

PYQSide

AIPMT 2012 (PRELIMS) — QUESTION PAPER

Max. Marks: 800

Questions: 200

Section A (MCQ)

- Q.1** The damping force on an oscillator is directly proportional to the velocity. The units of the constant of proportionality are

[AIPMT 2012 (Prelims)]

- (1) kg m s^{-1} (2) kg m s^{-2} (3) kg s^{-1} (4) kg s

Scan or tap for the full solution



- Q.2** The motion of a particle along a straight line is described by equation $x = 8 + 12t - t^3$ where x is in metre and t in second. The retardation of the particle when its velocity becomes zero is

[AIPMT 2012 (Prelims)]

- (1) 24 m s^{-2} (2) zero (3) 6 m s^{-2} (4) 12 m s^{-2}

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- Q.3** The horizontal range and the maximum height of a projectile are equal. The angle of projection of the projectile is

[AIPMT 2012 (Prelims)]

- (1) $\theta = \tan^{-1}\left(\frac{1}{4}\right)$ (2) $\theta = \tan^{-1}(4)$
(3) $\theta = \tan^{-1}(2)$ (4) $\theta = 45^\circ$

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- Q.4** A particle has initial velocity $(2\hat{i} + 3\hat{j})$ and acceleration $(0.3\hat{i} + 0.2\hat{j})$. The magnitude of velocity after 10 seconds will be

[AIPMT 2012 (Prelims)]

- (1) $9\sqrt{2}$ units (2) $5\sqrt{2}$ units (3) 5 units (4) 9 units

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- Q.5** The potential energy of a particle in a force field is $U = \frac{A}{r^2} - \frac{B}{r}$ where A and B are positive constants and r is the distance of particle from the centre of the field. For stable equilibrium, the distance of the particle is

[AIPMT 2012 (Prelims)]

- (1) $\frac{B}{2A}$ (2) $\frac{2A}{B}$ (3) $\frac{A}{B}$ (4) $\frac{B}{A}$

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- Q.6** A solid cylinder of mass 3 kg is rolling on a horizontal surface with velocity 4 m s^{-1} . It collides with a horizontal spring of force constant 200 N m^{-1} . The maximum compression produced in the spring will be

[AIPMT 2012 (Prelims)]

- (1) 0.5 m (2) 0.6 m (3) 0.7 m (4) 0.2 m

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- Q.7** Two spheres A and B of masses m_1 and m_2 respectively collide. A is at rest initially and B is moving with velocity v along x-axis. After collision B has a velocity $\frac{v}{2}$ in a direction perpendicular to the original direction. The mass A moves after collision in the direction:

[AIPMT 2012 (Prelims)]

- (1) same as that of B (2) opposite to that of B
(3) $\theta = \tan^{-1}\left(\frac{1}{2}\right)$ to the x-axis (4) $\theta = \tan^{-1}\left(-\frac{1}{2}\right)$ to the x-axis

Scan or tap for the full solution



- Q.8** When a mass is rotating in a plane about a fixed point, its angular momentum is directed along

[AIPMT 2012 (Prelims)]

- (1) a line perpendicular to the plane of rotation
(2) the line making an angle of 45° to the plane of rotation
(3) the radius
(4) the tangent to the orbit

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- Q.9** Two persons of masses 55 kg and 65 kg respectively, are at the opposite ends of a boat. The length of the boat is 3.0 m and weighs 100 kg. The 55 kg man walks up to the 65 kg man and sits with him. If the boat is in still water the centre of mass of the system shifts by:

[AIPMT 2012 (Prelims)]

- (1) 3.0 m (2) 2.3 m (3) zero (4) 0.75 m

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- Q.10** A car of mass 1000 kg negotiates a banked curve of radius 90 m on a frictionless road. If the banking angle is 45° , the speed of the car is

[AIPMT 2012 (Prelims)]

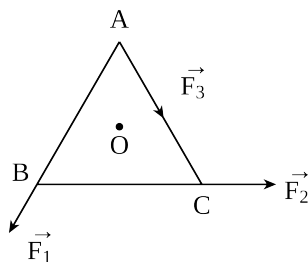
- (1) 20 m s^{-1} (2) 30 m s^{-1} (3) 5 m s^{-1} (4) 10 m s^{-1}

Scan or tap for the full solution



- Q.11** ABC is an equilateral triangle with O as its centre. $\vec{F}_1$, $\vec{F}_2$ and $\vec{F}_3$ represent three forces acting along the sides AB, BC and AC respectively. If the total torque about O is zero then magnitude of $\vec{F}_3$ is

[AIPMT 2012 (Prelims)]



- (1) $F_1 + F_2$ (2) $F_1 - F_2$ (3) $\frac{F_1 + F_2}{2}$ (4) $2(F_1 + F_2)$

Scan or tap for the full solution



- Q.12** The height at which the weight of a body becomes $\left(\frac{1}{16}\right)^{\text{th}}$ of its weight on the surface of earth (radius R), is

[AIPMT 2012 (Prelims)]

