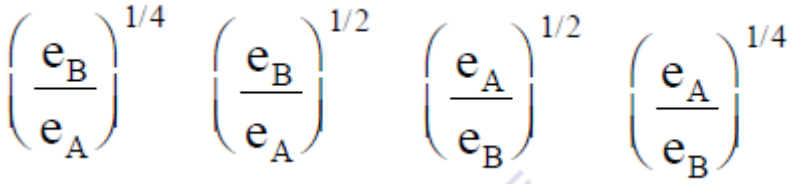
ALTUS KNOWLEDGE

Total: 200 Que. | NEET TEST 3 | Time: 180 Min.

Physics FLN

1). Two electric lamps A and B radiate the same power. Their filaments have the same dimensions, and have emissivities eA and eB . Their surface temperatures are TA and TB . The ratio TA / TB will be equal to

(a) (b) (c) (d)



Q.Type:- MCQ Single, Ans:- A

Solution :- P = eσAT4

2). An organ pipe filled with oxygen gas at 47ºC resonates in its fundamental mode at a frequency 300 Hz. If it is now filled with nitrogen gas, at what temperature will it resonance at the same frequency, in the fundamental mode?

(a) (b) (c) (d)

7ºC 27ºC 87ºC 107ºC

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$n \propto V \; ; \quad \text{Where } V = \sqrt{\frac{\gamma RT}{M}}$$

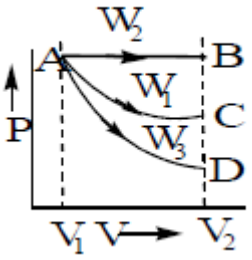
3). Starting with the same initial conditions, an ideal gas expands from volume V1 to V2 in three different ways. The work done by the gas is W1 if the process is purely isothermal, W2 if purely isobaric and W3 if purely adiabatic. Then

(a) (b) (c) (d)

W2>W1>W3 W2>W3>W1 W1>W2>W3 W1>W3>W2

Q.Type:- MCQ Single, Ans:- A

Solution :-



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4). A set of 'n' equal resistors, of value 'R' each, are connected in series to a battery of emf 'E' and internal resistance 'R'. The current drawn is I. Now, the 'n' resistors are connected in parallel to the same battery. Then, the current drawn from battery becomes 10I. The value of 'n' is

(a) (b) (c) (d)

20 11 10 9

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$I_1 = \frac{\varepsilon}{nR + R}; \qquad I_2 = \frac{\varepsilon}{\frac{R}{n} + R}$$

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5). Monochromatic light of wavelength 6000Å is used in a Young's double slit experiment. One of the slits is covered by a transparent sheet of thickness 1.8×10^{-5} m made of a material of refractive index 1.6. How many fringes will shift due to the introduction of the sheet?

(a) (b) (c) (d)

16 18 20 24

Q.Type:- MCQ Single, Ans:- B

Solution :-

$$(\mu - 1)t = n\lambda \Rightarrow n = \frac{(\mu - 1)t}{\lambda}$$

$$\eta = \frac{(1.6 - 1)51.8 \times 10^{-5}}{6000 \times 10^{-10}} = \frac{0.6 \times 1.8 \times 10^{-5}}{6 \times 10^{-7}} = \frac{18 \times 10^{-7}}{10^{-7}} = 18(\text{no. of fringes})$$

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6). The ratio of kinetic energy to the total energy of an electron in a Bohr orbit of the hydrogen atom, is

(a) (b) (c) (d)

2 : -1 1 : -1 1 : 1 1 : -2

Q.Type:- MCQ Single, Ans:- B

Solution :-

TE = −KE

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7). A radioactive substances decays at 1/32 of its initial activity in 25 days. Its half life is

(a) 10 days (b) 5 days (c) 20 days (d) 15 days

Q.Type:- MCQ Single, Ans:- B

Solution :-

$$\frac{A_0}{A} = 2^n$$

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8). In a p-n junction diode, change in temperature due to heating

(a) Does not affect resistance of p-n junction (b) Affects only forward resistance (c) Affects only reverse resistance

(d) Affects the overall V – I characteristics of p-n junction

Q.Type:- MCQ Single, Ans:- D

Solution :-

Affects the overall characteristics of junction

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9). An EM wave is propagating in a medium with a velocity v = vi^ . The instantaneous oscillating electric field of this EM wave is along + y – axis. Then, the direction of oscillating magnetic field of EM wave will be along

(a) – y-direction (b) + z-direction (c) –z-direction (d) –x-direction

Q.Type:- MCQ Single, Ans:- B

Solution :-

Propagation $\overline{C} = \overline{E} \times \overline{B}$

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10). An object is placed at a distance of 40 cm from a concave mirror of focal length 15 cm. If the object is displaced through a distance of 20 cm towards the mirror, the displacement of the image will be

(a) 30 cm towards the mirror (b) 36 cm away from the mirror (c) 30 cm away from the mirror (d) 36 cm towards the mirror

Q.Type:- MCQ Single, Ans:- B

Solution :-

$$\frac{1}{f}=\frac{1}{v}+\frac{1}{u}$$

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11). The magnetic potential energy stored in a certain inductor is 25 mJ, when the current in the inductor is 60 mA. This inductor is of inductance

(a) 1.389H (b) 138.88H (c) 0.138H (d) 13.89H

Q.Type:- MCQ Single, Ans:- D

Solution :-

$$U=\frac{1}{2}LI^2$$

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12). A number of spherical conductors of different radii are given charge such that the charge density of each conductor is inversely proportional to its radius. The conductors will have

(a) The same potential (b) The same potential energy (c) The same charge (d) Potentials inversely proportional to their radii

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$V=\frac{R\sigma}{\epsilon_0}\ ;\ \text{Here}\ \sigma\propto\frac{1}{R}.\ \text{Hence all conductors are at the same potential}$$

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13). A particle of mass m and charge Q is placed in an electric field E which varies with time t as E = E0 sinωt . It will undergo simple harmonic motion of amplitude

(a) QE02/mω^2 (b) QE0/mω^2 (c) (QE0/mω^2)$^{1/2}$ (d) QE0/mω

Q.Type:- MCQ Single, Ans:- B

Solution :-

$$F=QE_0\sin\omega t\ ;\qquad a=\frac{QE_0}{m}\ ;\quad \text{Where}\ a=\omega^2A$$

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14). Current sensitivity of a moving coil galvanometer is 5 div/mA and its voltage sensitivity (angular deflection per unit voltage applied) is 20 div/V. The resistance of the galvanometer is

(a) (b) (c) (d)

250Ω 25Ω 40Ω 500Ω

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$G = \frac{\sigma_I}{\sigma_V}$$

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15). An isolated parallel-plate capacitor of capacitance C has plates X and Y. If plate X is given charge Q, the potential difference between X and Y is

(a) (b) (c) (d)

ZERO 2Q/C Q/C Q/2C

Q.Type:- MCQ Single, Ans:- D

Solution :-

The charge on each side of plate X is Q/2

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16). A ball A, moving with kinetic energy E, makes a head-on, elastic collision with a stationary ball with mass n times that of A. The maximum potential energy stored in the system during the collision is

(a) (b) (c) (d)

nE / (n +1) (n +1)E / n (n −1)E / n E / n

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$\Delta U = \frac{1}{2}.\frac{m_1 m_2}{m_1 + m_2}\left(u_1 - u_2\right)^2$$

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17). A solid sphere is rotating freely about its symmetry axis in free space. The radius of the sphere is increased keeping its mass same. Which of the following physical quantities would remain constant for the sphere?

(a) (b) (c) (d)

Rotational kinetic energy Moment of inertia Angular velocity Angular momentum

Q.Type:- MCQ Single, Ans:- D

Solution :-

Angular momentum is conserved

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18).

An electric dipole has moment $\vec{p} = p\vec{i}$. Two points which are at equal distances from the dipole, and far away from it, have electric intensities $E_1\vec{i}$ and $-E_2\vec{i}$. The ratio E_1/E_2 must be

(a) (b) (c) (d)

1 $2^{1/2}$ 2 1/2

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$\overline{E_1} = \frac{1}{4\pi \in_0} \cdot \frac{2\overline{P}}{r^3}; \qquad \overline{E_2} = -\frac{1}{4\pi \in_0} \cdot \frac{\overline{P}}{r^3}$$

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19). A body executes simple harmonic motion. The potential energy (P.E.), the kinetic energy (K.E.) and total energy (T.E.) are measured as a function of displacement X. Which of the following statements is true ?

(a) K.E. is maximum when X = 0

(b) T.E. is zero when X = 0

(c) K.E. is maximum when X is maximum

(d) P.E. is maximum when X = 0

Q.Type:- MCQ Single, Ans:- A

Solution :-

We know that K.E. = $\frac{1}{2}m\omega^2(A^2 - X^2)$

At mean position X = 0

$\therefore$ K.E. = $\frac{1}{2}m\omega^2A^2$ is maximum

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20). The ratio of the largest to shortest wavelenghts in Lyman series of hydrogen spectra is

(a) 25/9 (b) 17/6 (c) 9/5 (d) 4/3

Q.Type:- MCQ Single, Ans:- D

Solution :-

$$\frac{\lambda_{max}}{\lambda_{min}} = \frac{\frac{4}{3R}}{\frac{1}{R}} = 4/3$$

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21).

