

NEET 2024 Question Paper Set Q1

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|----------------------------------|---------------------------|-----------------------------|
| Time Allowed :200 minutes | Maximum Marks :720 | Total questions :200 |
|----------------------------------|---------------------------|-----------------------------|

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The test is of 3 hours 20 minutes duration.
2. The question paper consists of 200 questions out of which 180 MCQs must be answered. The maximum marks are 720.
3. There are four parts in the question paper consisting of Biology, Physics, Chemistry and Mathematics.
4. Each subject will be divided into two sections, A and B which will have 35 and 15 questions respectively. Candidates will have to answer only 10 questions in Section B.
5. 4 marks are awarded for each correct answer and 1 mark is deducted for each wrong answer

PHYSICS

Section A

1.

A logic circuit provides the output Y as per the following truth table:

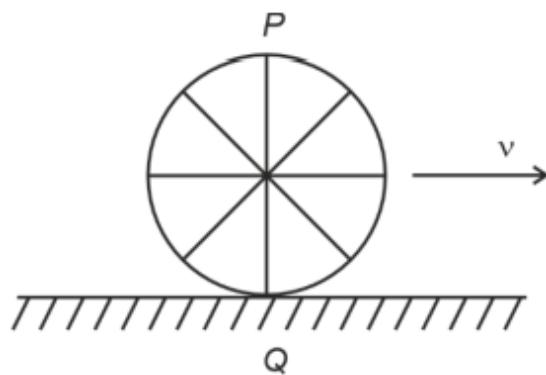
| A | B | Y |
|-----|-----|-----|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

The expression for the output Y is:

1. $A \cdot B + \overline{A}$
 2. $A \cdot \overline{B} + \overline{A}$
 3. \overline{B}
 4. B
-

2.

A wheel of a bullock cart is rolling on a level road as shown in the figure below. If its linear speed is v in the direction shown, which one of the following options is correct (P and Q are any highest and lowest points on the wheel, respectively)?

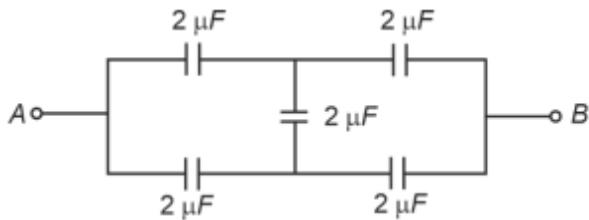


- (A) Point P moves slower than point Q
- (B) Point P moves faster than point Q
- (C) Both the points P and Q move with equal speed

(D) Point P has zero speed

3.

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



- (1) $2 \mu\text{F}$
 - (2) $1 \mu\text{F}$
 - (3) $0.5 \mu\text{F}$
 - (4) $4 \mu\text{F}$
-

4.

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

- (1) 10
 - (2) 5
 - (3) 7
 - (4) 6
-

5.

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

Assertion A: The potential (V) at any axial point, at 2 m distance (r) from the centre of the dipole of dipole moment vector \mathbf{P} of magnitude $4 \times 10^{-6} \text{ C m}$, is $\pm 9 \times 10^3 \text{ V}$.

(Take $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 \text{ SI units}$)

Reason R:

$$V = \pm \frac{2}{4\pi\epsilon_0} \frac{P}{r^2}$$

where r is the distance of any axial point, situated at 2 m from the centre of the dipole.

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

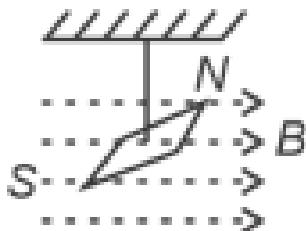
6.

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

- (1) 1 : 2
 - (2) 2 : 1
 - (3) 4 : 1
 - (4) 1 : 4
-

7.

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



- (1) $5\pi^2$
- (2) $128\pi^2$

(3) $50\pi^2$

(4) $1280\pi^2$

8.

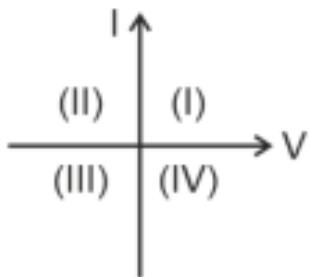
An unpolarised light beam strikes a glass surface at Brewster's angle. Then:

- (1) The reflected light will be partially polarised.
 - (2) The refracted light will be completely polarised.
 - (3) Both the reflected and refracted light will be completely polarised.
 - (4) The reflected light will be completely polarised but the refracted light will be partially polarised.
-

9.

Consider the following statements A and B and identify the correct answer:

- A. For a solar-cell, the I-V characteristics lie in the IV quadrant of the given graph.
- B. In a reverse biased pn junction diode, the current measured in (μA) is due to majority charge carriers.

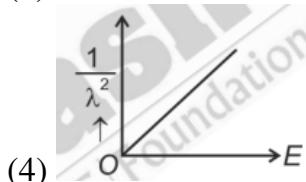
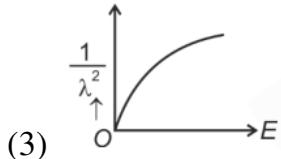
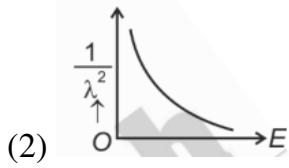
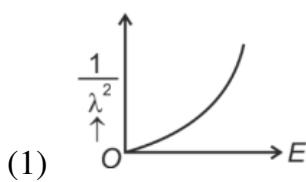


- (1) A is correct but B is incorrect
 - (2) A is incorrect but B is correct
 - (3) Both A and B are correct
 - (4) Both A and B are incorrect
-

10.

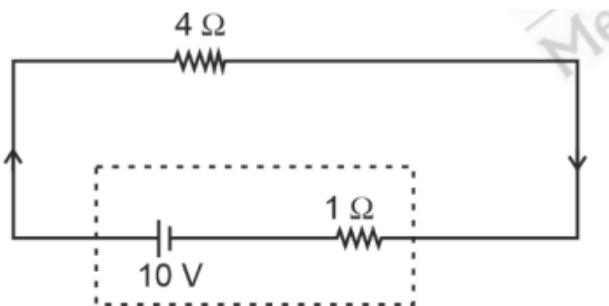
The graph below shows the variation of $\frac{1}{\lambda^2}$ and its kinetic energy E , where λ is the de Broglie wavelength of a free particle:

Choose the correct graph:



11.

The terminal voltage of the battery, whose emf is 10 V and internal resistance 1 Ω , when connected through an external resistance of 4 Ω as shown in the figure, is:



- (1) 4 V
- (2) 6 V
- (3) 8 V
- (4) 10 V

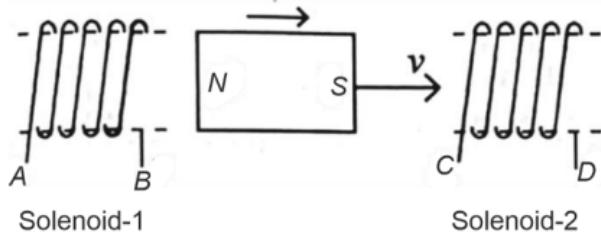
12.

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

-
- (1) strain and angle
 - (2) stress and angle
 - (3) strain and arc
 - (4) angular speed and stress
-

13.

In the above diagram, a 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) AB and DC
 - (2) BA and CD
 - (3) AB and CD
 - (4) BA and DC
-

14.

The moment of inertia of a thin rod about an axis passing through its mid point and perpendicular to the rod is 2400 g cm^2 . The length of the 400 g rod is nearly:

- (1) 8.5 cm
 - (2) 17.5 cm
 - (3) 20.7 cm
 - (4) 72.0 cm
-

15.

If $x = 5 \sin((\pi t) + \frac{\pi}{3})$ represents the motion of a particle executing simple harmonic motion, the amplitude and time period of motion, respectively, are:

-
- (1) 5 cm, 2 s
 - (2) 5 m, 2 s
 - (3) 5 cm, 1 s
 - (4) 5 m, 1 s

16.

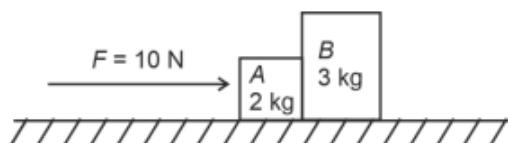
The mass of a planet is $\frac{1}{10}$ th that of the Earth and its diameter is half that of the Earth.

The acceleration due to gravity on that planet is:

- (1) 19.6 m/s²
 - (2) 9.8 m/s²
 - (3) 4.9 m/s²
 - (4) 3.92 m/s²
-

17.

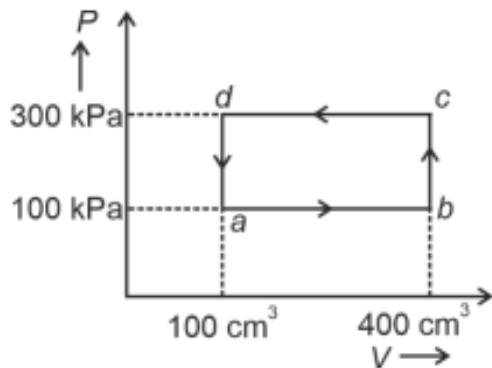
A horizontal force of 10 N is applied to a block A as shown in the figure. The masses of blocks A and B are 2 kg and 3 kg, respectively. The blocks slide over a frictionless surface. The force exerted by block A on block B is:



- (1) Zero
 - (2) 4 N
 - (3) 6 N
 - (4) 10 N
-

18.