- (1) 5R (2) 15R (3) 3R (4) 4R

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- Q.13** A spherical planet has a mass M_p and diameter D_p . A particle of mass m falling freely near the surface of this planet will experience an acceleration due to gravity, equal to

[AIPMT 2012 (Prelims)]

- (1) $\frac{4GM_p}{D_p^2}$ (2) $\frac{GM_p m}{D_p^2}$ (3) $\frac{GM_p}{D_p^2}$ (4) $\frac{4GM_p m}{D_p^2}$

Scan or tap for the full solution



- Q.14** A geostationary satellite is orbiting the earth at a height of 5R above the surface of the earth, R being the radius of the earth. The time period of another satellite in hours at a height of 2R from the surface of the earth is

[AIPMT 2012 (Prelims)]

- (1) 5 (2) 10 (3) $6\sqrt{2}$ (4) $\frac{6}{\sqrt{2}}$

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- Q.15** If the radius of a star is R and it acts as a black body, what would be the temperature of the star, in which the rate of energy production is Q?

[AIPMT 2012 (Prelims)]

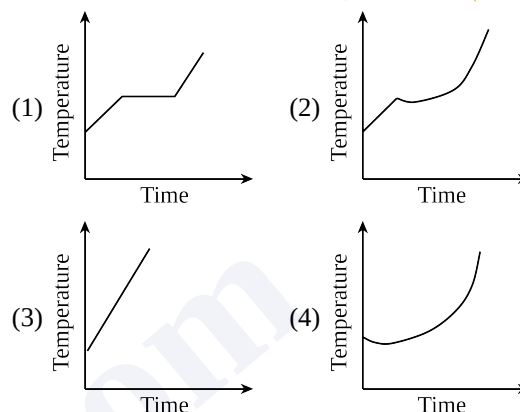
- (1) $\frac{Q}{4\pi R^2 \sigma}$ (2) $\left(\frac{Q}{4\pi R^2 \sigma}\right)^{-1/2}$
(3) $\left(\frac{4\pi R^2 Q}{\sigma}\right)^{1/4}$ (4) $\left(\frac{Q}{4\pi R^2 \sigma}\right)^{1/4}$

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- Q.16** Liquid oxygen at 50 K is heated to 300 K at constant pressure of 1 atm. The rate of heating is constant. Which one of the following graphs represents the variation of temperature with time?

[AIPMT 2012 (Prelims)]

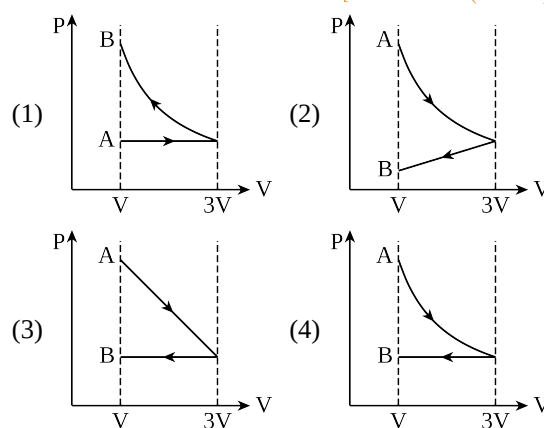


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- Q.17** One mole of an ideal gas goes from an initial state A to final state B via two processes : It first undergoes isothermal expansion from volume V to 3V and then its volume is reduced from 3V to V at constant pressure. The correct P-V diagram representing the two processes is

[AIPMT 2012 (Prelims)]

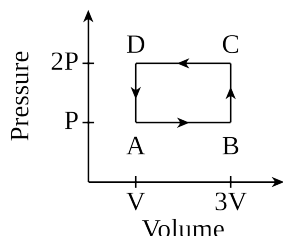


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- Q.18** A thermodynamic system is taken through the cycle ABCD as shown in figure. Heat rejected by the gas during the cycle is

[AIPMT 2012 (Prelims)]



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

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- Q.19** When a string is divided into three segments of lengths l_1 , l_2 and l_3 , the fundamental frequencies of these three segments are v_1 , v_2 and v_3 respectively. The original fundamental frequency (v) of the string is [AIPMT 2012 (Prelims)]

- (1) $\sqrt{v} = \sqrt{v_1} + \sqrt{v_2} + \sqrt{v_3}$
 (2) $v = v_1 + v_2 + v_3$
 (3) $\frac{1}{v} = \frac{1}{v_1} + \frac{1}{v_2} + \frac{1}{v_3}$
 (4) $\frac{1}{\sqrt{v}} = \frac{1}{\sqrt{v_1}} + \frac{1}{\sqrt{v_2}} + \frac{1}{\sqrt{v_3}}$

Scan or tap for the full solution



- Q.20** Two sources of sound placed close to each other, are emitting progressive waves given by $y_1 = 4\sin 600\pi t$ and $y_2 = 5\sin 608\pi t$. An observer located near these two sources of sound will hear [AIPMT 2012 (Prelims)]

- (1) 4 beats per second with intensity ratio 25 : 16 between waxing and waning.
 (2) 8 beats per second with intensity ratio 25 : 16 between waxing and waning.
 (3) 8 beats per second with intensity ratio 81 : 1 between waxing and waning.
 (4) 4 beats per second with intensity ratio 81 : 1 between waxing and waning.