Each molecule of a gas has f degrees of freedom. The ratio $\frac{c_p}{c_v} = \gamma$ for the gas is

A) $1+\frac{f}{2}$ B) $1+\frac{1}{f}$ C) $1+\frac{2}{f}$ D) $1+\frac{(f-1)}{3}$

(a) (b) (c) (d)

A B C D

Q.Type:- MCQ Single, Ans:- c

Solution :-

$$\gamma = 1+\frac{2}{f}$$

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22). A particle executive linear simple harmonic motion with an amplitude of 3 cm. When the particle is at 2 cm from the mean position, the magnitude of its velocity is equal to that of its acceleration. Then, its time period in second is

A) $\frac{\sqrt{5}}{\pi}$ B) $\frac{\sqrt{5}}{2\pi}$ C) $\frac{4\pi}{\sqrt{5}}$ D) $\frac{2\pi}{\sqrt{3}}$

(a) (b) (c) (d)

A B C D

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$\omega^2 y = \omega\sqrt{A^2 - y^2}$$

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23). The resistance of a wire is R ohm. If it is melted and stretched to n times its original length, its new resistance will be

(a) (b) (c) (d)

nR R/n n2R R/n2

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$R = \frac{Sl^2}{V}$$

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24). A uniform rod of mass m, length L, area of cross-section A and Young's modulus Y hangs from the ceiling. Its elongation under its own weight will be

(a) (b) (c) (d)

ZERO mgL/2AY mgL/AY 2mgL/AY

Q.Type:- MCQ Single, Ans:- B

Solution :-

$$e = \frac{Fl}{AY} \; ; \quad \text{Here } F = mg, l = L/2$$

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25). Radiations of two photons having energies twice and five times the work function of metal are incident successively on the metal surface. The ratio of the maximum velocity of photoelectrons emitted in the two cases will be :

(a) (b) (c) (d)

1:1 1:2 1:3 1:4

Q.Type:- MCQ Single, Ans:- B

Solution :-

$$\frac{1}{2}mV^2 = h\upsilon - \phi; \qquad \frac{V_1^2}{V_2^2} = \frac{2\phi - \phi}{5\phi - \phi} = \frac{1}{4} \Rightarrow \frac{V_1}{V_2} = \frac{1}{2}$$

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26). Two cars moving in opposite directions approach each other with speed of 20 m/s first car blows a horn having a frequency 400 Hz. The frequency heard by the driver of the second car is [velocity sound 340 m/s]
A) 350 Hz B) 360 Hz C) 420 Hz D) 450 Hz

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

$$n_1 = n\left[\frac{V + x}{V - x}\right]$$

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27).

A charged particle of charge q and mass m is rotating in a circle of radius R with uniform speed V. Ratio of its magnetic moment (μ) to the angular momentum (L) is

A) $\frac{q}{2m}$ B) $\frac{q}{m}$ C) $\frac{q}{4m}$ D) $\frac{2q}{m}$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$\frac{\mu}{L} = \frac{q}{2m}$$

28). All of the following are properties of ideal gases except :

(a) Gas molecules do not interact with each other except during collisions

(b) Collisions between gas molecules are completely elastic

(c) Volume occupied by molecules is negligible compared to the volume occupied by the gas

(d) Small amounts of energy are lost during collisions between gas molecules

Q.Type:- MCQ Single, Ans:- D

Solution :-

Small amounts of energy are lost during collisions between gas molecules

29). The ratio of wavelengths of the last line of Balmer series and the last line of Lyman series is

(a) 2 (b) 1 (c) 4 (d) 0.5

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$\frac{1}{\lambda} \propto \left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right]$$

30). In discharge tube experiment electrons are created by Thermionic emission and electrons are moving by applying potential difference of 49V. Find de-Broglie wavelength associated by electron :

(a) 1.75 Å (b) 2.34 Å (c) 3.65 Å (d) 0.29 Å

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$\lambda_e = \frac{12.27}{\sqrt{49}} \Rightarrow \frac{12.27}{7} = 1.75\ \text{Å}$$

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31). A thin prism having refracting angle 10º is made of glass of refractive index 1.42. This prism is combined with another thin prism of glass of refractive index 1.7. This combination produces dispersion without deviation. The refracting angle of second prism should be

(a) 4º (b) 6º (c) 8º (d) 10º

Q.Type:- MCQ Single, Ans:- B

Solution :-

$$(\mu_1 - 1)A_1 + (\mu_2 - 1)A_2 = 0$$

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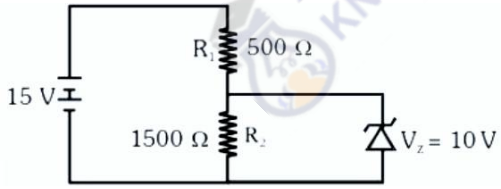
32). In the circuit given the current through the zener diode is



(1) 10 mA
(2) 6.67 mA
(3) 5 mA
(4) 3.33 mA

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

(4)

$$i_1 = \frac{35 - 30}{500} = .01\ \text{mA} = 10\ \text{mA},$$

$$i_2 = \frac{30}{4500} = 6.7\ \text{mA}$$

$$i_Z = 10 - 6.7 = 3.33\ \text{mA}$$

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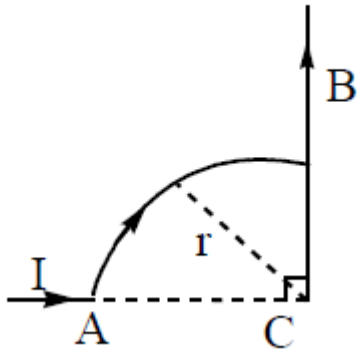
33).



A wire carrying a current I is shaped as shown. Section AB is a quarter circle of radius r.
The magnetic field at C is directed

(a) Along the bisector of the angle ACD, away from AB (b) Along the bisector of the angle ACB, towards AB
(c) Perpendicular to the plane of the paper, directed into the paper (d) At an angle π / 4 to the plane of the paper
Q.Type:- MCQ Single, Ans:- C

Solution :-

As the current is clockwise the field is directed inwards

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34).

A system is taken from state A to state B along two different paths 1 and 2. The heat absorbed and work done by the system along these two paths are Q_1 and Q_2 and W_1 and W_2 respectively.

A) $Q_1 = Q_2$ B) $W_1 = W_2$

C) $Q_1 - W_1 = Q_2 - W_2$ D) $Q_1 + W_1 = Q_2 + W_2$

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- C

Solution :-

$$dU = \text{constant}; \qquad dQ - dW = \text{constant}$$

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35). A Carnot engine operates between a source and a sink of temperatures 900 K and 600 K.
Its e ciency is

(a) 0.25 (b) 0.50 (c) 0.66 (d) 0.33
Q.Type:- MCQ Single, Ans:- D

Solution :-

$$\eta = \left(1 - \frac{T_2}{T_1}\right)$$

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36).

The x and y coordinates of the particle at any time are $x = 5t - 2t^2$ and $y = 10t$ respectively, where x and y are in metres and t in seconds. The acceleration of the particle at t = 2 s is

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$\frac{d^2x}{dt^2} = -4 ms^{-2}$$

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37).

The ratio of resolving powers of an optical microscope for two wavelengths $\lambda_1 = 4000Å$ and $\lambda_2 = 6000Å$ is

A) 8 : 27 B) 9 : 4 C) 3 : 2 D) 16 : 81

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$\text{Power } \alpha \frac{1}{\lambda}$$

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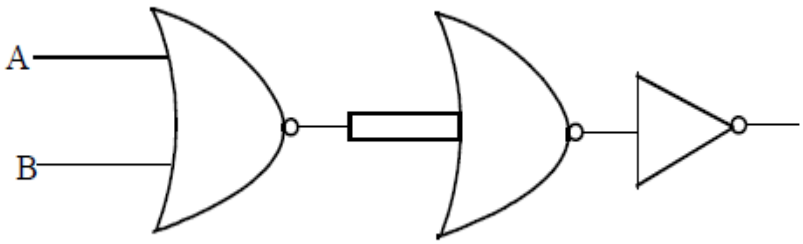
38).

The given electrical network is equivalent to



A) AND gate B) OR gate C) NOR gate D) NOT gate

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

NOR gate

39). In a common emitter transistor amplifier, the audio signal voltage across the collector is 3 V. The resistance of collector is3kohm. If current gain is 100 and the base resistance is 2 k ohm, the voltage and power gain of the amplifier is

(a) 200 & 1000 (b) 15 & 200 (c) 150 & 15000 (d) 20 & 2000

Q.Type:- MCQ Single, Ans:- C

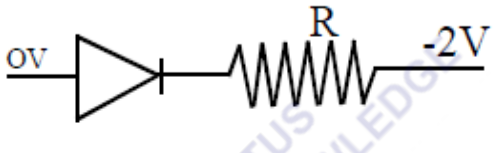
Solution :-

$$A_V = \beta.\frac{R_0}{R_I} \; ; \qquad A_P = \beta^2.\frac{R_0}{R_I}$$

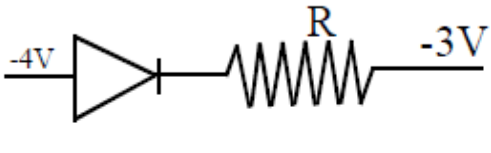
40).

Which one of the following represents forward bias diode?

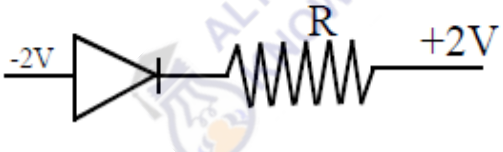
A)



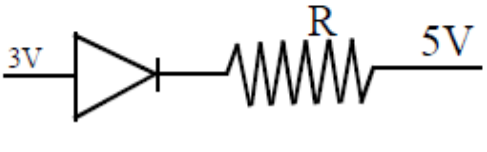
B)



C)



D)



(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

Potential on p –side should be more

41). An ideal gas A and a real gas B have their volumes increased from V to 2V under isothermal conditions. The increase in internal energy

(a) will be same in both A and B (b) will be zero in both the cases (c) of B will be more than that of A

(d) of A will be more than that of B

Q.Type:- MCQ Single, Ans:- B

Solution :-

(b) Under isothermal conditions, there is no change in internal energy.