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



- (1) Zero
 (2) 30 J
 (3) -90 J
 (4) -60 J
-

19.

Given below are two statements

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

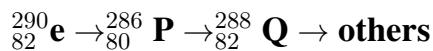
Statement II: Atoms of each element are stable and emit their characteristic spectrum.

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

Choose the most appropriate answer from the options given below:

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

20.



In the nuclear emission stated above, the mass number and atomic number of the product Q respectively, are:

-
- (1) 280, 81
 - (2) 286, 80
 - (3) 288, 82
 - (4) 286, 81
-

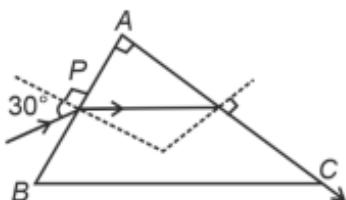
21.

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

- (1) Constant velocity
 - (2) Constant acceleration
 - (3) Constant velocity but varying acceleration
 - (4) Varying velocity and varying acceleration
-

22.

A light ray enters through a right-angled prism at point P with the angle of incidence 30° as shown in 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) $\frac{\sqrt{5}}{4}$
 - (2) $\frac{\sqrt{5}}{2}$
 - (3) $\frac{\sqrt{3}}{4}$
 - (4) $\frac{\sqrt{3}}{2}$
-

23.

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) $\frac{1}{10N}$

-
- (2) $\frac{1}{100(N+1)}$
 - (3) $100N$
 - (4) $10(N + 1)$

24.

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

- (1) Interference pattern will disappear
 - (2) There will be a central dark fringe surrounded by a few coloured fringes
 - (3) There will be a central bright white fringe surrounded by a few coloured fringes
 - (4) All bright fringes will be of equal width
-

25.

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

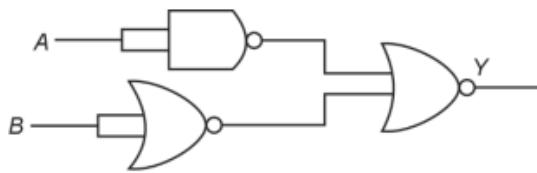
- A. The energy of a photon is $E = h\nu$.
- B. The velocity of a photon is c .
- C. The momentum of a photon is $p = \frac{h}{\nu c}$.
- D. In a photon-electron collision, both total energy and total momentum are conserved.
- E. Photon possesses positive charge.

Choose the correct answer from the options given below:

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

26.

The output (Y) of the given logic gate is similar to the output of an/a:



- (1) NAND gate
 - (2) NOR gate
 - (3) OR gate
 - (4) AND gate

27.

Match List-I with List-II.

List-I List-II

- | | |
|---------------------------|------------|
| A. $n_2 = 3$ to $n_1 = 2$ | I. 410.2 |
| B. $n_2 = 4$ to $n_1 = 2$ | II. 434.1 |
| C. $n_2 = 5$ to $n_1 = 2$ | III. 656.3 |
| D. $n_2 = 6$ to $n_1 = 2$ | IV. 486.1 |

Choose the correct answer from the options given below:

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

28.

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

- (1) 19.8 mN
 (2) 198 N
 (3) 1.98 mN

(4) 99 N

29.

In an ideal transformer, the turns ratio is $\frac{N_P}{N_S} = \frac{1}{2}$. The ratio $V_S : V_P$ is equal to (the symbols carry their usual meaning):

- (1) 1 : 2
 - (2) 2 : 1
 - (3) 1 : 1
 - (4) 1 : 4
-

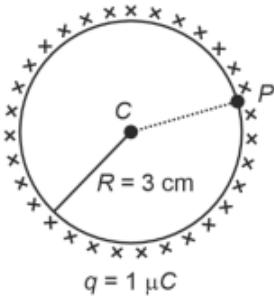
30.

The maximum elongation of a steel wire of 1 m length if the elastic limit of steel and its Young's modulus, respectively, are $8 \times 10^8 \text{ N/m}^2$ and $2 \times 10^{11} \text{ N/m}^2$, is:

- (1) 4 mm
 - (2) 0.4 mm
 - (3) 40 mm
 - (4) 8 mm
-

31.

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:



- (1) 3×10^5
- (2) 1×10^5

(3) 0.5×10^5

(4) Zero

32.

A wire of length 'l' and resistance 100Ω is divided into 10 equal parts. The first 5 parts are connected in series while the next 5 parts are connected in parallel. The two combinations are again connected in series. The resistance of this final combination is:

(1) 26Ω

(2) 52Ω

(3) 55Ω

(4) 60Ω

33.

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

$4\pi \times 10^{-7} \text{ S.I. units}$:

(1) 44 mT

(2) 4.4 T

(3) 4.4 mT

(4) 44 T

34.

Match List-I with List-II.

List-I List-II

(Material) (Susceptibility χ)

A. Diamagnetic I. $\chi = 0$

B. Ferromagnetic II. $0 \geq \chi \geq -1$

C. Paramagnetic III. $\chi \gg 1$

D. Non-magnetic IV. $0 < \chi < \epsilon$ (a small positive number)

Choose the correct answer from the options given below:

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

35.

A bob is whirled in a horizontal plane by means of a string with an initial speed of ω rpm. The tension in the string is T . If the speed becomes 2ω while keeping the same radius, the tension in the string becomes:

- (1) T
 - (2) $4T$
 - (3) $\frac{T}{4}$
 - (4) $\sqrt{2}T$
-

36.

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) There is no current
 - (2) Displacement current of magnitude equal to I flows in the same direction as I
 - (3) Displacement current of magnitude equal to I flows in a direction opposite to that of I
 - (4) Displacement current of magnitude greater than I flows but can be in any direction
-

37.

A $10 \mu\text{F}$ capacitor is connected to a $210 \text{ V}, 50 \text{ Hz}$ source as shown in the figure. The peak current in the circuit is nearly ($\pi = 3.14$):

- (1) 0.58 A
- (2) 0.93 A
- (3) 1.20 A
- (4) 0.35 A

38.

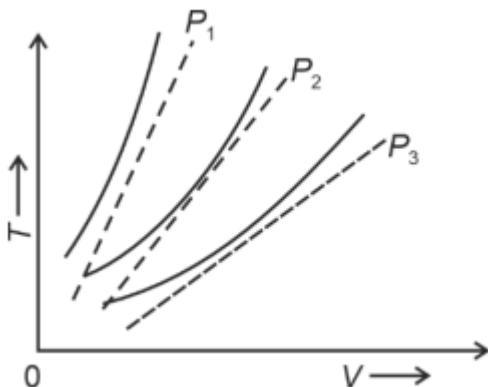
If the mass of the bob in a simple pendulum is increased to thrice its original mass and its length is made half its original length, then the new time period of oscillation is $\frac{x}{2}$ times its original time period. Then the value of x is:

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

39.

The following graph represents the T-V curves of an ideal gas (where T is the temperature and V the volume) at three pressures P_1, P_2 and P_3 compared with those of Charles's law represented as dotted lines.

Then the correct relation is:



- (1) $P_3 > P_2 > P_1$
 - (2) $P_1 > P_3 > P_2$
 - (3) $P_2 > P_1 > P_3$
 - (4) $P_1 > P_2 > P_3$
-

40.

The minimum energy required to launch a satellite of mass m from the surface of the Earth of mass M and radius R in a circular orbit at an altitude of $2R$ from the surface

of the Earth is:

- (1) $\frac{5}{6} \frac{GmM}{R}$
 - (2) $\frac{2}{3} \frac{GmM}{R}$
 - (3) $\frac{GmM}{2R}$
 - (4) $\frac{GmM}{3R}$
-

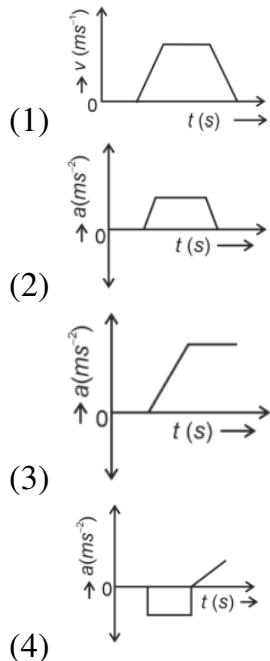
41.

The property which is not of an electromagnetic wave travelling in free space is that:

- (1) They are transverse in nature
 - (2) The energy density in electric field is equal to energy density in magnetic field
 - (3) They travel with a speed equal to $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$
 - (4) They originate from charges moving with uniform speed
-

42.

Choose the correct circuit which can achieve the bridge balance.



43.

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

- (1) $\frac{\beta t}{\alpha}$
 - (2) $\frac{\alpha t}{\beta}$
 - (3) $\alpha\beta t$
 - (4) $\frac{\alpha\beta}{t}$
-

44.

Two heaters A and B have power ratings of 1 kW and 2 kW, respectively. These two are first connected in series and then in parallel to a fixed power source. The ratio of power outputs for these two cases is:

- (1) 1 : 1
 - (2) 2 : 9
 - (3) 1 : 2
 - (4) 2 : 3
-

45.