Scan or tap for the full solution



- Q.21** An electric dipole of moment p is placed in an electric field of intensity E . The dipole acquires a position such that the axis of the dipole makes an angle θ with the direction of the field. Assuming the potential energy of the dipole to be zero when $\theta = 90^\circ$, the torque and the potential energy of the dipole will respectively be [AIPMT 2012 (Prelims)]
- (1) $pE\sin\theta$, $-pE\cos\theta$ (2) $pE\sin\theta$, $-2pE\cos\theta$
 (3) $pE\sin\theta$, $2pE\cos\theta$ (4) $pE\cos\theta$, $-pE\sin\theta$

Scan or tap for the full solution



- Q.22** Four point charges $-Q$, $-q$, $2q$ and $2Q$ are placed, one at each corner of the square. The relation between Q and q for which the potential at the centre of the square is zero is [AIPMT 2012 (Prelims)]
- (1) $Q = -q$ (2) $Q = -\frac{1}{q}$ (3) $Q = q$ (4) $Q = \frac{1}{q}$

Scan or tap for the full solution



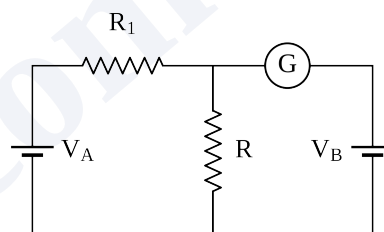
- Q.23** What is the flux through a cube of side a if a point charge of q is at one of its corners? [AIPMT 2012 (Prelims)]

- (1) $\frac{2q}{\epsilon_0}$ (2) $\frac{q}{8\epsilon_0}$ (3) $\frac{q}{\epsilon_0}$ (4) $\frac{q}{2\epsilon_0} 6a^2$

Scan or tap for the full solution



- Q.24** In the circuit shown the cells A and B have negligible resistances. For $V_A = 12\text{ V}$, $R_1 = 500\ \Omega$ and $R = 100\ \Omega$ the galvanometer (G) shows no deflection. The value of V_B is [AIPMT 2012 (Prelims)]

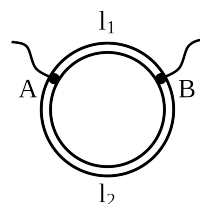


- (1) 4 V (2) 2 V (3) 12 V (4) 6 V

Scan or tap for the full solution



- Q.25** A ring is made of a wire having a resistance $R_0 = 12\ \Omega$. Find the points A and B, as shown in the figure, at which a current carrying conductor should be connected so that the resistance R of the sub circuit between these points is equal to $\frac{8}{3}\ \Omega$. [AIPMT 2012 (Prelims)]



- (1) $\frac{l_1}{l_2} = \frac{5}{8}$ (2) $\frac{l_1}{l_2} = \frac{1}{3}$ (3) $\frac{l_1}{l_2} = \frac{3}{8}$ (4) $\frac{l_1}{l_2} = \frac{1}{2}$

Scan or tap for the full solution



- Q.26** If voltage across a bulb rated 220 volt-100 watt drops by 2.5% of its rated value, the percentage of the rated value by which the power would decrease is [AIPMT 2012 (Prelims)]
- (1) 20% (2) 2.5% (3) 5% (4) 10%

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- Q.27** Two similar coils of radius R are lying concentrically with their planes at right angles to each other. The currents flowing in them are I and $2I$, respectively. The resultant magnetic field induction at the centre will be

[AIPMT 2012 (Prelims)]

- (1) $\frac{\sqrt{5}\mu_0 I}{2R}$ (2) $\frac{\sqrt{5}\mu_0 I}{R}$
(3) $\frac{\mu_0 I}{2R}$ (4) $\frac{\mu_0 I}{R}$

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- Q.28** A millivoltmeter of 25 millivolt range is to be converted into an ammeter of 25 ampere range. The value (in ohm) of necessary shunt will be

[AIPMT 2012 (Prelims)]

- (1) 0.001 (2) 0.01 (3) 1 (4) 0.05

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- Q.29** An alternating electric field, of frequency ν , is applied across the dees (radius = R) of a cyclotron that is being used to accelerate protons (mass = m). The operating magnetic field (B) used in the cyclotron and the kinetic energy (K) of the proton beam, produced by it, are given by

[AIPMT 2012 (Prelims)]

- (1) $B = \frac{mv}{e}$ and $K = 2m\pi^2\nu^2R^2$
(2) $B = \frac{2\pi m\nu}{e}$ and $K = m^2\pi\nu R^2$
(3) $B = \frac{2\pi m\nu}{e}$ and $K = 2m\pi^2\nu^2R^2$
(4) $B = \frac{mv}{e}$ and $K = m^2\pi\nu R^2$

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- Q.30** A compass needle which is allowed to move in a horizontal plane is taken to a geomagnetic pole. It

[AIPMT 2012 (Prelims)]

- (1) will become rigid showing no movement
(2) will stay in any position
(3) will stay in north-south direction only
(4) will stay in east-west direction only