42). When sound waves travel from air to water, which one of the following remains constant?

(a) Time Period (b) Frequency (c) Velocity (d) Wavelength

Q.Type:- MCQ Single, Ans:- B

Solution :-

(b) When sound travels from one medium to another its speed changes due to change in wavelength. Its frequency remains constant.

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43). The moment of inertia of disc about a tangent axis in its plane is

(a) $\frac{MR^2}{4}$ (b) $\frac{3MR^2}{2}$

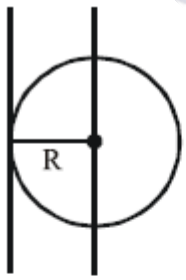
(c) $\frac{5}{4}MR^2$ (d) $\frac{7MR^2}{4}$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

(c)



Moment of inertia of a disc about a diameter

$$= \frac{1}{2} \times \frac{1}{2} MR^2 = \frac{1}{4} MR^2$$

$$[I_x + I_y = I_z = \frac{1}{2} MR^2]$$

Applying theorem of parallel axis.

$$I_z = \frac{1}{4} MR^2 + MR^2 = \frac{5}{4} MR^2$$

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44). After 300 days, the activity of a radioactive sample is 5000 dps (disintegrations per sec). The activity becomes 2500 dps after another 150 days. The initial activity of the sample in dps is

(a) 20,000 (b) 10,000 (c) 7,000 (d) 25,000

Q.Type:- MCQ Single, Ans:- A

Solution :-

(a) Activity decreases

5000 dps to 2500 dps in 150 days

$\therefore$ Half life period $T_{1/2} = 150$ days

$\therefore$ 300 days $= 2T_{1/2}$

Therefore, initial activity $= 5000 \times 2T_{1/2}$

$= 5000 \times 2 \times 2 = 20000$ dps

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45). A shunt of resistance 1 ohm is connected across a galvanometer of 120 ohm resistance. A current of 5.5 ampere gives full scale deflection in the galvanometer. The current that will give full scale deflection in the absence of the shunt is nearly :

(a) 5.5amp (b) 0.5amp (c) 0.004amp (d) 0.045amp

Q.Type:- MCQ Single, Ans:- D

Solution :-

(d) The current that will given full scale deflection in the absence of the shunt is nearly equal to the current through the galvanometer when shunt is connected i.e. I_g

$$\text{As } I_g = \frac{IS}{G+S}$$

$$= \frac{5.5 \times 1}{120+1} = 0.045 \text{ ampere.}$$

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46). Drop of water fall from the roof of a building which is 18m high at regular intervals of time. When the first drop reaches the ground, at the same instant fourth drop begins to fall. What are the distances of the second and third drops from the roof :

(a) 6m and 2m (b) 6m and 3m (c) 4m and 1m (d) 8m and 2m

Q.Type:- MCQ Single, Ans:- D

Solution :-

$$s = ut + \frac{1}{2}at^2 \text{ (For first drop } t' = 3t)$$

$$18 = \frac{1}{2} \times 10 \times (3t)^2$$

$$t = \sqrt{\frac{4}{10}}$$

II. $x_2 = 2t$

$$x_2 = \frac{1}{2} \times g \times (2t)^2 = \frac{1}{2} \times 10 \times \left(2 \times \sqrt{\frac{4}{10}}\right)^2 = 8m$$

III. $x_3 = t$

$$x_3 = \frac{1}{2} \times g \times (t)^2 = \frac{1}{2} \times 10 \times \frac{4}{10} = 2m$$

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47). A step up transformer has transformation ratio 5 : 3. What is voltage in secondary if voltage in primary is 60 V

(a) 20 (b) 60 (c) 100 (d) 180

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$T.R = \frac{V_s}{V_p}$$

$$\frac{5}{3} = \frac{V_s}{60} \Rightarrow V_s = 100V$$

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48).

A car starts from rest to cover a distance S. The coefficient of friction between the road and the tyres is μ. The minimum time in which the car can cover the distance is proportional to

A) μ B) $\sqrt{\mu}$ C) $\frac{1}{\mu}$ D) $\frac{1}{\sqrt{\mu}}$

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- D

Solution :-

Maximum acceleration $a = \mu g$

$S = \frac{1}{2} a t_{min}^2$; $S = \frac{1}{2} \mu g t^2 \Rightarrow t \propto \frac{1}{\sqrt{r}}$

49).

A rope is wound around a hollow cylinder of mass 3 kg and radius 40 cm. What is the tangential acceleration of a point on the surface of cylinder, if the rope is pulled with a force of 30 N?

A) $25\,m/s^2$ B) $0.25\,rad/s^2$ C) $25\,rad/s^2$ D) $10\,m/s^2$

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- C

Solution :-

$F.r = I.\alpha$; $F.r = mr^2.\alpha$

50).

Dimensional formula of linear momentum is

A) MLT^{-1} B) $ML^{-1}T^{-2}$ C) ML^2T^{-2} D) $ML^{-1}T^{-1}$

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- A

51). The number of water molecules is maximum in
A) 1.8 ml of water at STP B) 18 gram of water
C) 18 moles of water D) 18 molecules of water

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$1.8 \text{ gram of water} = \frac{6.023 \times 10^{23}}{18} \times 1.8 = 6.023 \times 10^{22} \text{ molecules}$$

$$18 \text{ gram of water} = 6.023 \times 10^{23} \text{ molecules}$$

$$18 \text{ moles of water} = 18 \times 6.023 \times 10^{23} \text{ molecules}$$

---

52).

$$CH_4 + O_2 \xrightarrow{Mo_2O_3\ \Delta} X$$

$$C_2H_6 + O_2 \xrightarrow{(CH_3COO)_2Mn} Y$$

$$(CH_3)_3CH \xrightarrow{KMnO_4/H^+} Z$$

The functional groups present in X,Y, Z respectively

A) -OH, -CHO, -COOH B) -CHO, -COOH, -OH

C) -COOH, -CHO, -OH D) -OH, -COOH, -OH

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

X is HCHO, Y is CH3COOH and Z is (CH3)3COH

---

53). Which of the following statements do not form a part of Bohr's model of hydrogen atom?
A) Energy of the electrons in the orbits are quantized
B) The electron in the orbit nearest the nucleus has the lowest energy
C) Electrons revolve in different orbits around the nucleus
D) It explains Zeeman and stark effect

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

Bohr's model cannot explain Zeeman and stark effect.

---

54). Which of the following is the correct IUPAC name?
A) 2 – ethylpentane B) 2 – propene
C) ethoxymethane D) ethylmethanoate

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

$HCOOC_2H_5$

---

55).

Which one of the following orders is not in accordance with the property stated against it?

A) $F_2 > Cl_2 > Br_2 > I_2$: Bond dissociation energy

B) $F_2 > Cl_2 > Br_2 > I_2$: Oxidising power

C) $HI > HBr > HCl > HF$: Acidic property in water

D) $F_2 > Cl_2 > Br_2 > I_2$: Electro negativity

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

$X-X$ bond $F-F$ $Cl-Cl$ $Br-Br$ $I-I$

$\underset{38}{}$ $\underset{57}{}$ $\underset{45.5}{}$ $\underset{35.6}{}$

Bond dissociation energy (kcal/mol)

The lower value of bond dissociation energy of fluorine is due to the high inter-electronic repulsion between non-bonding electrons in the 2p-orbitals of fluorine. As a result F – F bond is weaker in comparison to Cl – Cl and Br – Br bonds.

---

56).

The ionic radii (in $\mathring{A}$ of N^{3-}, O^{2-} and F^- are respectively

A) 1.71, 1.36 and 1.40

B) 1.36, 1.40 and 1.71

C) 1.36, 1.71 and 1.40

D) 1.71, 1.40 and 1.36

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

As "Z" increases ionic radius decreases for isoelectronic species

Trend of ionic radius : $N^{3-} > O^{2-} > F^-$

---

57).

In which of the following pairs, both the species are not isostructural?

A) $SiCl_4$, CCl_4 B) NH_3, PH_3 C) XeF_4, XeO_4 D) CO_2, XeF_2

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

In $SiCl_4$ and, CCl_4 central atom is sp3 hybridised and hence, both are isostructural NH_3 and PH_3 both are pyramidal and central atom in both cases is sp^3 hybridised. CO_2 and XeF_2, both are linear. In XeF_4, Xe is sp^3d^2 hybridised and structure is square planar while in XeO_4, Xe is sp^3 hybridised and structure is tetrahedral.

---

58). Which of the following do not show disproportionation reaction :

(1) ClO^-

(2) ClO_4^-

(3) ClO_2^-

(4) ClO_3^-

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

$Cl \rightarrow +7$ O.S.

(Max. & Min. O.S. do not give disproportionation reaction.

---

59).

Among the following, which one is a wrong statement?

A) PH_5 and $BiCl_5$ do not exist. B) $p\pi - d\pi$ bonds are present in SO_2

C) SeF_4 and CH_4 have same shape D) NaOH involve ionic and covalent bonds

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

SeF_4-See-saw shape,sp^3d hybridisation; CH_4-tetrahedral , sp^3 hybridisation

60).

