened species are taken out from their natural habitat and placed in special setting when they can he protected and given special care is called

(1) Biodiversity conservation
(2) Semi-conservative method
(3) Sustainable development
(4) in-situ conservation

178. These are regarded as major causes of biodiversity loss:
A. Over exploitation
B. Co-extinction
C. Mutation
D. Habitat loss and fragmentation
E. Migration
Choose the correct option:

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

179. List of endangered species was released by

(1) WWF
(2) FOAM
(3) IUCN
(4) GEAC

180. Match List I with List II.

List I

A. Robert May

B. Alexander von Humboldt

C. Paul Ehrlich

D. David Tilman

List II

I. Species-Area relationship

II. Long term ecosystem experiment using out door plots

III. Global species diversity at about 7 million

IV. Rivet popper hypothesis

Choose the correct answer from the options given below.

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

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

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

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

181. Formation of interfascicular cambium from fully developed parenchyma cells is an example for

(1) Redifferentiation

(2) Dedifferentiation

(3) Maturation

(4) Differentiation

182. Auxin is used by gardeners to prepare weed-free lawns. But no damage is caused to grass as auxin

(1) promotes abscission of mature leaves only

(2) does not affect mature monocotyledon plants

(3) can help in cell division in grasses, to produce growth

(4) promotes apical dominance

183. The capacity to generate a whole plant from any cell of the plant is called

(1) Micropropagation

(2) Differentiation

(3) Somatic hybridization

(4) Totipotency

184. Spraying sugarcane crop with which of the following plant growth regulators, increases the length of stem, thus, increasing the yield?

(1) Gibberellin

(2) Cytokinin

(3) Abscisic acid

(4) Auxin

185. Match List I with List II:

List I
A. Expiratory capacity
B. Functional residual capacity
C. Vital capacity
D. Inspiratory capacity

List II
I. Expiratory reserve volume + Tidal volume + Inspiratory reserve volume
II. Tidal volume + Expiratory reserve volume
III. Tidal volume + Inspiratory reserve volume
IV. Expiratory reserve volume + Residual volume

Choose the correct answer from the options given below:

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

186. Which of the following factors are favourable for the formation of oxyhaemoglobin in alveoli?

(1) High pO2 and lesser H+ concentration
(2) Low pCO2 and high H+ concentration
(3) Low pCO2 and high temperature
(4) High pO2 and high pCO2

187. Following are the stages of pathway for conduction of an action potential through the heart
A. AV bundle
B. Purkinje fibres
C. AV node
D. Bundle branches
E. SA node
Choose the correct sequence of pathway from the options given below

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

188. Match List I with List II:

List I
A. P Wave
B. QRS complex
C. T wave
D. T-P gap

List II
I. Heart muscles are electrically silent
II. Depolarisation of ventricles
III. Depolarisation of atria
IV. Repolarisation of ventricles

Choose the correct answer from the options given below:

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

189. Given below are two statements:

Statement I: In the nephron, the descending limb of loop of Henle is impermeable to water and permeable to electrolytes.
Statement II: The proximal convoluted tubule is lined by simple columnar brush border epithelium and increases the surface area for reabsorption.

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

(1) Both statement I and statement II are false

(2) Statement I is true but statement II is false

(3) Statement I is false but statement II is true

(4) Both statement I and statement II are true

190. Choose the correct statement given below regarding juxta medullary nephron.

(1) Renal corpuscle of juxta medullary nephron lies in the outer portion of the renal medulla.

(2) Loop of Henle of juxta medullary nephron runs deep into medulla.

(3) Juxta medullary nephrons outnumber the cortical nephrons.

(4) Juxta medullary nephrons are located in the columns of Bertini.

191. Match List I with List II:

List I:
A. Fibrous joints
B. Cartilaginous joints
C. Hinge
D. Ball and socket joints

List II:
I. Adjacent vertebrae, limited movement
II. Humerus and Pectoral girdle, rotational movement
III. Skull, don't allow any movement
IV. Knee, help in locomotion

Choose the correct answer from the options given below:

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

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

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

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

192. Three types of muscle tissue are shown as (a), (b) and (c):

(a) Long, parallel, cylindrical striated (cross-banded) fibres with peripheral nuclei.
(b) Spindle-shaped (fusiform) non-striated cells tapering at both ends, each with a single central nucleus.
(c) Striated, branched fibres joined end-to-end with central nuclei.