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- Q.31** A coil of resistance $400\ \Omega$ is placed in a magnetic field. If the magnetic flux ϕ (Wb) linked with the coil varies with time t (sec) as $\phi = 50t^2 + 4$. The current in the coil at $t = 2$ sec is

[AIPMT 2012 (Prelims)]

- (1) 0.5 A (2) 0.1 A (3) 2 A (4) 1 A

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- Q.32** In an electrical circuit R , L , C and a.c. voltage source are all connected in series. When L is removed from the circuit, the phase difference between the voltage and the current in the circuit is $\frac{\pi}{3}$. If instead, C is removed from the circuit, the phase difference is again $\frac{\pi}{3}$. The power factor of the circuit is

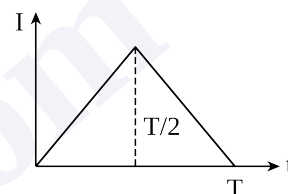
[AIPMT 2012 (Prelims)]

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

Scan or tap for the full solution

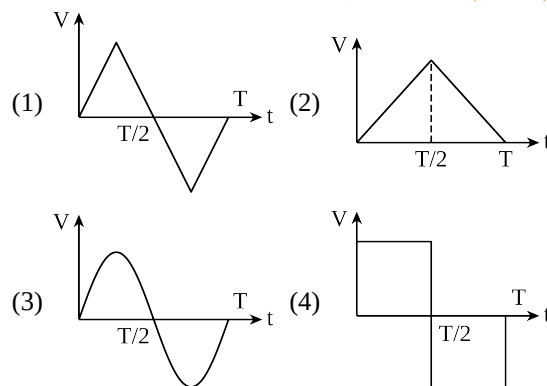


- Q.33** The current (I) in the inductance is varying with time according to the plot shown in figure.



- Which one of the following is the correct variation of voltage with time in the coil?

[AIPMT 2012 (Prelims)]



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- Q.34** The electric field associated with an em wave in vacuum is given by $\vec{E} = \hat{i}40\cos(kz - 6 \times 10^8 t)$ where E , z and t are in volt/m, meter and seconds respectively. The value of wave vector k is

[AIPMT 2012 (Prelims)]

- (1) 2 m^{-1} (2) 0.5 m^{-1} (3) 6 m^{-1} (4) 3 m^{-1}

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- Q.35** When a biconvex lens of glass having refractive index 1.47 is dipped in a liquid, it acts as a plane sheet of glass. This implies that the liquid must have refractive index

[AIPMT 2012 (Prelims)]

- (1) equal to that of glass
 (2) less than one
 (3) greater than that of glass
 (4) less than that of glass

Scan or tap for the
full solution



Q.36 A ray of light is incident at an angle of incidence i , on one face of a prism of angle A (assumed to be small) and emerges normally from the opposite face. If the refractive index of the prism is μ , the angle of incidence i , is nearly equal to

[AIPMT 2012 (Prelims)]

- (1) μA (2) $\frac{\mu A}{2}$ (3) $\frac{A}{\mu}$ (4) $\frac{A}{2\mu}$

Scan or tap for the
full solution



Q.37 A concave mirror of focal length f_1 is placed at a distance of d from a convex lens of focal length f_2 . A beam of light coming from infinity and falling on this convex lens – concave mirror combination returns to infinity. The distance d must equal

[AIPMT 2012 (Prelims)]

- (1) $f_1 + f_2$ (2) $-f_1 + f_2$ (3) $2f_1 + f_2$ (4) $-2f_1 + f_2$

Scan or tap for the
full solution



Q.38 The magnifying power of a telescope is 9. When it is adjusted for parallel rays the distance between the objective and eyepiece is 20 cm. The focal length of lenses are

[AIPMT 2012 (Prelims)]

- (1) 10 cm, 10 cm (2) 15 cm, 5 cm
 (3) 18 cm, 2 cm (4) 11 cm, 9 cm

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full solution



Q.39 A 200 W sodium street lamp emits yellow light of wavelength $0.6 \mu\text{m}$. Assuming it to be 25% efficient in converting electrical energy to light, the number of photons of yellow light it emits per second is

[AIPMT 2012 (Prelims)]

- (1) 1.5×10^{20} (2) 6×10^{18}
 (3) 62×10^{20} (4) 3×10^{19}

Scan or tap for the
full solution



Q.40 Monochromatic radiation emitted when electron in hydrogen atom jumps from first excited to the ground state irradiates a photosensitive material. The stopping potential is measured to be 3.57 V. The threshold frequency of the material is

[AIPMT 2012 (Prelims)]

- (1) $4 \times 10^{15} \text{ Hz}$ (2) $5 \times 10^{15} \text{ Hz}$
 (3) $1.6 \times 10^{15} \text{ Hz}$ (4) $2.5 \times 10^{15} \text{ Hz}$