Which one of the following is expected to exhibit optical isomerism ? (en = ethylenediamine)

A) *Cis* – $\left[Pt(NH_3)_2Cl_2\right]$

B) *Trans* – $\left[Pt(NH_3)_2Cl_2\right]$

C) *Cis* – $\left[Co(en)_2Cl_2\right]^+$

D) *Trans* – $\left[Co(en)_2Cl_2\right]^+$

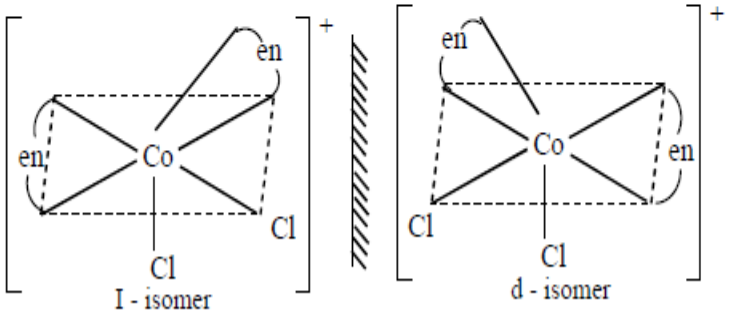
(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

Optical isomerism is not shown by square planar complexes, *Cis* – $\left[Pt(NH_3)_2Cl_2\right]$ and *Trans* – $\left[Pt(NH_3)_2Cl_2\right]$

Octahedral complex, *Trans* – $\left[Co(en)_2Cl_2\right]^+$ does not show optical isomerism (superimposable mirror image). But *Cis* – $\left[Co(en)_2Cl_2\right]^+$ shows optical isomerism



cis – $\left[Co(en)_2Cl_2\right]^+$

61).

Three thermochemical equations are given below

i) $C_{(graphite)} + O_{2(g)} \rightarrow CO_{2(g)}; \Delta, H^{o} = xkJ\,mol^{-1}$

ii) $C_{(graphite)} + 1/2O_{2(g)} \rightarrow CO_{(g)}; \Delta, H^{o} = ykJ\,mol^{-1}$

iii) $CO_{(g)} + 1/2O_{2(g)} \rightarrow CO_{2(g)}; \Delta, H^{o} = zkJ\,mol^{-1}$

Based on the above equations, find out which of the relationship given below is correct.

A) z = x+ y B) x = y + z C) y = 2z – x D) x = y – z

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

According to Hess law, equation (i) is equal to equations (ii)+(iii).

---

62).

The final product formed when Ethylamine is treated with $NaNO_2$and HCl followed by hydrolysis is

A) Nitroethane B) Methylcyanide C) Ethyl alcohol D) Diazomethane

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

Ethylamine when treated with NaNO2and HCl followed by hydrolysis wil give ethylalcohol as final product.

---

63).

(I) $H_2O_2 + O_3 \rightarrow H_2O + 2O_2$

(II) $H_2O_2 + Ag_2O \rightarrow 2Ag + H_2O + O_2$

Role of hydrogen peroxide in the above reactions is respectively

A) Oxidizing in (I) and reducing in (II) B) Reducing in (I) and oxidizing in (II)

C) Reducing in (I) and (II) D) Oxidizing in (I) and (II)

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

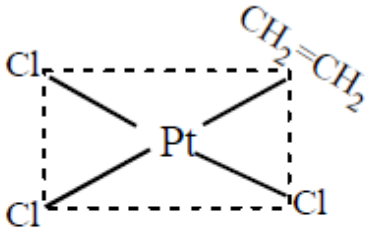
Solution :-

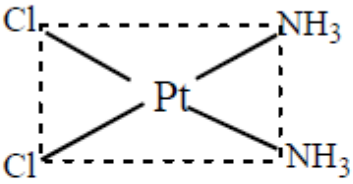
H2O2 acts as reducing agent in all those reactions in which O2 is evolved

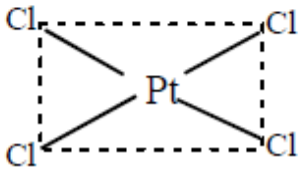
---

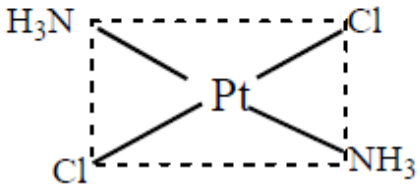
64).

Which of the following is considered to be an anticancer species?

A) 

B) 

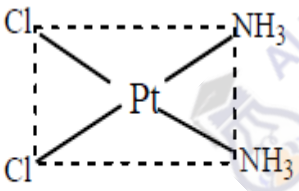
C) 

D) 

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-



, Cis-platin is used as an anticancer drug for treating several types of malignant tumours.

---

65).

On heating which of the following releases CO_2 most easily?

A) Na_2CO_3 B) $MgCO_3$ C) $CaCO_3$ D) K_2CO_3

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

1A carbonates thermally more stable .
IIA carbonates thermal stability increases down the group

---

66). **Which of the following structure is similar to graphite?**

A) B_4C B) B_2H_6 C) BN D) B

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

Both graphite and BN have layer like structure

---

67).

$$CH_3COOH + Cl_2 \xrightarrow{\text{red P}} \underset{Cl}{CH_2}COOH$$

Name of this reaction is

A) Wolf-Kishner reaction

B) Stephen's reaction

C) Perkin's reaction

D) Hell-Volhard-Zelinsky reaction

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

HVZ reaction is the halogenation of carboxylic acid with alpha hydrogen by red P and X2

---

68). **Base strength of**

$$\overset{(-)}{\underset{(i)}{H_3C}}\overset{}{C}H_2, H_2C=\overset{(-)}{\underset{(ii)}{C}}H \text{ and } H-\overset{}{\underset{(iii)}{C}}\equiv\overset{(-)}{C}$$

is in the order of

A) (i) > (iii) > (ii)

B) (i) > (ii) > (iii)

C) (ii) > (i) > (iii)

D) (iii) > (ii) > (i)

(a) A (b) B (c) C (d) D

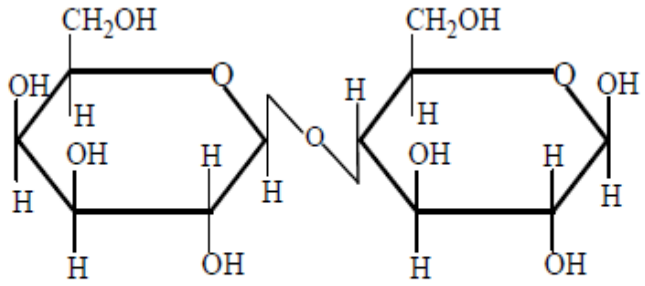
Q.Type:- MCQ Single, Ans:- B

Solution :-

Acidic strength order $C_2H_2 > C_2H_4 > C_2H_6$. Basic strength order is reverse for their conjugate bases

---

69).



This structure represents

A) Lactose

B) Galactose

C) Maltose

D) amylase

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

Lactose is composed of C-4 of β -D-glucose and C-1 of β -D-galactose

---

70).

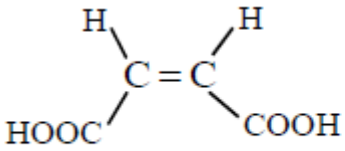
Which of the following acids does not exhibit optical isomerism?

A) Maleic acid B) Valine C) Lactic acid D) Tartaric acid

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-



Maleic acid does not exhibit optical isomerism.

---

71). **Which of the following cannot be detected by the isocyanide test ?**

A) $C_6H_5 - NH_2$ B) $C_6H_5 - NH - CH_3$

C) $CH_3 - \underset{\displaystyle NH_2}{\underset{|}{CH}} - CH_3$ D) $CH_3 - \underset{\displaystyle NH_2}{\underset{|}{\overset{\displaystyle CH_3}{\overset{|}{C}}}} - CH_3$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

Both aliphatic and aromatic primary amines give isocyanide test.

---

72). Green chemistry means such reactions which
A) Are related to the depletion of ozone layer
B) Study the reactions in plants
C) Produce colour during reactions
D) Reduce the use and production of hazardous chemicals

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

Green chemistry is the design , development , and implementation of chemical products and processes to reduce or eliminate the use and generation of substances hazardous to human health and the environment.

---

73).

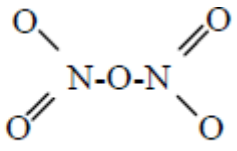
In N_2O_5 molecule each nitrogen atom is surrounded by ..... oxygen atoms.

A) 2 B) 3 C) 5 D) 6

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

Structure of N_2O_5 is 

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74). The number of carbon atoms per unit cell of diamond unit cell is
A) 6 B) 1 C) 4 D) 8

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

Diamond is like zinc blende, Carbon forming ccp (FCC) and also occupying half of tetrahedral voids.
Total no.of carbon atoms per unit cell is 8

---

75).

Statement -I: Ionic compounds like NaCl, $BaCl_2$ are less soluble in heavy water than in ordinary water.

Statement -II : Heavy water has a lower dielectric constant than ordinary water

A) Both I and I are true B) Both I and I are false

C) I is true but II is false D) I is false but II is true

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

Due to high dielectric constant of ordinary water ionic compounds like NaCl, BaCl2 are more soluble in ordinary water

---

76). The van't Hoff factor i for a compound which undergoes dissociation in one solvent and association in other solvent is respectively
A) Less than one and greater than one B) Less than one and less than one
C) Greater than one and less than one D) Greater than one and greater than one

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

From the value of van't Hoff factor I it is possible to determine the degree of dissociation or association. In case of dissociation, i is greater than 1 and in case of association i is less than 1.

---

77). A solution of acetone in ethanol
A) Obeys Raoult's law
B) Shows a negative deviation from Raoult's law
C) Shows a positive deviation from Raoult's law
D) Behaves like a near ideal solution

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

Both the components escape easily showing higher vapour pressure than the expected value.