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 of 60° with each other. The magnetic moment of this new magnet is:

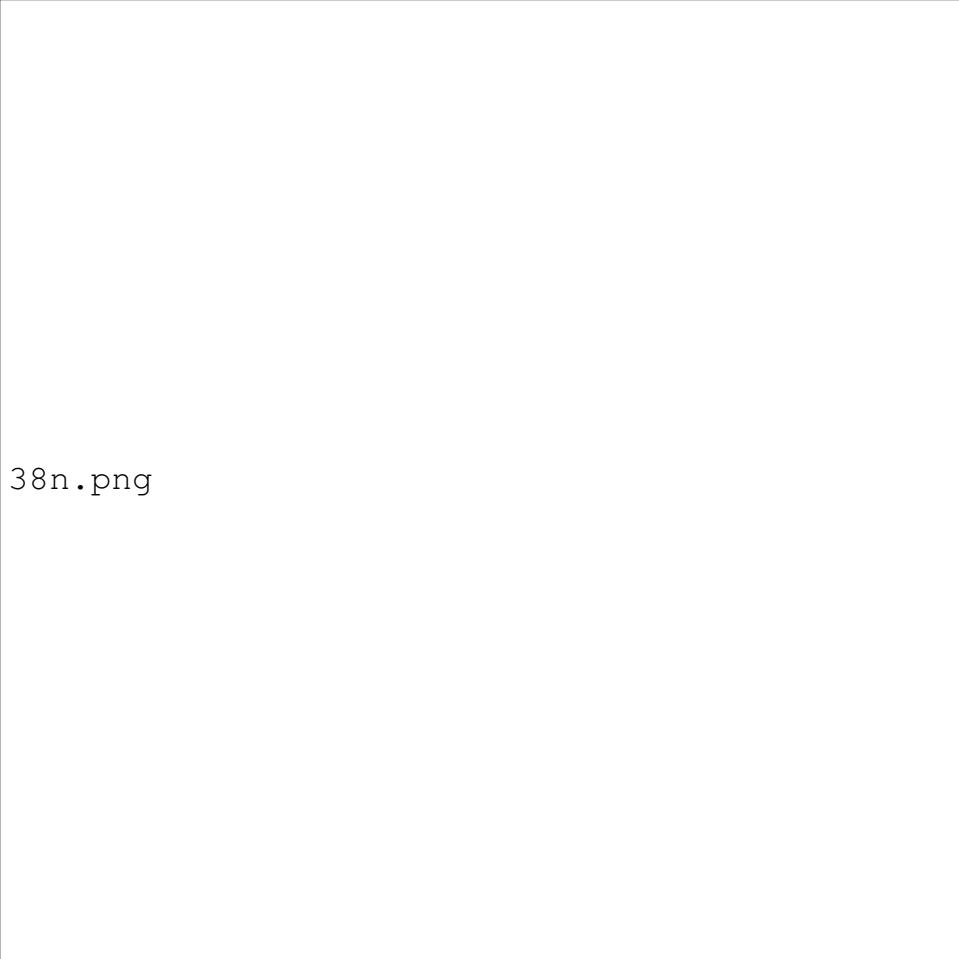
- (1) M
 - (2) $\frac{M}{2}$
 - (3) $2M$
 - (4) $\frac{M}{\sqrt{3}}$
-

46.

A metallic bar of Young's modulus $0.5 \times 10^{11} \text{ N/m}^2$ and coefficient of linear thermal expansion $10^{-5} \text{ }^\circ\text{C}^{-1}$, 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:

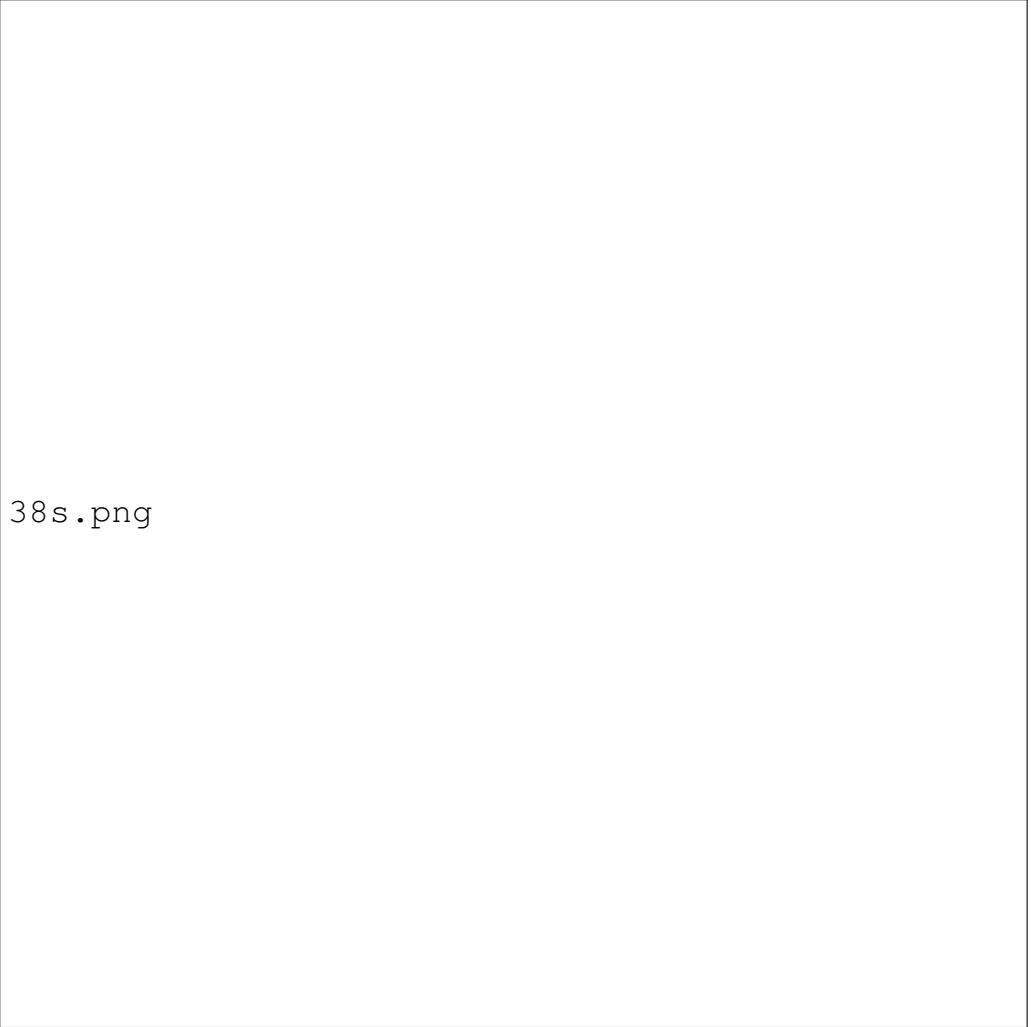
- (1) 5×10^3 N
- (2) 50×10^3 N
- (3) 100×10^3 N
- (4) 2×10^3 N

47. The velocity (v)-time (t) plot of a body is shown.



38n.png

The acceleration (a)-time (t) graph is:



38s.png

48.

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 from the options given below:

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

(4) A, B and C only

49.

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) 34
 - (2) 28
 - (3) 17
 - (4) 32
-

50.

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) from the options given below:

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

51.

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

Choose the correct answer from the options given below:

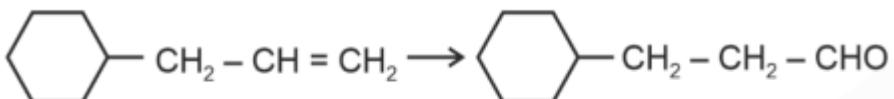
- (1) Si < C < N < O < F
- (2) Si < C < O < N < F

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

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

52.

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



(1) (i) $\text{H}_2\text{O}/\text{H}^+$, (ii) CrO_3

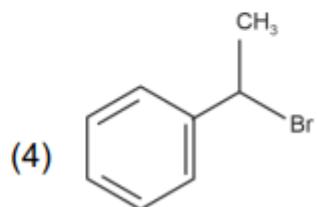
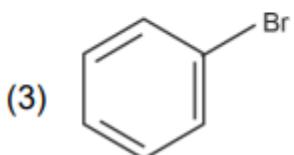
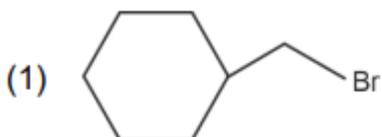
(2) (i) BH_3 , (ii) $\text{H}_2\text{O} / \text{OH}^-$

(3) (i) BH_3 , (ii) $\text{H}_2\text{O} / \text{OH}^-$, (iii) alk. KMnO_4

(4) (i) $\text{H}_2\text{O}/\text{H}^+$, (ii) PCC

53.

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



54.

For the reaction $2A \rightleftharpoons B + C$, $K_C = 4 \times 10^{-3}$. At a given time, the composition of the reaction mixture is:

$$[A] = [B] = [C] = 2 \times 10^{-3} \text{ M.}$$

Then, which of the following is correct?

(1) Reaction is at equilibrium.

(2) Reaction has a tendency to go in forward direction.

(3) Reaction has a tendency to go in backward direction.

(4) Reaction has gone to completion in forward direction.

55.

The highest number of helium atoms is in:

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

56.

Match List I with List II:

| List I | List II |
|-----------------------|---|
| A. Isothermal process | I. No heat exchange |
| B. Isochoric process | II. Carried out at constant temperature |
| C. Isobaric process | III. Carried out at constant volume |
| D. Adiabatic process | IV. Carried out at constant pressure |

Choose the correct answer from the options given below:

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

57.

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

- (1) $-x$
- (2) $-\frac{x}{9}$
- (3) $-4x$
- (4) $\frac{4x}{9}$

58.