Scan or tap for the
full solution



Q.41 An α -particle moves in a circular path of radius 0.83 cm in the presence of a magnetic field of 0.25 Wb/m^2 . The de Broglie wavelength associated with the particle will be [AIPMT 2012 (Prelims)]
 (1) $1 \text{ \AA}$ (2) $0.1 \text{ \AA}$ (3) $10 \text{ \AA}$ (4) $0.01 \text{ \AA}$

Scan or tap for the
full solution



Q.42 Electron in hydrogen atom first jumps from third excited state to second excited state and then from second excited to the first excited state. The ratio of the wavelengths $\lambda_1:\lambda_2$ emitted in the two cases is

[AIPMT 2012 (Prelims)]

- (1) $\frac{7}{5}$ (2) $\frac{27}{20}$ (3) $\frac{27}{5}$ (4) $\frac{20}{7}$

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full solution



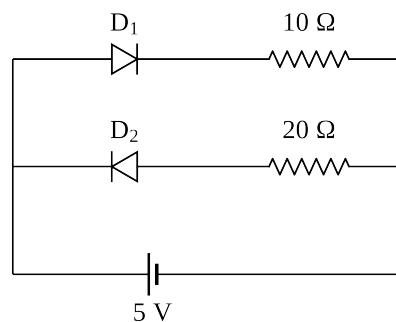
Q.43 An electron of a stationary hydrogen atom passes from the fifth energy level to the ground level. The velocity that the atom acquired as a result of photon emission will be [AIPMT 2012 (Prelims)]

- (1) $\frac{24hR}{25m}$ (2) $\frac{25hR}{24m}$ (3) $\frac{25m}{24hR}$ (4) $\frac{24m}{25hR}$

Scan or tap for the
full solution



Q.44 Two ideal diodes are connected to a battery as shown in the circuit. The current supplied by the battery is [AIPMT 2012 (Prelims)]



- (1) 0.75 A (2) zero (3) 0.25 A (4) 0.5 A

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full solution



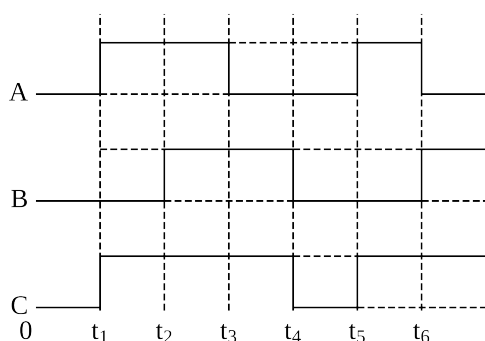
Q.45 C and Si both have same lattice structure; having 4 bonding electrons in each. However, C is insulator whereas Si is intrinsic semiconductor. This is because [AIPMT 2012 (Prelims)]

- (1) In case of C the valence band is not completely filled at absolute zero temperature.
- (2) In case of C the conduction band is partly filled even at absolute zero temperature.
- (3) The four bonding electrons in the case of C lie in the second orbit, whereas in the case of Si they lie in the third.
- (4) The four bonding electrons in the case of C lie in the third orbit, whereas for Si they lie in the fourth orbit.

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- Q.46** The figure shows a logic circuit with two inputs A and B and the output C. The voltage wave forms across A, B and C are as given. The logic circuit gate is [AIPMT 2012 (Prelims)]



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

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- Q.47** If the nuclear radius of ^{27}Al is 3.6 fermi, the approximate nuclear radius of ^{64}Cu in fermi is

[AIPMT 2012 (Prelims)]

- (1) 2.4
- (2) 1.2
- (3) 4.8
- (4) 3.6

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- Q.48** A mixture consists of two radioactive materials A_1 and A_2 with half lives of 20 s and 10 s respectively. Initially the mixture has 40 g of A_1 and 160 g of A_2 . The amount of the two in the mixture will become equal after [AIPMT 2012 (Prelims)]

- (1) 60 s
- (2) 80 s
- (3) 20 s
- (4) 40 s

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- Q.49** In a CE transistor amplifier, the audio signal voltage across the collector resistance of 2 k Ω is 2 V. If the base resistance is 1 k Ω and the current amplification of the transistor is 100, the input signal voltage is

[AIPMT 2012 (Prelims)]

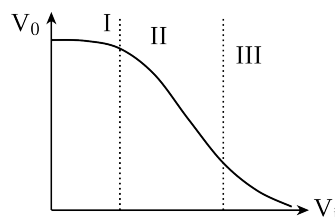
- (1) 0.1 V
- (2) 1.0 V
- (3) 1 mV
- (4) 10 mV

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- Q.50** Transfer characteristics [output voltage (V_0) vs input voltage (V_i)] for a base biased transistor in CE configuration is as shown in the figure. For using transistor as a switch, it is used

[AIPMT 2012 (Prelims)]



- (1) in region III
- (2) both in region (I) and (III)
- (3) in region II
- (4) in region I

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- Q.51** Maximum number of electrons in a subshell with $l = 3$ and $n = 4$ is [AIPMT 2012 (Prelims)]

- (1) 14
- (2) 16
- (3) 10
- (4) 12

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- Q.52** The correct set of four quantum numbers for the valence electron of rubidium atom ($Z = 37$) is

[AIPMT 2012 (Prelims)]

- (1) 5, 1, 1, $+\frac{1}{2}$
- (2) 6, 0, 0, $+\frac{1}{2}$
- (3) 5, 0, 0, $+\frac{1}{2}$
- (4) 5, 1, 0, $+\frac{1}{2}$

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- Q.53** Identify the wrong statement in the following.