---

78). The method of zone refining of metals is based on the principle of
A) Greater mobility of the pure metal than that of the impurity
B) Higher melting point of the impurity than that of the pure metal
C) Greater noble character of the solid metal than that of the impurity
D) Greater solubility of the impurity in the molten state than in the solid

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

Elements which are used as semiconductors such as Si, Ge, Ga etc. are refined by this method. Which is based on the difference in solubility of impurities in molten and solid state of the metal.

---

79).

Identify the incorrect statement, regarding the molecule XeO_4 :

A) XeO_4 molecule is square planar.

B) There are four $p\pi - d\pi$ bonds.

C) There are four $sp^3 - p$, σ bonds.

D) XeO_4 molecule is tetrahedral

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

sp3 hybridised molecule has tetrahedral shape.

---

80). **Which one is most reactive towards S_N1 reaction**

A) $C_6H_5CH(C_6H_5)Br$

B) $C_6H_5CH(CH_3)Br$

C) $C_6H_5C(CH_3)(C_6H_5)Br$

D) $C_6H_5CH_2Br$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

3º alkyl halide is more reactive towards SN 1 reaction

---

81).

In the following reaction , $C_6H_5CH_2Br \xrightarrow[2.\ H_3O^+]{1.\ Mg,\ Ether}$ the product 'X' is

A) $C_6H_5CH_2OCH_2C_6H_5$

B) $C_6H_5CH_2OH$

C) $C_6H_5CH_3$

D) $C_6H_5CH_2CH_2C_6H_5$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

$$C_6H_5CH_2Br + Mg \xrightarrow{ether} C_6H_5CH_2 - MgBr \xrightarrow{H_3O^+} C_6H_5CH_3 + MgO(OH)Br$$

---

82).

The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoroacetic acid (B), acetic acid (C) and formic acid (D) is

A) $B > A > D > C$

B) $B > D > C > A$

C) $A > B > C > D$

D) $A > C > B > D$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$CF_3COOH > CCl_3 - COOH > HCOOH > CH_3COOH$$

---

83). Which of the following compounds will give a yellow precipitate with iodine and alkali?

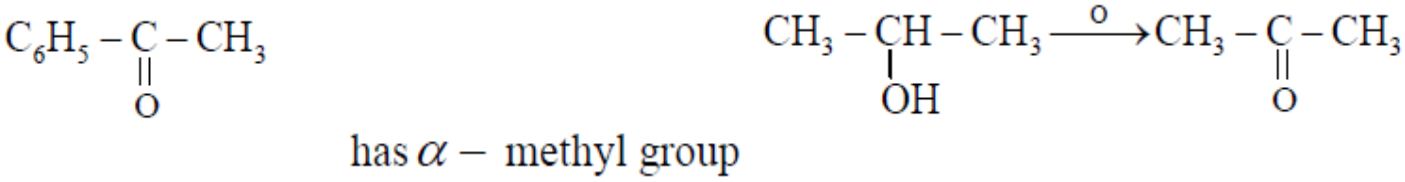
A) Acetophenone B) Methyl acetate

C) Acetamide D) Benzaldehyde

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-



has α – methyl group

---

84).

The number of structurally isomeric amines possible from the molecular formula C_3H_9N is

A) 5

B) 2

C) 3

D) 4

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

1) $CH_3 - CH_2 - CH_2 - NH_2$

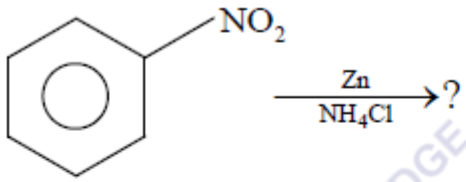
2) $CH_3 - CH_2 - NH - CH_3$

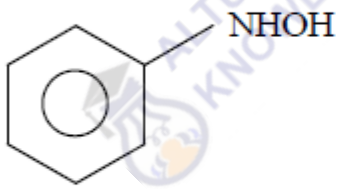
3) $CH_3 - \underset{\displaystyle NH_2}{\underset{|}{CH}} - CH_3$

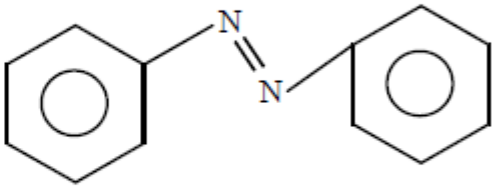
4) $(CH_3)_3 N$

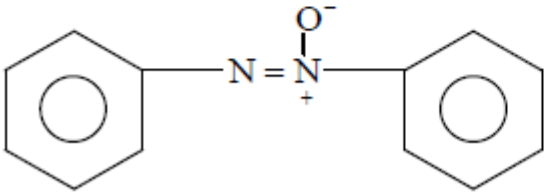
---

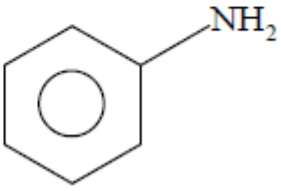
85). **What is the product obtained in the following reaction?**



A) 

B) 

C) 

D) 

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$C_6H_5NO_2 + 4(H) \longrightarrow C_6H_5NHOH + H_2O$$

---

86). Which of the folowing points defects are shown by AgBr crystals :

1. Schottky defect

2. Frenkel defect

3. Metal excess defect

4.Metal deficiency defect

(a) 1 and 2 (b) 3 and 4 (c) 1 and 3 (d) 2 and 4

Q.Type:- MCQ Single, Ans:- A

Solution :-

AgBr shows both schottky as will as frenkel defect.

---

87). Decomposition of Ammonia over surface of gold catalyst at high pressure is an example for
A) zero order reaction B) pseudo first order reaction
C) first order kinetics D) second order reaction

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

Decomposition of Ammonia on gold surface follows zero order kinetics.

---

88). **Which of the following salts will give highest pH in water?**

A) KCl B) NaCl C) Na_2CO_3 D) $CuSO_4$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

Solution :-

Na_2CO_3 which is a salt of NaOH (strong base) and H_2CO_3(weak acid) will produce a basic solution with pH greater than 7.

---

89).

Calcium crystallizes in FCC unit cell with edge length(a) is 0.556 nm. Calculate the density of unit cell?

A) 1.56 gm/ cm^3 B) 2.5 gm/ cm^3 B) 1.1 gm/ cm^3 D) 2.347 gm/ cm^3

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

$$\rho = \frac{n'M}{N_0 a^3}$$

---

90). In an experiment, addition of 5 ml of 1M NaCl to 100 ml of arsenious sulphide sol just causes the complete coagulation. The flocculating value of NaCl is:
A) 50 B) 30 C) 40 D) 25

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

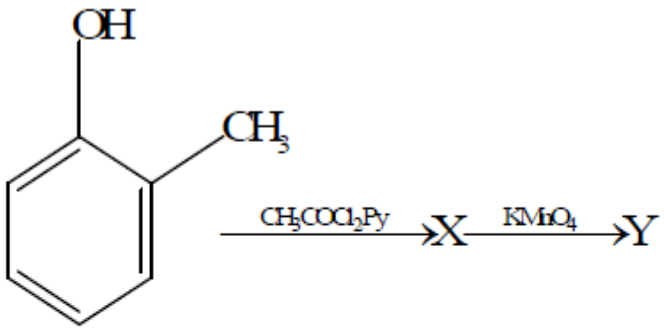
Solution :-

Flocculating value =millimoles of the electrolyte per litre of sol for complete coagulation
No of millimoles of NaCl present in 5ml of 1M NaCl = 5×1 = 5
100ml of arsenious sulphide sol require NaCl for complete coagulation = 5 millimoles

Therefore , 1000ml of arsenious sulphide sol require NaCl for complete coagulation
= 50 millimoles.

---

91).



The final product 'Y' is used as medicine. Which of the following is incorrect regarding?

A) It has analgesic as well as antipyretic properties

B) It helps to prevent heart attack

C) It has anti-blood clotting action

D) It suppresses the gastric anomalies

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

'Y' is aspirin

---

92).

Monomers of glyptal are X and Y. Monomers of Dacron are X and Z. Y and Z are:

A) Positional isomers

B) Chain isomers

C) Homologues

D) Functional isomers

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

Monomers of glyptal are ethyleneglycol and pthalicacid and monomers of Dacron are ethylene glycol and terepthalic acid. pthalicacid and terepthalic acid are positional isomers.

---

93). Vander Waal's real gas, acts as an ideal gas, at which conditions?
A) High temperature, low pressure B) Low temperature, high pressure
C) High temperature, high pressure D) Low temperature, low pressure

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

Solution :-

At low pressure and high temperature Vander Waals real gas acts as ideal gas and observed to obey PV= nRT relation

---

94). Which of the following happens when lead storage battery is discharged?
A) SO2 is evolved B) Lead sulphate is consumed

C) lead is formed D) H2SO4 is consumed

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

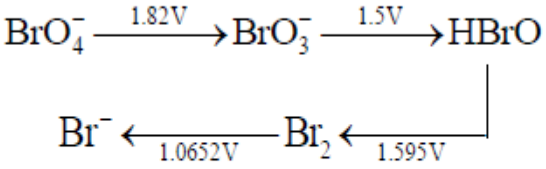
Solution :-

H2SO4 is consumed during discharging of lead storage battery

---

95).