Match List I with List II:

| List I | List II |
|---------------------------|--|
| A. ethane | I. one σ -bond and two π -bonds |
| B. ethene | II. two π -bonds |
| C. carbon molecule, C_2 | III. one σ -bond |
| D. ethyne | IV. one σ -bond and one π -bond |

Choose the correct answer from the options given below:

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

59.

Match List I with List II:

| List I | List II |
|------------|-----------------------|
| A. NH_3 | I. Trigonal Pyramidal |
| B. BrF_5 | II. Square Planar |
| C. XeF_4 | III. Octahedral |
| D. SF_6 | IV. Square Pyramidal |

Choose the correct answer from the options given below:

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

60.

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

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

61.

In which of the following equilibria, K_p and K_c are NOT equal?

- (1) $\text{PCl}_5(g) \rightleftharpoons \text{PCl}_3(g) + \text{Cl}_2(g)$
 - (2) $\text{H}_2(g) + \text{I}_2(g) \rightleftharpoons 2\text{HI}(g)$
 - (3) $\text{CO}(g) + \text{H}_2(g) \rightleftharpoons \text{CO}_2(g) + \text{H}_2\text{O}(g)$
 - (4) $\text{Br}_2(g) \rightleftharpoons 2\text{Br}(g)$
-

62.

Among Group 16 elements, which one does NOT show –2 oxidation state?

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

63.

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

64.

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

- (1) n-hexane
 - (2) 2-methylpentane
 - (3) 2,3-dimethylbutane
 - (4) 2,2-dimethylbutane
-

65.

Given below are two statements:

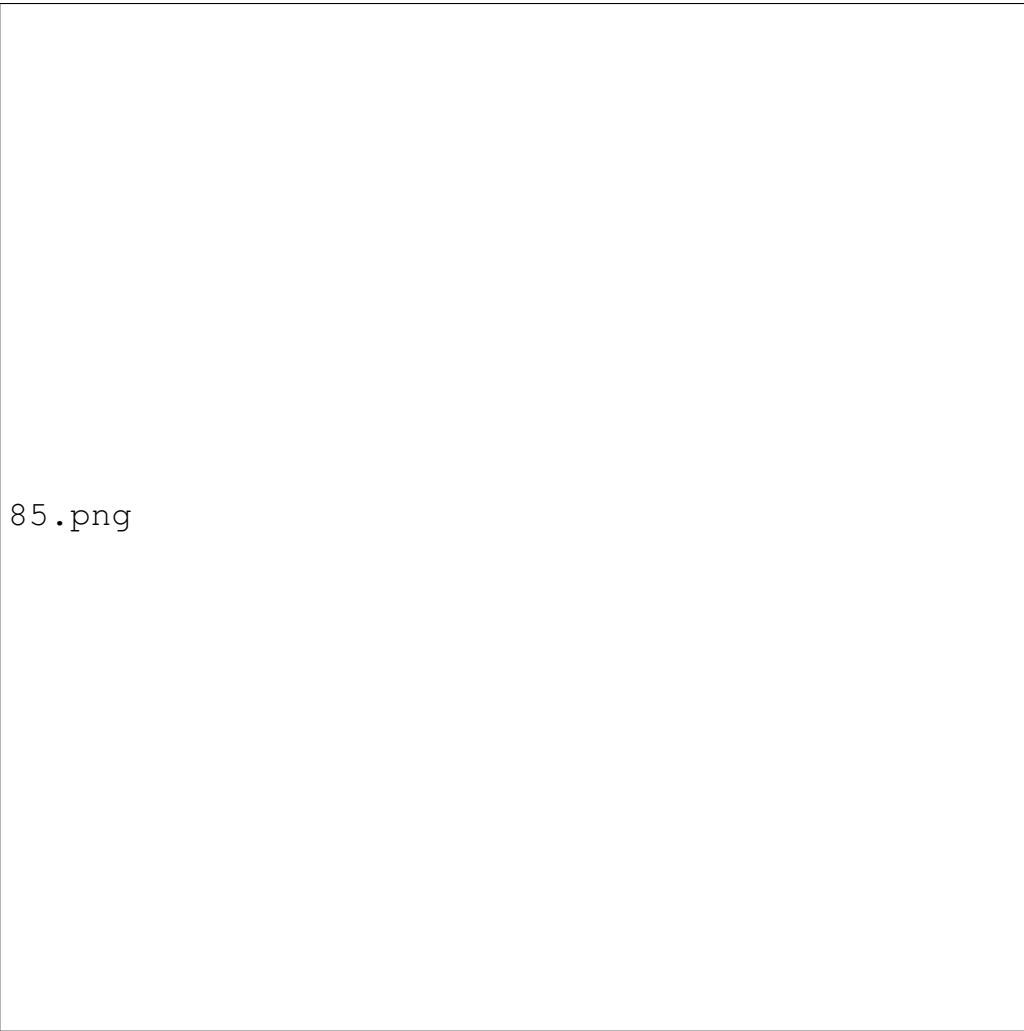
Statement I: The boiling point of three isomeric pentanes follows the order
 $n\text{-pentane} > \text{isopentane} > \text{neopentane}$

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

66. Which plot of $\ln k$ vs $\frac{1}{T}$ is consistent with the Arrhenius equation?



85.png

67.

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

68.

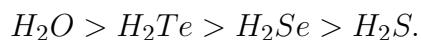
Fehling's solution 'A' is:

-
- (1) aqueous copper sulphate
 - (2) alkaline copper sulphate
 - (3) alkaline solution of sodium potassium tartrate (Rochelle's salt)
 - (4) aqueous sodium citrate
-

69.

Given below are two statements:

Statement I: The boiling point of hydrides of Group 16 elements follow the order



Statement II: On the basis of molecular mass, H_2O is expected to have a lower boiling point than the other members of the group but due to the presence of extensive hydrogen bonding in H_2O , it has a higher boiling point.

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

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

70.

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.

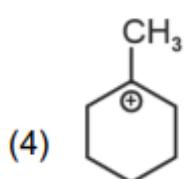
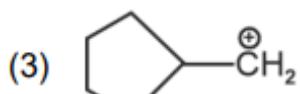
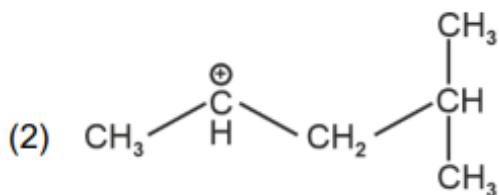
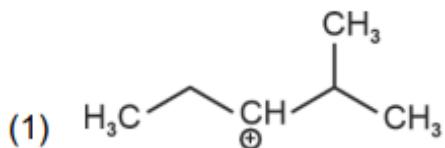
Statement II: $[Co(NH_3)_6]^{3+}$ is diamagnetic whereas $[CoF_6]^{3-}$ is paramagnetic.

Choose the correct answer from the options given below:

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

71.

The most stable carbocation among the following is:



72.

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

- (1) Crystallization
 - (2) Sublimation
 - (3) Distillation
 - (4) Chromatography
-

73.

Match List I with List II.

Choose the correct answer from the options given below:

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

| List I (Complex) | List II (Type of isomerism) |
|---|-----------------------------|
| A. $[\text{Co}(\text{NH}_3)_5(\text{NO}_2)]\text{Cl}_2$ | I. Solvate isomerism |
| B. $[\text{Co}(\text{NH}_3)_5(\text{SO}_4)]\text{Br}$ | II. Linkage isomerism |
| C. $[\text{Co}(\text{NH}_3)_6][\text{Cr}(\text{CN})_6]$ | III. Ionization isomerism |
| D. $[\text{Co}(\text{H}_2\text{O})_6]\text{Cl}_3$ | IV. Coordination isomerism |

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

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

74.

The reagents with which glucose does not react to give the corresponding tests/products are:

- A. Tollen's reagent
- B. Schiff's reagent
- C. HCN
- D. NH_2OH
- E. NaHSO_3

Choose the correct options from the given below:

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

75.

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

- (1) rate constant at standard temperature
- (2) probability of collision
- (3) orientation of reactant molecules during collision
- (4) rate constant at two different temperatures

76.

Match List I with List II:

| List I | List II |
|---|----------------|
| A. 1 mol of H_2O to O_2 | I. 3F |
| B. 1 mol of 4MnO_4^- to Mn^{2+} | II. 2F |
| C. 1.5 mol of Ca from molten CaCl_2 | III. 1F |
| D. 1 mol of FeO to Fe_2O_3 | IV. 5F |

Choose the correct answer from the options given below:

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

77.

Match List I with List II:

| List I | List II |
|---|----------------|
| A. 1 mol of H_2O to O_2 | I. 3F |
| B. 1 mol of 4MnO_4^- to Mn^{2+} | II. 2F |
| C. 1.5 mol of Ca from molten CaCl_2 | III. 1F |
| D. 1 mol of FeO to Fe_2O_3 | IV. 5F |

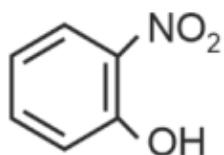
Choose the correct answer from the options given below:

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

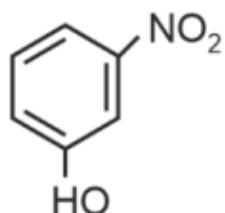
78.

Intramolecular hydrogen bonding is present in:

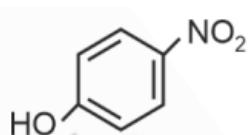
1.



2.



3.



(4) HF

Choose the correct option from the given below:

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

79.