Identify the correct matching pair along with their location in the human body (Name of muscle / location):

(1) Skeletal - Triceps, (b) Smooth - Stomach, (c) Cardiac - Heart

(2) Skeletal - Biceps, (b) Involuntary - Intestine, (c) Smooth - Heart

(3) Involuntary - Nose tip, (b) Skeletal - Bone, (c) Cardiac - Heart

(4) Smooth - Toes, (b) Skeletal - Legs, (c) Cardiac - Heart

193. Given below are two statements:

Statement I: The cerebral hemispheres are connected by a nerve tract known as corpus callosum.

Statement II: The brain stem consists of the medulla oblongata, pons and cerebrum.

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

(1) Both Statement I and Statement II are incorrect.

(2) Statement I is Correct but Statement II is incorrect.

(3) Statement I is incorrect but Statement II is correct.

(4) Both Statement I and Statement II are correct.

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194. Match List I with List II:

List I
A. Pons
B. Hypothalamus
C. Medulla
D. Cerebellum

List II
I. Provides additional space for neurons, regulates posture and balance
II. Controls respiration and gastric secretions
III. Connects different regions of the brain
IV. Neurosecretory cells

Choose the correct answer from the options given below:

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

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

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

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

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195. Match List I with List II.

List I
A. Exophthalmic goiter
B. Acromegaly
C. Cushing's syndrome
D. Cretinism

List II
I. Excess secretion of cortisol, moon face & hyperglycemia
II. Hypo-secretion of thyroid hormone and stunted growth
III. Hyper secretion of thyroid hormone & protruding eye balls
IV. Excessive secretion of growth hormone

Choose the correct answer from the options given below

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

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

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

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

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196. Which of the following is not a steroid hormone?

(1) Testosterone

(2) Progesterone

(3) Glucagon

(4) Cortisol

Answer Key

1.A	2.A	3.D	4.D	5.B	6.C	7.A	8.B	9.C	10.B	11.A
12.A	13.B	14.A	15.A	16.D	17.B	18.C	19.A	20.D	21.A	22.A
23.D	24.D	25.D	26.A	27.A	28.D	29.C	30.A	31.C	32.A	33.D
34.D	35.A	36.B	37.A	38.D	39.A	40.A	41.A	42.B	43.C	44.A
45.C	46.D	47.D	48.A	49.A	50.D	51.A	52.D	53.D	54.A	55.A
56.D	57.A	58.D	59.A	60.C	61.C	62.A	63.C	64.D	65.C	66.B
67.D	68.D	69.D	70.B	71.D	72.D	73.D	74.D	75.C	76.C	77.D
78.D	79.B	80.A	81.A	82.C	83.A	84.D	85.B	86.A	87.C	88.D
89.D	90.B	91.C	92.C	93.B	94.A	95.A	96.B	97.D	98.B	99.A
100.B	101.C	102.C	103.D	104.A	105.D	106.D	107.C	108.D	109.B	110.C
111.C	112.B	113.A	114.A	115.A	116.A	117.A	118.D	119.B	120.B	121.A
122.A	123.C	124.C	125.D	126.C	127.B	128.A	129.C	130.B	131.D	132.D
133.D	134.D	135.B	136.D	137.C	138.D	139.B	140.C	141.C	142.B	143.A
144.C	145.A	146.D	147.B	148.A	149.A	150.D	151.C	152.A	153.B	154.D
155.B	156.B	157.D	158.D	159.A	160.D	161.B	162.B	163.A	164.B	165.B
166.C	167.D	168.B	169.A	170.B	171.C	172.C	173.B	174.B	175.B	176.A
177.A	178.C	179.C	180.A	181.B	182.B	183.D	184.A	185.D	186.A	187.D
188.A	189.A	190.B	191.C	192.A	193.B	194.A	195.C	196.C		