Consider the change in oxidation state of Bromine corresponding to different emf values as shown in the diagram below:



Then the species undergoing disproportionation is

A) BrO_3^- B) BrO_4^- C) Br_2 D) HBrO

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

Solution :-

Calculate E^0_{cell} corresponding to each compound undergoing disproportionation reaction. The reaction for which E^0_{cell} comes out +ve is spontaneous.

$$HBrO \longrightarrow Br_2 \qquad E^\circ = 1.595, SRP(\text{cathode})$$

$$HBrO \longrightarrow BrO_3^- \qquad E^\circ = -1.5V, SOP(\text{Anode})$$

$$2HBrO \longrightarrow Br_2 + BrO_3^- \qquad E^0_{cell} = SRP(\text{cathode}) - SRP(\text{Anode})$$

$$= 1.595 - 1.5 = 0.095V$$

$$E^0_{cell} > 0 \Rightarrow \Delta G^\circ < 0(\text{spontaneous})$$

---

96). At 0° C and one atm pressure, a gas occupies 100 cc. If the pressure is increased to one and a half-time and temperature is increased by one third of absolute temperature, then final volume of the gas will be
(a) 80 cc (b) 88.9 cc
(c) 66.7 cc (d) 100 cc

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

(b) Apply $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

$$\Rightarrow \frac{1\times 100}{273} = \frac{\frac{3}{2}\times V}{\left(273+\frac{273}{3}\right)}$$

$$V = 88.9\ cc$$

---

97). The electronegativity follows the order
(a) F > O > Cl > Br
(b) F > Cl > Br > O
(c) O > F > Cl > Br
(d) Cl > F > O > Br

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- A

Solution :-

(a) F and O belong to 2nd period whereas Cl and Br belong to 3rd and 4th periods respectively. Hence the sequence of the E.N. is

$$F > O > Cl > Br$$

---

98). Which of the following is not formed when glycerol reacts with HI?

(a) $CH_2=CH-CH_2I$
(b) $CH_2(OH)–CH(I)–CH_2OH$
(c) $CH_3–CH=CH_2$
(d) $CH_3–CH(I)–CH_3$

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- B

---

99). The amine that does not react with acetyl chloride is

(a) CH_3NH_2
(b) $(CH_3)_2NH$
(c) $(CH_3)_3N$
(d) None of these

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- C

Solution :-

(c) The compounds containing active H-atoms (H atoms attached to N, O or S) react with CH_3COCl to form acetyl derivatives.

---

100). The activation energy for a hypothetical reaction, A $\rightarrow$ Product, is 12.49 kcal/mole. If temperature is raised from 295 to 305, the rate of reaction increased by

(a) 60% (b) 100%
(c) 50% (d) 20%

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

Solution :-

(b) $pH = pK_a + \log \frac{Salt}{Acid}$

$$6 = -\log 10^{-5} + \log \frac{Salt}{Acid}$$

$$= 5 + \log \frac{Salt}{Acid}$$

$\log \frac{Salt}{Acid}$ must be 1.

$\therefore \frac{Salt}{Acid} = \frac{10}{1}$ or 10 : 1.

BOTANY FL

101). Mark the correct statement about centriole.
(1) Forms basal body
(2) Found in higher plant cells
(3) Has '9 + 2' organisation of microtubules
(4) Is surrounded by plasma membrane

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

102). DNA and histone proteins synthesis occur in
(1) G1 phase (2) S phase
(3) G2 phase (4) M phase

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

103). Beginning of terminalisation of chiasmata occurs in
(1) Pachytene (2) Diplotene
(3) Diakinesis (4) Zygotene

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

104). Select the **incorrect** match.

(1) Herbarium – Quick reference in taxonomical studies

(2) Botanical garden – '*ex situ*' conservation of plants

(3) Museum – Collection of preserved animals

(4) Flora – Listing and description of all organisms of a particular area

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

---

105). Viroids differ from viruses in
(1) Being infectious
(2) Having capsid
(3) Having genetic material
(4) Being smaller than viruses

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

---

106). The imperfect fungi such as Trichoderma
(1) Reproduce sexually by spore formation
(2) Have aseptate mycelium
(3) Reproduce asexually by conidia formation
(4) Have coenocytic mycelium

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

107). In racemose inflorescence
(1) The main axis terminates into a flower
(2) Peduncle has unlimited growth
(3) The flowers are borne in basipetal order
(4) Both (2) and (3)

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

108). Dicot stem share a common feature with monocot stem that is both have
(1) Well developed large pith
(2) Conjoint vascular bundles
(3) Open vascular bundles
(4) Pericycle and endodermis

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

109). Water potential of pure water at standard temperatures, which is not under any pressure is

(1) Equal to Ψ_s of a solution

(2) Equal to zero

(3) Always negative

(4) Any positive value above zero

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

110). Rhizobium and Frankia
a. Are heterotrophs
b. Use solar energy to synthesize their food
c. Are symbiotic nitrogen fixing bacteria
Select the correct option.
(1) Only a is correct
(2) Only a and b are correct
(3) Only a and c are correct
(4) Only c is correct

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

111). In cyclic photophosphorylation
(1) There is production of ATP and NADPH2
(2) External source of electrons is required
(3) The reaction center is P700
(4) Splitting of water occurs

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

112). Select the incorrect statement.
(1) R.Q of organic acids is more than one.
(2) During fermentation oxygen is not required.
(3) Cytochrome c acts as a mobile carrier for transfer of electrons between complex III and IV during ETS in mitochondria
(4) There is no substrate level phosphorylation during glycolysis.

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

---

113). Read the following statements and choose the correct option.
Statement-A : Auxin inhibits the growth of lateral or axillary buds.
Statement-B : Cytokinins are used to delay the

senescence of intact leaves and other plant parts.
(1) Only statement A is correct
(2) Only statement B is correct
(3) Both statements are correct
(4) Both statements are incorrect

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

114). Which of the aquatic plants is not pollinated by water?
(1) Vallisneria (2) Zostera
(3) Water hyacinth (4) Hydrilla

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

115). If in a eukaryotic cell, RNA polymerase III is nonfunctional, then which of the following RNA will not be formed?
(1) hn RNA (2) 5.8 SrRNA
(3) 5 SrRNA (4) 28 SrRNA

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

116). To obtain a pathogen free plant from a diseased plant through tissue culture, the best technique is
(1) Anther culture
(2) Meristem culture
(3) Embryo culture
(4) Protoplast fusion

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

117). Blood cholesterol lowering agents called statins are produced from
(1) A bacterium (2) A virus
(3) A yeast (4) An animal

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

118). Growing population
(1) Is called stable population
(2) Has more pre-reproductive individuals than reproductive
(3) Show urn shaped age pyramid
(4) Is mature population also

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

119). In grassland ecosystem the pyramid of biomass and energy will be ____A____ and ____B____ respectively.

Choose the **correct** option to fill the blanks A and B.

	A	B
(1)	Upright	Upright
(2)	Upright	Inverted
(3)	Inverted	Upright
(4)	Inverted	Inverted

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

120). Green mu er scheme has launched to reduce
(1) Noise pollution (2) Water pollution
(3) Air pollution (4) Soil pollution

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

121). In binomial nomenclature
(1) Both genus and species names are underlined if handwritten
(2) Genus name starts with small letter
(3) Species name starts with capital letter
(4) Genus name is written after species name

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

122). Aseptate mycelium is commonly found in which of the following class of fungi?
(1) Ascomycetes
(2) Basidiomycetes
(3) Phycomycetes
(4) Deuteromycetes

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

123). Match the following and select the correct option
a. Oomycetes (i) Algal fungi
b. Basidiomycetes (ii) Fungi imperfecti
c. Ascomycetes (iii) Sac fungi
d. Deuteromycetes (iv) Club fungi
(1) a(ii), b(iii), c(i), d(iv)
(2) a(i), b(iv), c(iii), d(ii)
(3) a(iii), b(iv), c(ii), d(i)
(4) a(iv), b(iii), c(ii), d(i)

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

124). Polysomes which are commonly found in prokaryotic cells are composed of
(1) mRNA and DNA
(2) DNA and tRNA
(3) Ribosomes and mRNA
(4) tRNA and mRNA

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

125). Micortubules attach to kinetochore of sister chromatids during
(1) Anaphase-I (2) Porphase-II
(3) Metaphase-II (4) Anapahse-II

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

126). For stomatal opening, which of the following group of factors are responsible?
(1) CO2 concentration and temperature
(2) NO2 concentration and light
(3) Temperature and N2 concentration
(4) N2 concentration and light

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

127). The **correct** sequence of electron transport during non-cyclic photophosphorylation is

(1) PS-II $\rightarrow$ Cyt b_6f $\rightarrow$ PS-I

(2) PS-I $\rightarrow$ Cyt c $\rightarrow$ PS-II

(3) Cyt bc $\rightarrow$ PS-I $\rightarrow$ PS-II

(4) PS-I $\rightarrow$ PS-II $\rightarrow$ Cytbc

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

128). Pace of EMP pathway can be regulated by enzyme
(1) Hexokinase
(2) Phosphofructokinase
(3) Enolase
(4) Pyuruvate dehydrogenase

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

129). Which of the following pair of plant hormones is responsible for seed germination and apical dominance respectively?
(1) ABA and GAs (2) Auxins and GAs
(3) GAs and IAA (4) Ethylene and ABA

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

130). Cleistogamous flowers
(1) Open during the self pollination
(2) Remain close and are bisexual
(3) Are female flowers and never open
(4) Are bisexual and open during cross pollination

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

131). Innermost layer of pollen sac is responsible for
(1) Protection of anther
(2) Nourishing to growing pollen grains
(3) Dehiscence of anther
(4) Providing mechanical strength to anther

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

132). Sterile female lacks one X chromosome. This female is suffering from
(1) A disease caused due to trisomy
(2) Klinfelter's syndrome
(3) Turner's syndrome
(4) Phenylketonuria