Given below are two statements:

Statement I: Aniline does not undergo Friedel-Crafts alkylation reaction.

Statement II: Aniline cannot be prepared through Gabriel synthesis.

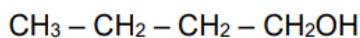
In the light of the above statements, choose the correct answer from the options given below:

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

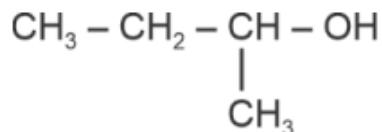
80.

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

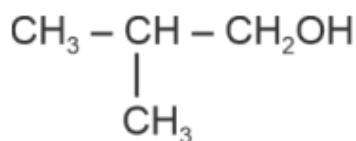
A.



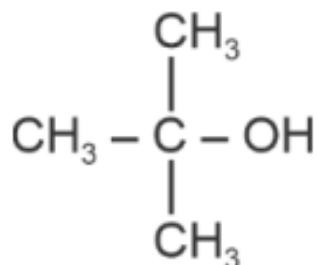
B.



C.



D.



81.

Arrange the following elements in increasing order of first ionization enthalpy:

Li, Be, B, C, N

Choose the correct answer from the options given below:

- (1) Li < Be < B < C < N
 - (2) Li < B < Be < C < N
 - (3) Li < Be < C < B < N
 - (4) Li < Be < N < B < C
-

82.

Which reaction is NOT a redox reaction?

- (1) $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
 - (2) $2\text{KClO}_3 + \text{I}_2 \rightarrow 2\text{KIO}_3 + \text{Cl}_2$
 - (3) $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
 - (4) $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$
-

83.

Match List I with List II:

| List I | List II |
|------------------|-------------------------------------|
| (Quantum Number) | (Information provided) |
| A. m_l | I. Shape of orbital |
| B. m_s | II. Size of orbital |
| C. l | III. Orientation of orbital |
| D. n | IV. Orientation of spin of electron |

Choose the correct answer from the options given below :

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

84.

In which of the following processes does entropy increase?

- A. A liquid evaporates to vapour.
- B. The temperature of a crystalline solid is lowered from 130 K to 0 K.
- C. $2\text{NaHCO}_3(s) \rightarrow \text{Na}_2\text{CO}_3(s) + \text{CO}_2(g) + \text{H}_2\text{O}(g)$
- D. $\text{Cl}_2(g) \rightarrow 2\text{Cl}(g)$

Choose the correct answer from the options given below:

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

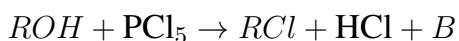
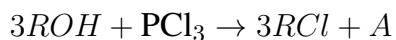
85.

1 gram of sodium hydroxide was treated with 25 mL of 0.75 M HCl solution. The mass of sodium hydroxide left unreacted is equal to:

- (1) 750 mg
 - (2) 250 mg
 - (3) Zero mg
 - (4) 200 mg
-

86.

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

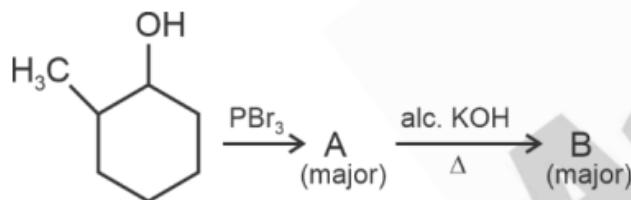


- (1) POCl_3 and H_3PO_3
- (2) POCl_3 and H_3PO_4
- (3) H_3PO_4 and POCl_3

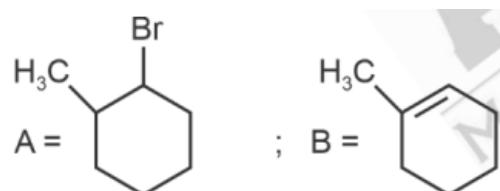
(4) H_3PO_3 and POCl_3

87.

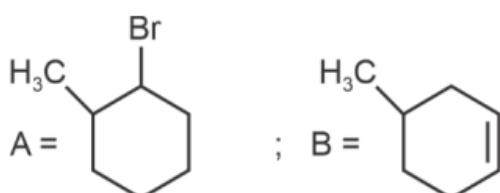
Major products A and B formed in the following reaction sequence, are:



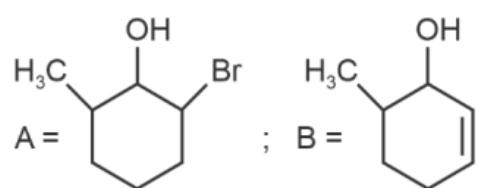
(1)



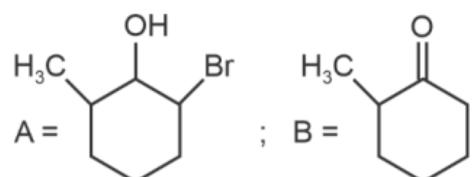
(2)



(3)

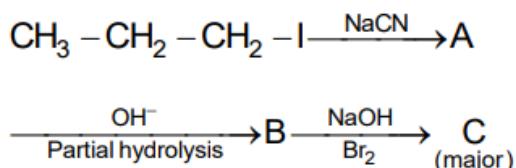


(4)



88.

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



- (1) Propylamine
 - (2) Butylamine
 - (3) Butanamide
 - (4) α -bromobutanoic acid
-

89.

During the preparation of Mohr's salt solution (Ferrous ammonium sulphate), which of the following acid is added to prevent hydrolysis of Fe^{2+} ion?

- (1) dilute hydrochloric acid
 - (2) concentrated sulphuric acid
 - (3) dilute nitric acid
 - (4) dilute sulphuric acid
-

90.

Consider the following reaction in a sealed vessel at equilibrium with concentrations of $\text{N}_2 = 3.0 \times 10^{-3} \text{ M}$, $\text{O}_2 = 4.2 \times 10^{-3} \text{ M}$ and $\text{NO} = 2.8 \times 10^{-3} \text{ M}$.



If 0.1 mol L^{-1} of $\text{NO}(g)$ is taken in a closed vessel, what will be the degree of dissociation (α) of $\text{NO}(g)$ at equilibrium?

- (1) 0.00889
- (2) 0.0889

-
- (3) 0.8889
 - (4) 0.717
-

91. The work done during reversible isothermal expansion of one mole of hydrogen gas at 25°C from pressure of 20 atmosphere to 10 atmosphere is

(Given $R = 2.0 \text{ cal K}^{-1} \text{ mol}^{-1}$)

- (1) 0 calorie
 - (2) -413.14 calories
 - (3) 413.14 calories
 - (4) 100 calories
-

92. 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 Cu = 63 g mol⁻¹, 1 F = 96487 C)

- (1) 3.15 g
 - (2) 0.315 g
 - (3) 31.5 g
 - (4) 0.0315 g
-

93. The rate of a reaction quadruples when temperature changes from 27°C to 57°C.

Calculate the energy of activation.

(Given: $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$, $\log 4 = 0.6021$)

- (1) 38.04 kJ/mol
 - (2) 380.4 kJ/mol
 - (3) 3.80 kJ/mol
 - (4) 3804 kJ/mol
-

94. The plot of osmotic pressure (Π) vs concentration (mol L^{-1}) for a solution gives a straight line with slope $25.73 \text{ L bar mol}^{-1}$. The temperature at which the osmotic pressure measurement is done is

(Use $R = 0.083 \text{ L bar mol}^{-1}\text{K}^{-1}$)

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

95. Given below are certain cations. Using inorganic qualitative analysis, arrange them in increasing group number from 0 to VI.

- A. Al^{3+}
- B. Cu^{2+}
- C. Ba^{2+}
- D. Co^{2+}
- E. Mg^{2+}

Choose the correct answer from the options given below:

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

96. Given below are two statements:

Statement I: $[\text{Co}(\text{NH}_3)_6]^{3+}$ is a homoleptic complex, whereas $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$ is a heteroleptic complex.

Statement II: Complex $[\text{Co}(\text{NH}_3)_6]^{3+}$ has only one kind of ligand, but $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$ has more than one kind of ligand.

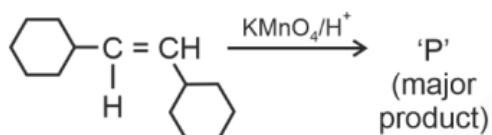
In the light of the above statements, choose the most appropriate answer from the options given below:

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

97. The pair of lanthanoid ions which are diamagnetic is

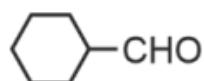
- (1) Ce^{4+} and Yb^{2+}
 - (2) Ce^{3+} and Eu^{2+}
 - (3) Gd^{3+} and Eu^{3+}
 - (4) Pm^{3+} and Sm^{3+}
-

98. For the given reaction:

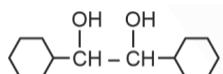


Identify the product 'P' formed in the reaction.