[AIPMT 2012 (Prelims)]

- (1) Amongst isoelectronic species, smaller the positive charge on the cation, smaller is the ionic radius.
- (2) Amongst isoelectronic species, greater the negative charge on the anion, larger is the ionic radius.
- (3) Atomic radius of the elements increases as one moves down the first group of the periodic table.
- (4) Atomic radius of the elements decreases as one moves across from left to right in the 2nd period of the periodic table.

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Q.54 Which one of the following pairs is isostructural (i.e., having the same shape and hybridization) ?

[AIPMT 2012 (Prelims)]

- (1) $[\text{BCl}_3 \text{ and } \text{BrCl}_3]$ (2) $[\text{NH}_3 \text{ and } \text{NO}_3^-]$
 (3) $[\text{NF}_3 \text{ and } \text{BF}_3]$ (4) $[\text{BF}_4^- \text{ and } \text{NH}_4^+]$

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Q.55 Bond order of 1.5 is shown by

[AIPMT 2012 (Prelims)]

- (1) O_2^+ (2) O_2^- (3) O_2^{2-} (4) O_2

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Q.56 Which of the following species contains three bond pairs and one lone pair around the central atom ?

[AIPMT 2012 (Prelims)]

- (1) H_2O (2) BF_3 (3) NH_2^- (4) PCl_3

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Q.57 The pair of species with the same bond order is

[AIPMT 2012 (Prelims)]

- (1) O_2^{2-} , B_2 (2) O_2^+ , NO^+
 (3) NO , CO (4) N_2 , O_2

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Q.58 In which of the following reactions, standard reaction entropy change (ΔS°) is positive and standard Gibbs energy change (ΔG°) decreases sharply with increasing temperature ?

[AIPMT 2012 (Prelims)]

- (1) $\text{C}_{(\text{graphite})} + \frac{1}{2}\text{O}_{2(\text{g})} \longrightarrow \text{CO}_{(\text{g})}$
 (2) $\text{CO}_{(\text{g})} + \frac{1}{2}\text{O}_{2(\text{g})} \longrightarrow \text{CO}_{2(\text{g})}$
 (3) $\text{Mg}_{(\text{s})} + \frac{1}{2}\text{O}_{2(\text{g})} \longrightarrow \text{MgO}_{(\text{s})}$
 (4) $\frac{1}{2}\text{C}_{(\text{graphite})} + \frac{1}{2}\text{O}_{2(\text{g})} \longrightarrow \frac{1}{2}\text{CO}_{2(\text{g})}$

Scan or tap for the full solution



Q.59 The enthalpy of fusion of water is 1.435 kcal/mol. The molar entropy change for the melting of ice at 0°C is

[AIPMT 2012 (Prelims)]

- (1) 10.52 cal/(mol K) (2) 21.04 cal/(mol K)
 (3) 5.260 cal/(mol K) (4) 0.526 cal/(mol K)

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Q.60 Equimolar solutions of the following substances were prepared separately. Which one of these will record the highest pH value ?

[AIPMT 2012 (Prelims)]

- (1) BaCl_2 (2) AlCl_3 (3) LiCl (4) BeCl_2

Scan or tap for the full solution



Q.61 Standard enthalpy of vaporisation $\Delta_{\text{vap}}H^\circ$ for water at 100°C is 40.66 kJ mol $^{-1}$. The internal energy of vaporisation of water at 100°C (in kJ mol $^{-1}$) is

[AIPMT 2012 (Prelims)]

- (1) +37.56 (2) -43.76 (3) +43.76 (4) +40.66

Scan or tap for the full solution



Q.62 pH of a saturated solution of $\text{Ba}(\text{OH})_2$ is 12. The value of solubility product (K_{sp}) of $\text{Ba}(\text{OH})_2$ is

[AIPMT 2012 (Prelims)]

- (1) 3.3×10^{-7} (2) 5.0×10^{-7}
 (3) 4.0×10^{-6} (4) 5.0×10^{-6}

Scan or tap for the full solution



Q.63 Buffer solutions have constant acidity and alkalinity because

[AIPMT 2012 (Prelims)]

- (1) these give unionised acid or base on reaction with added acid or alkali
 (2) acids and alkalies in these solutions are shielded from attack by other ions
 (3) they have large excess of H^+ or OH^- ions
 (4) they have fixed value of pH

Scan or tap for the full solution



Q.64 Among the following compounds the one that is most reactive towards electrophilic nitration is

[AIPMT 2012 (Prelims)]

- (1) benzoic acid (2) nitrobenzene
 (3) toluene (4) benzene

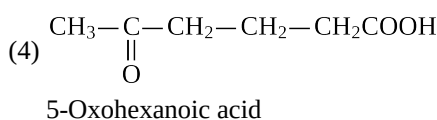
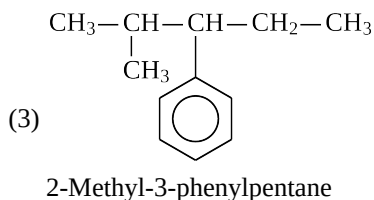
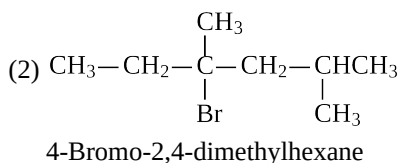
Scan or tap for the full solution



Q.65 Which nomenclature is not according to IUPAC system?