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

133). Greenhouse gases
(1) Absorbs all sunlight and warm the atmosphere
(2) Include gases such as CO_2 and O_2
(3) Are responsible for ozone layer formation
(4) Are mainly CO_2 and CH_4

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

---

134). Which of the given organelles in endomembrane system is the important site for glycosylation of proteins and lipids?
(1) Endoplasmic reticulum
(2) Golgi apparatus
(3) Lysosome
(4) Vacuoles

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

135). Flower is hypogynous and ovary is said to be superior in
(1) Mustard (2) Plum
(3) Peach (4) Guava

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

136). A living mechanical tissue which provides the mechanical support to the growing parts of the plant such as young stem and petiole of leaf is
(1) Parenchyma
(2) Collenchyma
(3) Sclerenchymatous fibres
(4) Sclereids

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

137). It has been observed that grasses can regenerate the parts which are removed by grazing herbivores. The presence of which of the given meristem is involved in such activity?
(1) Apical meristem
(2) Intercalary meristem
(3) Lateral meristem
(4) Secondary meristem

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

138). Main plant body is haploid in which of the given plant groups?
(1) Bryophytes (2) Pteridophytes
(3) Gymnosperm (4) Both (1) and (2)

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

139). Which of the given plants shows Kranz anatomy in their leaves?
(1) Rice
(2) Maize
(3) Cotton
(4) Sunflower

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

140). Which of the plant groups produce both isogametes as well as heterogametes?
(1) Algae (2) Bryophyte
(3) Pteridophyte (4) Gymnosperms

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

141). How many nucleosomes are present in the nucleus of diploid eukaryotic cell which possess 6.6×10^6 bp?
(1) 6.6×10^6
(2) 6.6×10^4
(3) 3.3×10^4
(4) 3.3×10^6

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

142). Read the statements stating true (T) or false (F) and select the correct option.
A. Saccharum barberi was originally grown in South India.
B. SCP is rich in good quality protein and poor in fats.
C. Wheat variety Atlas 66 with high protein

content has been used as donor for improving cultivated wheat.

	A	B	C
(1)	T	T	T
(2)	F	F	T
(3)	T	T	F
(4)	F	T	T

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

---

143). Find the **correct** mathematical expression for geometric growth resulting in a J-shaped population growth curve.

(1) $\frac{dN}{dt}=rN$ (2) $\frac{K-N}{K}$

(3) $\frac{dN}{dt}=rN\left(\frac{K-N}{K}\right)$ (4) $\frac{dN}{dt}=rN\left(\frac{N-K}{N}\right)$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

144). Pioneer community on rocks is of
(1) Phytoplanktons (2) Zooplanktons
(3) Lichens (4) Herbs

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

145). Which of the given traits of pea selected by Mendel during hybridisation experiment on pea can be expressed in both homozygous as well as heterozygous conditions?
(1) Round seed (2) Green seed
(3) White flower (4) Terminal flower

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

146). How many ATPs are required for each molecule of NH_3 produced w.r.t nitrogen fixation?
(1) 8 (2) 16
(3) 2 (4) 3

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

147). Which of the plant groups produce both isogametes as well as heterogametes?
(1) Algae (2) Bryophyte
(3) Pteridophyte (4) Gymnosperms

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

148). How many additional ATPs are required during synthesis of three molecules of hexose sugar in sugarcane than in rice?
(1) 12 (2) 54
(3) 36 (4) 16

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

149). Which of the given algae exhibits diplontic lifecycle pattern?
(1) Volvox (2) Spirogyra
(3) Fucus (4) Polysiphonia

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

150). Which of the given member of class Ascomycetes is also called Drosophila of plant kingdom?
(1) Penicillium
(2) Aspergillus
(3) Neurospora
(4) Claviceps

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

ZOOLOGY FL

151). Choose the incorrect statement w.r.t cockroach
(1) Haemocoel contains haemolymph which contains colourless plasma and haemocytes
(2) Nervous system consists of segmentally arranged ganglia, six in thorax and nine in abdomen
(3) Mushroom gland is present in 6th – 7th abdominal segment in male cockroach
(4) Proventriculus has an outer layer of thick circular muscles and inner thick cuticle forming teeth

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

152). Match column I and column II w.r.t epithelium and its location

Column-I	Column-II
(i) Ciliated columnar	(a) Stomach
(ii) Brush border columnar	(b) PCT
(iii) Simple columnar	(c) Intestine
(iv) Brush border cuboidal	(d) Fallopian tube

Choose the **correct** match

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

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

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

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

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

153). Smooth muscle fibres are not
(1) Unbranched (2) Spindle shaped
(3) Syncytial (4) Involuntary

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

154). **Correct** sequence of layers of wall of gut from inside to outside is

(1) Mucosa → Muscularis → Submucosa → Serosa

(2) Mucosa → Submucosa → Muscularis → Serosa

(3) Submucosa → Mucosa → Muscularis → Serosa

(4) Submucosa → Muscularis → Mucosa → Serosa

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

155). Choose the set of enzymes present in intestinal juice
(1) Maltase, Sucrase, Amylase
(2) Enterokinase, Nucleosidase, Trypsinogen
(3) Nuclease, Lipase, Amylase
(4) Lactase, Lipase, Enterokinase

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- D

---

156). Match column I and column II w.r.t organism and type of respiration

Column-I	Column-II
a. Molluscs	(i) Pulmonary respiration
b. Insects	(ii) Branchial respiration
c. Earthworm	(iii) Tracheal respiration
d. Birds	(iv) Cutaneous respiration

Choose the **correct** option
(1) a(iii), b(ii), c(i), d(iv) (2) a(ii), b(iii), c(iv), d(i)
(3) a(ii), b(iii), c(i), d(iv) (4) a(iii), b(ii), c(iv), d(i)

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- B

---

157). Complete the analogy w.r.t reabsorption
PCT : Glucose and amino acids :: DCT : _____
(1) K^+ and H^+ (2) H^+ and HCO_3^-
(3) NaCl and HCO_3^- (4) K^+ and H_2O

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- C

---

158). Micturition does not involve
(1) Relaxation of urethral sphincter
(2) Contraction of urinary bladder
(3) Stretching of transitional epithelium of urinary bladder
(4) Contraction of ureters

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- D

---

159). Choose the correct statement.
(1) In a resting muscle fibre, a subunit of troponin masks the active binding sites on myosin for actin filaments
(2) The myosin monomer called meromyosin has a globular head which has binding sites

for ATP and active sites for actin
(3) A motor neuron along with the muscle fibres connected to it constitute motor-end plate
(4) The Z-lines attached to A-bands are pulled inwards towards the H-zone causing shortening of sarcomere

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

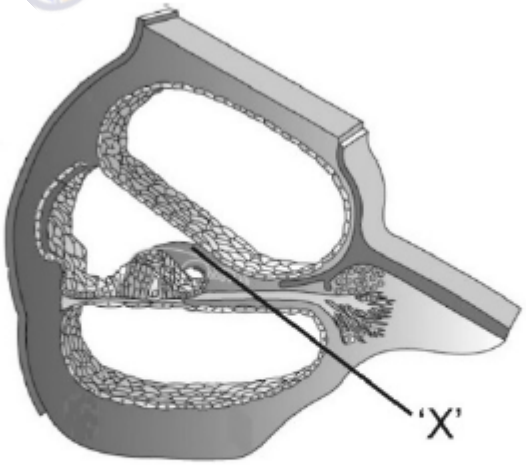
160). Read the following statements
Statement-A: The retina contains ganglion cells, bipolar cells and photoreceptor cells arranged in sequence from inside to outside.
Statement-B: Light induces potential difference in photoreceptor cells that generates action potential in bipolar cells through ganglion cells
Choose the correct option.
(1) Only A is correct
(2) Only B is correct
(3) Both A and B are correct
(4) Both A and B are incorrect

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

---

161). Choose the **incorrect** statement w.r.t the structure marked 'X' in the following diagram



(1) It is a thin elastic membrane
(2) It makes up roof of organ of Corti
(3) It is suspended in perilymph
(4) It does not contain afferent neurons

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

---

162). A poikilotherm having four-chambered heart is
(1) Columba (2) Chameleon
(3) Crocodilus (4) Canis

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

163). The hormones that attain peak level towards the middle of menstrual cycle are
a. LH b. FSH
c. Estrogen d. Progesterone
Choose the correct option
(1) a only (2) a, b and c
(3) a and b only (4) a, b and d

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

164). A hormone releasing IUD that makes the uterus unsuitable for implantation is
(1) Lippes loop (2) LNG 20
(3) Multiload 375 (4) CuT

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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165). Hardy-Weinberg equilibrium can be disrupted by presence of all except
(1) Genetic drift
(2) Random mating
(3) Non random mating
(4) Mutations

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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166). Choose the **incorrect** match

(1)	Flippers of penguins and dolphins	Convergent evolution
(2)	Marsupials of Australia	Adaptive radiation
(3)	Darwin's finches	Natural selection
(4)	Lemur and spotted cuscus	Divergent evolution

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

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167). Cells of immune system that do not provide innate immunity are
(1) T-lymphocytes
(2) Neutrophils
(3) NK cells
(4) Macrophages

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

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168). Which of the following is a naturally sourced stimulant?
(1) Morphine (2) Amphetamines
(3) Cocaine (4) Marijuana

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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169). Choose the incorrect statement
(1) Continued inbreeding may result in loss of fertility, vigour and productivity
(2) Cross breeding allows the desirable qualities of two different breeds to be combined
(3) Out breeding may involve out crossing or cross breeding or interspecific hybridisation
(4) Out crossing involves mating of animals of different breeds but having common ancestors for about 4-6 generations

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

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170). All the following are transformation procedures except
(1) Microinjection (2) Biolistics
(3) Spooling (4) Electroporation

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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171). Downstream processing does not involve
(1) Biosynthesis (2) Separation
(3) Purification (4) Centrifugation

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

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172). ELISA based on the interaction of antigen and antibody can detect the presence of all except
(1) HIV
(2) Pregnancy
(3) Non-coding DNA
(4) Proteins and glycoproteins

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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173). How many nucleotides are present in 68A long B-DNA strand?
(1) 20 (2) 40
(3) 60 (4) 80

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

174). Select the correct pair of digestive enzymes which work optimally in the alkaline pH range.
(1) Gastric lipase and Lactase
(2) Rennin and Sucrase
(3) Dipeptidase and Nucleotidase
(4) Salivary amylase and Pepsin

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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175). Match the items given in Column I with those in Column II and select the **correct** option given below.