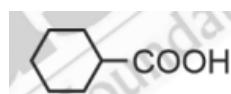
(1)



(2)

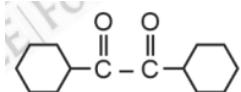


(3)



(4)

99. Identify the correct answer.



- (1) Three resonance structures can be drawn for ozone
- (2) BF_3 has non-zero dipole moment
- (3) Dipole moment of NF_3 is greater than that of NH_3
- (4) Three canonical forms can be drawn for CO_3^{2-} ion

100. A compound X contains 32% of A, 20% of B, and the remaining percentage of C. Then, the empirical formula of X is:

- (1) A_2BC_2
- (2) ABC_3
- (3) AB_2C_2
- (4) ABC_4

101. Match List I with List II:

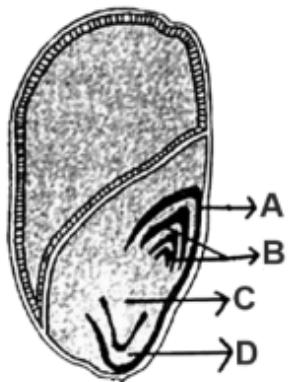
| List I | List II |
|------------|-----------------|
| A.Rhizopus | I.Mushroom |
| B.Ustilago | II.Smut fungus |
| C.Puccinia | III.Bread mould |
| D.Agaricus | IV.Rust fungus |

Choose the correct answer from the options given below:

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

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

- (A) A (B) B (C) C (D) D
-



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

- (1) Amino acids
- (2) Phospholipids
- (3) Glycerides
- (4) Carbohydrates

104. Match List I with List II:

| List I | List II |
|--|---------------|
| A.Two or more alternative forms of a gene | I.Back cross |
| B.Cross of F1 progeny with homozygous recessive parent | II.Ploidy |
| C.Cross of F1 progeny with any of the parents | III.A allele |
| D.Number of chromosome sets in plant | IV.Test cross |

Choose the correct answer from the options given below:

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

105. A transcription unit in DNA is defined primarily by the three regions in DNA and these are with respect to upstream and downstream end:

Choose the correct answer from the options given below:

- (A) Repressor, Operator gene, Structural gene (B) Structural gene, Transposons, Operator gene (C) Inducer, Repressor, Structural gene (D) Promoter, Structural gene, Terminator

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

- (A) promotes apical dominance. (B) promotes abscission of mature leaves only. (C) does not affect mature monocotyledonous plants. (D) can help in cell division in grasses, to produce growth.
-

107. 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:

- (A) A, C and D only (B) A, B, C and D only (C) A, B and E only (D) A, B and D only
-

108. 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:

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

109. Spindle fibers attach to kinetochores of chromosomes during:

- (A) Prophase (B) Metaphase (C) Anaphase (D) Telophase
-

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

- (A) Datura (B) Cassia (C) Pisum (D) Sesbania
-

111. The cofactor of the enzyme carboxypeptidase is:

- (A) Zinc (B) Niacin (C) Flavin (D) Haem
-

112. Match List I with List II:

| List I | List II |
|-------------------|---|
| A.Nucleolus | I.Site of formation of glycolipid |
| B.Centriole | II.Organization like the cartwheel |
| C.Leucoplasts | III.Site for active ribosomal RNA synthesis |
| D.Golgi apparatus | IV.For storing nutrients |

Choose the correct answer from the options given below:

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

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

- (A) Totipotency (B) Micropropagation (C) Differentiation (D) Somatic hybridization
-

114. Hind II always cuts DNA molecules at a particular point called recognition sequence and it consists of:

- (A) 8 bp (B) 6 bp (C) 4 bp (D) 10 bp
-

115. Identify the set of correct statements:

- A. The flowers of Vallisneria are colourful and produce nectar.
B. The flowers of water lily 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 some hydrophytes, the pollen grains are carried passively inside water.

Choose the correct answer from the options given below:

- (A) C, D and E only (B) A, B, C and D only (C) A, C, D and E only (D) B, C, D and E only
-

116. Given below are two statements:

Statement I: Parenchyma is living but collenchyma is dead tissue.

Statement II: Gymnosperms lack xylem vessels but the 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:

- (A) Both Statement I and Statement II are true (B) Both Statement I and Statement II are false (C) Statement I is true but Statement II is false (D) Statement I is false but Statement II is true
-

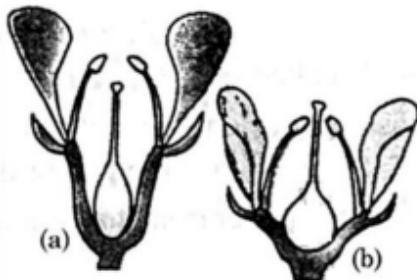
117. Formation of interfascicular cambium from fully developed parenchyma cells is an example for:

- (A) Differentiation (B) Redifferentiation (C) Dedifferentiation (D) Maturation
-

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

- (A) Cofactor inhibition (B) Feedback inhibition (C) Competitive inhibition (D) Enzyme activation
-

119. 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):



Choose the correct answer from the options given below:

- (A) (a) Epigynous; (b) Hypogynous (B) (a) Hypogynous; (b) Epigynous (C) (a) Perigynous; (b) Epigynous (D) (a) Perigynous; (b) Perigynous
-

120. 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, with which of the following genotype will you cross it?

- (A) BB (B) bb (C) Bb (D) BB/Bb
-

121. Tropical regions show greatest level of species richness because:

- A. Tropical latitudes have remained relatively undisturbed for millions of years, hence more time was available for species diversification.
- B. Tropical environments are more seasonal.
- C. More solar energy is available in tropics.
- D. Constant environments promote niche specialization.
- E. Tropical environments are constant and predictable.

Choose the correct answer from the options given below:

- (A) A, C, D and E only (B) A and B only (C) A, B and E only (D) A, B and D only
-

122. The equation of Verhulst-Pearl logistic growth is:

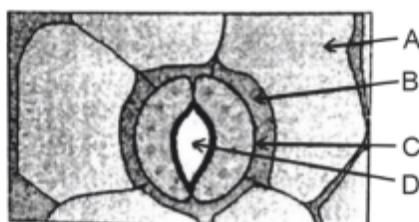
$$\frac{dN}{dt} = rN \left[\frac{K - N}{K} \right]$$

From this equation, K indicates:

Choose the correct answer from the options given below:

- (A) Intrinsic rate of natural increase (B) Biotic potential (C) Carrying capacity (D)
Population density
-

123. In the given figure, which component has thin outer walls and highly thickened inner walls?



Choose the correct answer from the options given below:

- (A) C (B) D (C) A (D) B
-

124. Given below are two statements:

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

Statement II: 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:

- (A) Both Statement I and Statement II are true (B) Both Statement I and Statement II are false (C) Statement I is true but Statement II is false (D) Statement I is false but Statement II is true
-

125. List of endangered species was released by:

Choose the correct answer from the options given below:

- (A) GEAC (B) WWF (C) FOAM (D) IUCN
-

126. Which of the following are required for the dark reaction of photosynthesis?

- A. Light
- B. Chlorophyll
- C. CO₂
- D. ATP
- E. NADPH

- (A) A, B and C only (B) B, C and D only (C) C, D and E only (D) D and E only
-

127. The type of conservation in which the threatened species are taken out from their natural habitat and placed in special settings where they can be protected and given special care is called:

- (A) in-situ conservation (B) Biodiversity conservation (C) Semi-conservative method (D) Sustainable development
-

128. What is the fate of a piece of DNA carrying only the gene of interest which is transferred into an alien organism?

- A. The piece of DNA would be able to multiply itself independently in the progeny cells of the organism.
- B. It may get integrated into the genome of the recipient.
- C. It may multiply and be inherited along with the host DNA.

D. The alien piece of DNA is not an integral part of chromosome.

E. It shows ability to replicate.

Choose the correct answer from the options given below:

(A) A and B only (B) D and E only (C) B and C only (D) A and E only

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

(A) Beta-galactosidase (B) Acetylase (C) Permease (D) Polymerase

130. 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 characters 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:

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

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

(A) Morphology of mycelium (B) Mode of nutrition (C) Mode of spore formation (D) Fruiting body

132. Given below are two statements:

Statement I: Bt toxins are insect group specific and coded by a gene cry IAc.

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 most appropriate answer from the options given below:

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

133. Bulliform cells are responsible for:

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

134. 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) Only red flowered plants
 - (2) Red flowered as well as pink flowered plants
 - (3) Only pink flowered plants
 - (4) Red, Pink as well as white flowered plants
-

135. How many molecules of ATP and NADPH are required for every molecule of CO₂ fixed in the Calvin cycle?

- (1) 2 molecules of ATP and 3 molecules of NADPH
 - (2) 2 molecules of ATP and 2 molecules of NADPH
 - (3) 3 molecules of ATP and 3 molecules of NADPH
 - (4) 3 molecules of ATP and 2 molecules of NADPH
-

136. Match List I with List II

| List I | List II |
|--------------------------|--|
| A.Robert May | <i>I.Species-Area relationship</i> |
| B.Alexander von Humboldt | <i>II.Long term ecosystem experiment using outdoor plots</i> |
| C.Paul Ehrlich | <i>III.Global species diversity at about 7 million</i> |
| D.David Tilman | <i>IV.Rivet popper hypothesis</i> |

Choose the correct answer from the options given below:

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

137. Identify the correct description about the given figure:



- (1) Wind pollinated plant inflorescence showing flowers with well exposed stamens.
 - (2) Water pollinated flowers showing stamens with mucilaginous covering.
 - (3) Cleistogamous flowers showing autogamy.
 - (4) Compact inflorescence showing complete autogamy.
-

138. Match List I with List II

| List I | List II |
|---|--|
| <i>A</i> .Frederick Griffith | <i>I</i> .Genetic code |
| <i>B</i> .Francois Jacob & Jacque Monod | <i>II</i> .Semi-conservative mode of DNA replication |
| <i>C</i> .Har Gobind Khorana | <i>III</i> .Transformation |
| <i>D</i> .Meselson & Stahl | <i>IV</i> .Lac operon |

Choose the correct answer from the options given below:

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

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

- (1) Auxin
 - (2) Gibberellin
 - (3) Cytokinin
 - (4) Abscisic acid
-

140. Match List I with List II

| List I | List II |
|------------------|----------------------------------|
| <i>A</i> .Rose | <i>I</i> .Twisted aestivation |
| <i>B</i> .Pea | <i>II</i> .Perigynous flower |
| <i>C</i> .Cotton | <i>III</i> .Drupe |
| <i>D</i> .Mango | <i>IV</i> .Marginal placentation |

Choose the correct answer from the options given below:

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

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

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

141. 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 by 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) A, B, C and D only
 - (2) B, C, D and E only
 - (3) A, C, D and E only
 - (4) A, B, C and E only
-

142. Identify the step in tricarboxylic acid cycle, which does not involve oxidation of substrate.

- (1) Malic acid → Oxaloacetic acid
 - (2) Succinic acid → Malic acid
 - (3) Succinyl-CoA → Succinic acid
 - (4) Isocitrate → α -ketoglutaric acid
-

143. Given below are two statements:

Statement I: In C₃ plants, some O₂ binds to RuBisCO, hence CO₂ fixation is decreased.