[AIPMT 2012 (Prelims)]

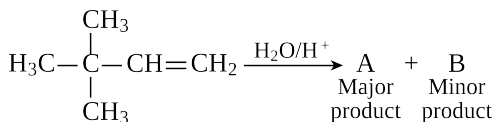
- (1) $\text{Br}-\text{CH}_2-\text{CH}=\text{CH}_2$
1-Bromoprop-2-ene



Scan or tap for the full solution



Q.66 In the following reaction



The major product is

[AIPMT 2012 (Prelims)]

- (1) $\text{H}_3\text{C}-\underset{\text{OH}}{\overset{\text{CH}_3}{\text{C}}}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_3$
- (2) $\text{CH}_2-\underset{\text{OH}}{\overset{\text{CH}_3}{\text{C}}}-\text{CH}_2-\text{CH}_3$
- (3) $\text{H}_3\text{C}-\underset{\text{CH}_3}{\overset{\text{CH}_3}{\text{C}}}-\underset{\text{OH}}{\text{CH}}-\text{CH}_3$
- (4) $\text{H}_3\text{C}-\underset{\text{CH}_3}{\overset{\text{CH}_3}{\text{C}}}-\text{CH}_2-\underset{\text{OH}}{\text{CH}_2}$

Scan or tap for the full solution



Q.67 Which of the following acids does not exhibit optical isomerism?

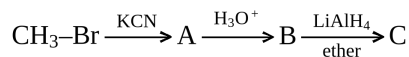
[AIPMT 2012 (Prelims)]

- (1) Maleic acid (2) α -amino acids
(3) Lactic acid (4) Tartaric acid

Scan or tap for the full solution



Q.68 In the following sequence of reactions



the end product (C) is

[AIPMT 2012 (Prelims)]

- (1) acetone (2) methane
(3) acetaldehyde (4) ethyl alcohol

Scan or tap for the full solution



Q.69 When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from

[AIPMT 2012 (Prelims)]

- (1) zero to +1 and zero to -5
(2) zero to -1 and zero to +5
(3) zero to -1 and zero to +3
(4) zero to +1 and zero to -3

Scan or tap for the full solution



Q.70 A mixture of potassium chlorate, oxalic acid and sulphuric acid is heated. During the reaction which element undergoes maximum change in the oxidation number?

[AIPMT 2012 (Prelims)]

- (1) S (2) H (3) Cl (4) C

Scan or tap for the full solution



Q.71 CH_3CHO and $\text{C}_6\text{H}_5\text{CH}_2\text{CHO}$ can be distinguished chemically by

[AIPMT 2012 (Prelims)]

- (1) Benedict's test (2) Iodoform test
(3) Tollens' reagent test (4) Fehling's solution test

Scan or tap for the full solution



Q.72 The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoroacetic acid (B), acetic acid (C) and formic acid (D) is

[AIPMT 2012 (Prelims)]

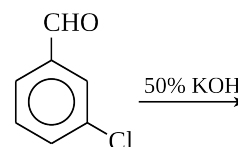
- (1) $\text{B} > \text{A} > \text{D} > \text{C}$ (2) $\text{B} > \text{D} > \text{C} > \text{A}$
(3) $\text{A} > \text{B} > \text{C} > \text{D}$ (4) $\text{A} > \text{C} > \text{B} > \text{D}$

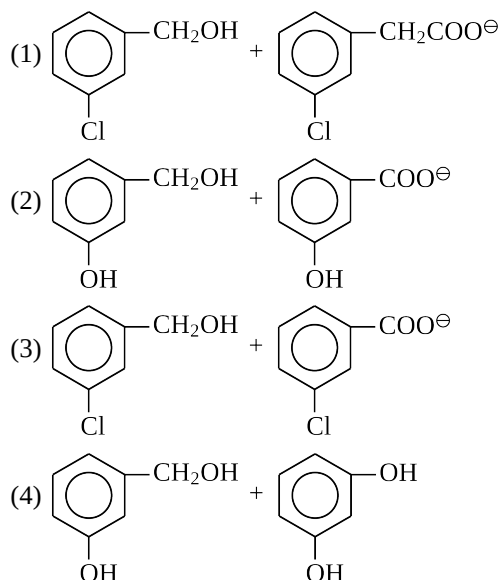
Scan or tap for the full solution



Q.73 Predict the products in the given reaction.