	Column-I		Column-II
a.	Inspiratory capacity	(i)	IRV + EC
b.	Vital capacity	(ii)	TV + IRV
c.	Residual volume	(iii)	TLC –VC
d.	Functional residual capacity	(iv)	TLC – IC

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

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- D

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176). Choose the correct statement regarding mechanism of concentration of the nephric filtrate in humans.
(1) The capability of concentrating the urine is majorly related to the diameter of efferent arteriole.
(2) NaCl and urea maintain the osmolarity gradient in the medullary interstitium.
(3) Osmotic concentration of the glomerular filtrate is the lowest at the bottom of the U-shaped Henle's loop.
(4) Glomerular filtration is an active process requiring high amount of energy.

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- B

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177). Substance 'X' which converts angiotensinogen to angiotensin I is secreted by
(1) Wall of heart (2) Adrenal cortex
(3) Liver (4) JG cells

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- D

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178). Palm bones and ankle bones are respectively termed
(1) Metacarpals and tarsals
(2) Phalanges and tarsals
(3) Metatarsals and carpals
(4) Metacarpals and carpals

(a) A (b) B (c) C (d) D
Q.Type:- MCQ Single, Ans:- A

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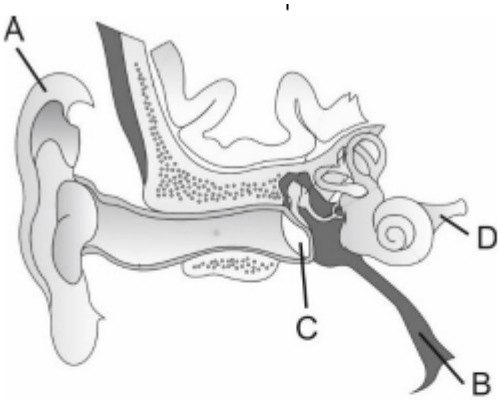
179). Parts A, B, C and D of the human ear are shown in the diagram. Select the option which gives incorrect identification along with its functions/characteristics.



(1) A : External ear – Collects the vibrations in the air

(2) B : Eustachian tube – Connects the middle ear cavity with the pharynx

(3) C : Malleus – Increase the efficiency of transmission of sound waves

(4) D : Cochlear nerve – Carry sensory impulses to the auditory cortex of the brain

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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180). A lipid soluble hormone which crosses the plasma membrane of the target cell and attaches to intracellular receptors is

(1) Insulin
(2) Epinephrine
(3) Cortisol
(4) Thyrocalcitonin

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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181). Choose the option which contains only **incorrect** statements.

a. Goitre may be caused by iodine deficiency in the diet.

b. Target gland of PRL is corpus luteum.

c. Oxytocin causes ejection of milk from mammary gland.

d. ADH maintains the 24-hour diurnal rhythm of the body.

e. The major role of thymus is the development of emergency hormones.

(1) a, b and d (2) b, d and e

(3) c, d and e (4) a and e

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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182). Which of the following options correctly arranges the events of development of the foetus in its gestational period?
(a) Development of limbs and digits
(b) Major organ systems are formed
(c) Heart is formed
(d) Eye-lids separate
(e) Hair appear on the head

(1) $c \rightarrow b \rightarrow a \rightarrow d \rightarrow e$

(2) $b \rightarrow c \rightarrow a \rightarrow e \rightarrow d$

(3) $c \rightarrow a \rightarrow b \rightarrow e \rightarrow d$

(4) $a \rightarrow d \rightarrow e \rightarrow c \rightarrow b$

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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183). Capacitation of sperms, in humans occurs in
(1) Vas deferens
(2) Female genital tract
(3) Penile urethra
(4) Epididymis

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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184). The first gene therapy was given to a 4-year old girl with deficiency of
(1) Pancreatic lipase
(2) Alkaline phosphatase
(3) Adenosine deaminase
(4) Carbonic anhydrase

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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185). If a population in Hardy-Weinberg equilibrium has 16% homozygous individuals with a recessive allele ‘a’ then the frequencies for given genotypes would be
AA% Aa%
(1) 36 48
(2) 16 36
(3) 48 16
(4) 36 16

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

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186). Choose the incorrect statement
(1) Ribozyme is a non-proteinaceous enzyme
(2) Lactose is a non-reducing disaccharide
(3) Competitive inhibition is seen when the substrate and the inhibitor compete for the active site of enzyme
(4) A non-competitive inhibitor binds to the enzyme at a site distinct from that which binds the substrate

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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187). In a typical ECG of a normal person, end of T wave represents

(1) Contraction of both the atria
(2) Beginning of atrial systole
(3) Beginning of the ventricular contraction
(4) End of ventricular systole

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

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188). A person with blood group O^- can accept blood from donor with blood group of type

(1) AB^+ (2) O^+

(3) O^- (4) AB^-

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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189). When a skeletal muscle contracts
(1) H-zone increases in length
(2) A band decreases in length
(3) I-bands get reduced
(4) H-zone remains unaffected

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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190). Cell body of neuron contains certain granular bodies involved in protein synthesis that are called
(1) Perikaryon (2) Nissl's granules
(3) Schwann cells (4) Glial cells

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

---

191). Select the **incorrect** match of a hormone, its source and function

	Hormone	Source	Function
(1)	Oxytocin	Hypothalamus	Milk ejection
(2)	Vasopressin	Posterior pituitary	Reabsorption of water from nephric filtrate
(3)	Cortisol	Adrenal cortex	Anti- inflammatory
(4)	Adrenaline	Adrenal medulla	Increases Blood pressure and heart rate

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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192). In which of the following the genus name, its two characters and its phylum are **not** correctly matched?

	Genus Name	Characters	Phylum
(1)	*Spongilla*	• Water canal system • Spongocoel	Porifera
(2)	*Physalia*	• Bioluminescence • Organ level of organisation	Platyhelminthes
(3)	*Ascaris*	• Sexual dimorphism • Complete digestive system	Aschelminthes
(4)	*Asterias*	• Water vascular system • Exclusively marine	Echinodermata

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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193). Which of the following characteristic features hold true for the corresponding group of animals?
(1) 4-chambered heart, – Birds
poikilothermy
(2) Cartilaginous – Osteichthyes
endoskeleton
(3) Sucking mouth, – Cyclostomata
unpaired appendages
(4) Two chambered heart, – Amphibia
dicondylic skull

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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194). Select the odd one w.r.t natural methods of contraception
(1) Lactational amenorrhea
(2) Coitus interruptus
(3) Rhythm method
(4) Lippes loop

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- D

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195). Choose the incorrect statement
(1) IgM is the antibody mainly involved in secondary immune response
(2) Antibodies produced against allergens in case of hypersensitivity are IgE type
(3) Spleen is commonly called "graveyard of RBCs"
(4) Malignant tumor exhibit the property of metastasis

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

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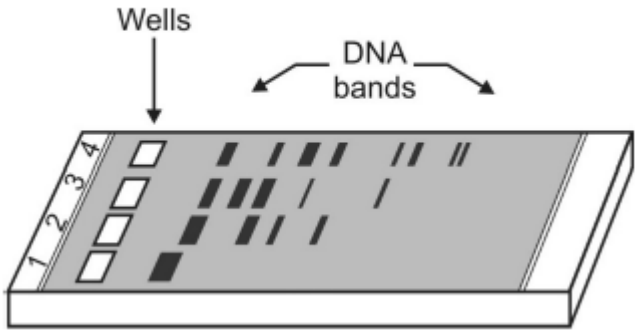
196). Observe the figure of a typical gel electrophoresis given below



Choose the incorrect statement
(1) Its employed to check the progression of restriction enzyme digestion
(2) Smaller the fragment size, the farther it moves from anode
(3) Largest DNA fragment is closest to the loading well
(4) Separated DNA can be visualized only after staining with ethidium bromide

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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197). Enterokinase catalyses the conversion of
(1) Pepsinogen to pepsin
(2) Procarboxypeptidase to carboxypeptidase
(3) Trypsinogen to trypsin
(4) Peptides or proteins to dipeptides

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C

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198). Excessive cigarrete smoking leading to damage of alveolar walls is associated with
(1) Asthma (2) Emphysema
(3) Silicosis (4) Botulism

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- B

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199). Choose the **incorrect** match w.r.t animal, its phylum and two features

	Animal	Phylum	Features
(1)	*Clarias*	Chordata	Placoid scales, Operculum
(2)	*Antedon*	Echinodermata	Water vascular system, Radial symmetry
(3)	*Locusta*	Arthropoda	Jointed appendages, Open circulatory system
(4)	*Nereis*	Annelida	Dioecious, Parapodia

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- A

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200). Hypothalamus does not contain centre for controlling
(1) Body temperature (2) Hunger
(3) Respiration (4) Osmoregulation

(a) A (b) B (c) C (d) D

Q.Type:- MCQ Single, Ans:- C