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

144. Match List-I with List-II

| List-I | List-II |
|-------------------|--|
| <i>A.GLUT – 4</i> | <i>I.Hormone</i> |
| <i>B.Insulin</i> | <i>II.Enzyme</i> |
| <i>C.Trypsin</i> | <i>III.Intercellulargroundsubstance</i> |
| <i>D.Collagen</i> | <i>IV.Enablesglucosetransportintocells</i> |

Choose the correct answer from the options given below:

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

145. Match List-I with List-II

| List-I | List-II |
|------------------------|------------------------|
| <i>A.Monoadelphous</i> | <i>I.Citrus</i> |
| <i>B.Diadelphous</i> | <i>II.Pea</i> |
| <i>C.Polyadelphous</i> | <i>III.Lily</i> |
| <i>D.Epiphyllous</i> | <i>IV.China – rose</i> |

Choose the correct answer from the options given below:

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

146. The DNA present in chloroplast is:

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

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

- (1) $\frac{x}{10}$ $\text{kcal m}^{-2} \text{ yr}^{-1}$
 - (2) x $\text{kcal m}^{-2} \text{ yr}^{-1}$
 - (3) $10x$ $\text{kcal m}^{-2} \text{ yr}^{-1}$
 - (4) $\frac{100x}{3x}$ $\text{kcal m}^{-2} \text{ yr}^{-1}$
-

148. Which of the following are fused in somatic hybridization involving two varieties of plants?

- (1) Callus
 - (2) Somatic embryos
 - (3) Protoplasts
 - (4) Pollens
-

149. Match List I with List II:

| List-I | List-II |
|-----------------------------|---|
| A.Citric acid cycle | I.Cytoplasm |
| B.Glycolysis | II.Mitochondrial matrix |
| C.Electron transport system | III.Intermembrane space of mitochondria |
| D.Protongradient | IV.Inner mitochondrial membrane |

150. Which of the following statement is correct regarding the process of replication in E. coli?

- (1) The DNA dependent DNA polymerase catalyses polymerization in one direction that is $3' \rightarrow 5'$
 - (2) The DNA dependent RNA polymerase catalyses polymerization in one direction, that is $5' \rightarrow 3'$
 - (3) The DNA dependent DNA polymerase catalyses polymerization in $5' \rightarrow 3'$ as well as $3' \rightarrow 5'$ direction
 - (4) The DNA dependent DNA polymerase catalyses polymerization in $5' \rightarrow 3'$ direction
-

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

- (1) Cortisol
 - (2) Testosterone
 - (3) Progesterone
 - (4) Glucagon
-

152. Given below are two statements:

Statement I: The presence or absence of hymen is not a reliable indicator of virginity.

Statement II: The hymen is torn during the first coitus only.

Choose the correct answer from the options given below:

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

153. Which of the following statements is incorrect?

- (1) A bio-reactor provides optimal growth conditions for achieving the desired product

-
- (2) Most commonly used bio-reactors are of stirring type
 - (3) Bio-reactors are used to produce small scale bacterial cultures
 - (4) Bio-reactors have an agitator system, an oxygen delivery system and foam control system
-

154. Which one is the correct product of DNA dependent RNA polymerase to the given template?

3' TACATGGCAAATATCCATTCA 5'

- (1) 5' AUGUACCGUUUAUAGGUAGU 3'
 - (2) 5' AUGUAAAGUUUAUAGGUAGU 3'
 - (3) 5' AUGUACCGUUUAUAGGGAAGU 3'
 - (4) 5' ATGTACCGTTATAGGTAAGT 3'
-

155. Given below are two statements:

Statement I: FSH acts upon ovarian follicles in female and Leydig cells in male.

Statement II: Growing ovarian follicles secrete estrogen in female while interstitial cells secrete androgen in male human beings.

Choose the correct answer from the options given below:

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

156. Match List I with List II:

| List I | List II |
|------------------------|--------------------|
| <i>A.Typhoid</i> | <i>I.Fungus</i> |
| <i>B.Leishmaniasis</i> | <i>II.Nematode</i> |
| <i>C.Ringworm</i> | <i>IIIProtozoa</i> |
| <i>D.Filariasis</i> | <i>IV.Bacteria</i> |

Choose the correct answer from the options given below:

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

157. Following are the stages of pathway for conduction of an action potential through the heart

- A. AV bundle
- B. Purkinje fibers
- C. AV node
- D. Bundle branches
- E. SA node

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

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

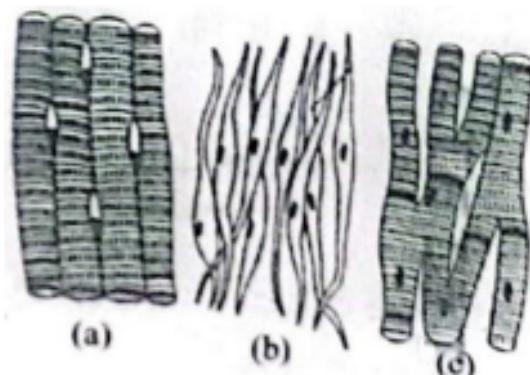
158. Match List I with List II:

| List I (Sub-Phases of Prophase I) | List II (Specific Characters) |
|--|---|
| A.Diakinesis | <i>I.</i> Synaptonemal complex formation |
| B.Pachytene | <i>II.</i> Completion of terminalisation of chiasmata |
| C.Zygotene | <i>III.</i> Chromosomes look like thin threads |
| D.Leptotene | <i>IV.</i> Appearance of recombination nodules |

Choose the correct answer from the options given below:

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

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



Muscle Name/Location:

- (1) (a) Smooth - Toes, (b) Skeletal – Legs, (c) Cardiac – Heart
- (2) (a) Skeletal - Triceps, (b) Smooth – Stomach, (c) Cardiac – Heart
- (3) (a) Skeletal - Biceps, (b) Involuntary – Intestine, (c) Smooth – Heart
- (4) (a) Involuntary – Nose tip, (b) Skeletal – Bone, (c) Cardiac – Heart

160. Match List I with List II:

| List I | List II |
|-------------------------|-----------------|
| A.Non-medicated IUD | I.Multiload 375 |
| B.Copper releasing IUD | II.Progestogens |
| C.Hormone releasing IUD | III.Lippes loop |
| D.Implants | IV.LNG-20 |

Choose the correct answer from the options given below:

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

161. Match List I with List II:

| List I | List II |
|------------|------------------------|
| A.Lipase | I.Peptide bond |
| B.Nuclease | II.Ester bond |
| C.Protease | III.Glycosidic bond |
| D.Amylase | IV.Phosphodiester bond |

Choose the correct answer from the options given below:

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

162. 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 and R is the correct explanation of A
 - (2) Both A and R are correct but R is NOT the correct explanation of A
 - (3) A is correct but R is not correct
 - (4) A is not correct but R is correct
-

163. 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) D-A-C-B
 - (2) B-A-D-C
 - (3) C-B-D-A
 - (4) A-D-C-B
-

164. Match List I with List II:

| List I | List II |
|---------------------|-----------------------|
| A.Axoneme | I.Centriole |
| B.Cartwheel pattern | II.Cilia and flagella |
| C.Crista | III.Chromosome |
| D.Satellite | IV.Mitochondria |

Choose the correct answer from the options given below:

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

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

165. Match List I with List II:

| List I | List II |
|-----------------------|-----------------------|
| <i>A.Pterophyllum</i> | <i>I.Hag fish</i> |
| <i>B.Myxine</i> | <i>II.Saw fish</i> |
| <i>C.Pristis</i> | <i>III.Angel fish</i> |
| <i>D.Exocoetus</i> | <i>IV.Flying fish</i> |

Choose the correct answer from the options given below:

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

166. Match List I with List II:

| List I | List II |
|---|--------------------------|
| <i>A.α – Iantitrypsin</i> | <i>I.Cotton bollworm</i> |
| <i>B.Cry IAb</i> | <i>II.ADA deficiency</i> |
| <i>C.Cry IAc</i> | <i>III.Emphysema</i> |
| <i>D.Enzyme replacement therapy</i> | <i>IV.Corn borer</i> |

Choose the correct answer from the options given below:

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

167. The “Ti plasmid” of *Agrobacterium tumefaciens* stands for

- (1) Tumour inhibiting plasmid
 - (2) Tumor independent plasmid
 - (3) Tumor inducing plasmid
 - (4) Temperature independent plasmid
-

168. Match List I with List II:

| List I | List II |
|-----------------|------------------|
| A.Pleurobrachia | I.Mollusca |
| B.Radula | II.Ctenophora |
| C.Stomochord | III.Osteichthyes |
| D.Air bladder | IV.Hemichordata |

Choose the correct answer from the options given below:

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

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

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

170. 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) C-E-D-A-B
- (2) E-B-D-A-C
- (3) B-D-E-A-C
- (4) E-C-A-D-B

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

- (1) Genetic recombination
- (2) Genetic drift
- (3) Gene migration
- (4) Constant gene pool

172. Match List I with List II:

| List I | List II |
|----------------|---|
| A.Pons | I.Provides additional space for Neurons, regulates posture and balance. |
| B.Hypothalamus | II.Controls respiration and gastric secretions. |
| C.Medulla | III.Connects different regions of the brain. |
| D.Cerebellum | IV.Neurosecretory cells |

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

173. Match List I with List II:

| List I | List II |
|--------------------------------|---|
| A.Expiratory capacity | I.Expiratory reserve volume + Tidal volume + Inspiratory volume |
| B.Functional residual capacity | II.Tidal volume + Expiratory reserve volume |
| C.Vital capacity | III.Tidal volume + Inspiratory reserve volume |
| D.Inspiratory capacity | IV.Expiratory reserve volume + Residual volume |

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

174. 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,BD only
 - (2) A,BE only
 - (3) B,C E only
 - (4) C,D E only
-

175. Which of the following is not a component of Fallopian tube?

- (1) Uterine fundus

-
- (2) Isthmus
 - (3) Infundibulum
 - (4) Ampulla
-

176. Match List I with List II:

| List I | List II |
|--------------------------|---|
| A.Fibrous joints | I.Adjacent vertebrae, limited movement |
| B.Cartilaginous joints | II.Humerus and Pectoral girdle, rotational movement |
| C.Hinge joints | III.Skull, don't allow any movement |
| D.Ball and socket joints | IV.Knee, help in locomotion |

Choose the correct answer from the options given below:

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

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

- (1) Adaptive radiation
 - (2) Natural selection
 - (3) Convergent evolution
 - (4) Divergent evolution
-

178. Given below are two statements:

Statement I: In the nephron, the descending limb of the 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 option given below:

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

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

- (1) 5th segment
 - (2) 10th segment
 - (3) 8th and 9th segment
 - (4) 11th segment
-

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

- (1) High pO₂ and High pCO₂
 - (2) High pO₂ and Lesser H⁺ concentration
 - (3) Low pCO₂ and High H⁺ concentration
 - (4) Low pCO₂ and High temperature
-

181. 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 resistance to antibiotics and 'Y' for protein involved in the replication of Plasmid.
- (2) The gene 'X' is responsible for controlling the copy number of the linked DNA and 'Y' for protein involved in the replication of Plasmid.
- (3) The gene 'X' is for protein involved in replication of Plasmid and 'Y' for resistance to antibiotics.
- (4) Gene 'X' is responsible for recognition sites and 'Y' is responsible for antibiotic resistance.

182. Match List I with List II:

| List I | List II |
|---------------------------|---------------------|
| A.Down's syndrome | I.11th chromosome |
| B. α – Thalassemia | II.'X' chromosome |
| C. β – Thalassemia | III.21st chromosome |
| D.Klinefelter's syndrome | IV.16th chromosome |

183. Consider the following statements:

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

184. Match List I with List II:

| List I | List II |
|---------------|------------------|
| A.Common cold | I.Plasmodium |
| B.Haemozoain | II.Typhoid |
| C.Widal test | III.Rhinoviruses |
| D.Allergy | IV.Dust mites |

Choose the correct answer from the options given below :

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

185. Match List I with List II:

| List I | List II |
|---------------------|---|
| <i>A</i> .Cocaine | <i>I</i> .Effective sedative in surgery |
| <i>B</i> .Heroin | <i>II</i> .Cannabis sativa |
| <i>C</i> .Morphine | <i>III</i> .Erythroxylum |
| <i>D</i> .Marijuana | <i>IV</i> .Papaver somniferum |

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

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

186. 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.

187. 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.
-

188. Given below are two statements:

Statement I: The cerebral hemispheres are connected by 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 correct.
 (2) Both Statement I and Statement II are incorrect.
 (3) Statement I is correct but Statement II is incorrect.
 (4) Statement I is incorrect but Statement II is correct.
-

189. Match List I with List II related to digestive system of cockroach.

| List I | List II |
|--|-------------------------|
| A. The structures used for storing of food | I. Gizzard |
| B. Ring of 6-8 blind tubules at junction of foregut and midgut. | II. Gastric Caeca |
| C. Ring of 100-150 yellow coloured thin filaments at junction of midgut and hindgut. | III. Malpighian tubules |
| D. The structures used for grinding the food. | IV. Crop |

Choose the correct answer from the options given below:

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

190. Match List I with List II:

| List I | List II |
|------------------------|--|
| A. Exophthalmic goiter | I. Excess secretion of cortisol, moon face & hyperglycemia. |
| B. Acromegaly | II. Hypo-secretion of thyroid hormone and stunted growth. |
| C. Cushing's syndrome | III. Hyper secretion of thyroid hormone & protruding eyeballs. |
| D. Cretinism | IV. Excessive secretion of growth hormone. |

Choose the correct answer from the options given below:

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

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

- A. Juxta medullary nephrons are located in the columns of Bertini.
 - B. Renal corpuscle of juxta medullary nephron lies in the outer portion of the renal medulla.
 - C. Loop of Henle of juxta medullary nephron runs deep into medulla.
 - D. Juxta medullary nephrons outnumber the cortical nephrons.
-

192. 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) E, A, D, C, B
 - (2) A, E, B, D, C
 - (3) B, A, C, D, E
 - (4) E, D, C, B, A
-

193. Match List I with List II:

| List I | List II |
|---------------------------------------|---------------------------------------|
| A. Unicellular glandular epithelium | I. Salivary glands |
| B. Compound epithelium | II. Pancreas |
| C. Multicellular glandular epithelium | III. Goblet cells of alimentary canal |
| D. Endocrine glandular epithelium | IV. Moist surface of buccal cavity |

Choose the correct answer from the options given below:

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

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

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

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

194. Match List I with List II:

| List I | List II |
|--------------------|------------------------|
| A. Mesozoic Era | I. Lower invertebrates |
| B. Proterozoic Era | II. Fish & Amphibia |
| C. Cenozoic Era | III. Birds & Reptiles |
| D. Paleozoic Era | IV. Mammals |

Choose the correct answer from the options given below:

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

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

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

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

195. Given below are two statements:

Statement I: Mitochondria and chloroplasts are both double membrane-bound organelles.

Statement II: The inner membrane of mitochondria is relatively less permeable, as compared to the chloroplast membrane.

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 correct.

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

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

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

196. Match List I with List II:

| List I | List II |
|----------------|---|
| A. P wave | I. Heart muscles are electrically silent. |
| B. QRS complex | II. Depolarisation of ventricles. |
| C. T wave | III. Depolarisation of atria. |
| D. T-P gap | IV. Repolarisation of ventricles. |

Choose the correct answer from the options given below:

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

197. Given below are two statements:

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

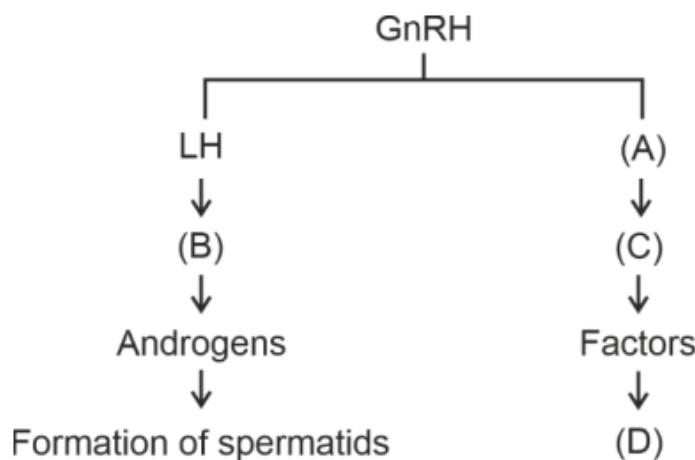
Statement II: Both bone marrow and thymus provide micro environments for the development and maturation of T-lymphocytes.

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

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

- (1) FSH, Leydig cells, Sertoli cells, spermiogenesis.
 - (2) ICSH, Interstitial cells, Leydig cells, spermiogenesis.
 - (3) FSH, Sertoli cells, Leydig cells, spermatogenesis.
 - (4) ICSH, Leydig cells, Sertoli cells, spermatogenesis.
-



199. 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. $I^B i / I^A i / ii$
- B. $I^B I^B / I^A I^A / ii$
- C. $I^A I^B / i I^A / I^B i$
- D. $I^A i / I^B i / I^A i$

Choose the most appropriate answer from the options given below : (1) A only

- (2) B only
 - (3) C and B only
 - (4) D and E only
-

200. Match List I with List II:

| List I | List II |
|---------------------------------|------------------|
| A. RNA polymerase III | I. snRNPs |
| B. Termination of transcription | II. Promotor |
| C. Splicing of Exons | III. Rho factor |
| D. TATA box | IV. SnRNAs, tRNA |

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-III, B-IV, C-I, D-II

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