[AIPMT 2012 (Prelims)]



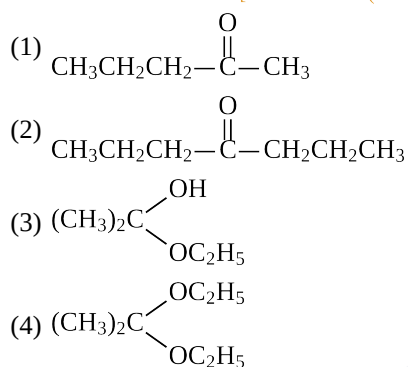


Scan or tap for the full solution



Q.74 Acetone is treated with excess of ethanol in the presence of hydrochloric acid. The product obtained is

[AIPMT 2012 (Prelims)]



Scan or tap for the full solution



Q.75 Deficiency of vitamin B₁ causes the disease

[AIPMT 2012 (Prelims)]

- (1) convulsions (2) beri-beri
(3) cheilosis (4) sterility

Scan or tap for the full solution



Q.76 Which one of the following sets of monosaccharides forms sucrose?

[AIPMT 2012 (Prelims)]

- (1) α -D-galactopyranose and α -D-glucopyranose
(2) α -D-glucopyranose and β -D-fructofuranose
(3) β -D-glucopyranose and α -D-fructofuranose
(4) α -D-glucopyranose and β -D-fructopyranose

Scan or tap for the full solution



Q.77 p_A and p_B are the vapour pressures of pure liquid components, A and B, respectively of an ideal binary solution. If x_A represents the mole fraction of component A, the total pressure of the solution will be

[AIPMT 2012 (Prelims)]

- (1) $p_A + x_A(p_B - p_A)$ (2) $p_A + x_A(p_A - p_B)$
(3) $p_B + x_A(p_B - p_A)$ (4) $p_B + x_A(p_A - p_B)$

Scan or tap for the full solution



Q.78 Limiting molar conductivity of NH_4OH

[i.e. $\Lambda_{\text{m}(\text{NH}_4\text{OH})}^0$] is equal to [AIPMT 2012 (Prelims)]

- (1) $\Lambda_{\text{m}(\text{NH}_4\text{OH})}^0 + \Lambda_{\text{m}(\text{NaCl})}^0 - \Lambda_{\text{m}(\text{NaOH})}^0$
(2) $\Lambda_{\text{m}(\text{NaOH})}^0 + \Lambda_{\text{m}(\text{NaCl})}^0 - \Lambda_{\text{m}(\text{NH}_4\text{Cl})}^0$
(3) $\Lambda_{\text{m}(\text{NH}_4\text{OH})}^0 + \Lambda_{\text{m}(\text{NH}_4\text{Cl})}^0 - \Lambda_{\text{m}(\text{HCl})}^0$
(4) $\Lambda_{\text{m}(\text{NH}_4\text{Cl})}^0 + \Lambda_{\text{m}(\text{NaOH})}^0 - \Lambda_{\text{m}(\text{NaCl})}^0$

Scan or tap for the full solution



Q.79 In a reaction, $\text{A} + \text{B} \rightarrow \text{product}$, rate is doubled when the concentration of B is doubled, and rate increases by a factor of 8 when the concentrations of both the reactants (A and B) are doubled, rate law for the reaction can be written as

[AIPMT 2012 (Prelims)]

- (1) $\text{rate} = k[\text{A}][\text{B}]^2$ (2) $\text{rate} = k[\text{A}]^2[\text{B}]^2$
(3) $\text{rate} = k[\text{A}][\text{B}]$ (4) $\text{rate} = k[\text{A}]^2[\text{B}]$

Scan or tap for the full solution



Q.80 In a zero-order reaction, for every 10°C rise of temperature, the rate is doubled. If the temperature is increased from 10°C to 100°C , the rate of the reaction will become

[AIPMT 2012 (Prelims)]

- (1) 256 times (2) 512 times
(3) 64 times (4) 128 times

Scan or tap for the full solution



Q.81 In which of the following compounds, nitrogen exhibits highest oxidation state?

[AIPMT 2012 (Prelims)]

- (1) N_2H_4 (2) NH_3 (3) N_3H (4) NH_2OH

Scan or tap for the full solution



Q.82 Which of the following statements is not valid for oxoacids of phosphorus?

[AIPMT 2012 (Prelims)]

- (1) Orthophosphoric acid is used in the manufacture of triple superphosphate.
 (2) Hypophosphorous acid is a diprotic acid.
 (3) All oxoacids contain tetrahedral four coordinated phosphorus.
 (4) All oxoacids contain at least one P=O unit and one P–OH group.

Scan or tap for the full solution 

Q.83 Sulphur trioxide can be obtained by which of the following reactions? [AIPMT 2012 (Prelims)]

- (1) $\text{CaSO}_4 + \text{C} \xrightarrow{\Delta}$ (2) $\text{Fe}_2(\text{SO}_4)_3 \xrightarrow{\Delta}$
 (3) $\text{S} + \text{H}_2\text{SO}_4 \xrightarrow{\Delta}$ (4) $\text{H}_2\text{SO}_4 + \text{PCl}_5 \xrightarrow{\Delta}$

Scan or tap for the full solution 

Q.84 Identify the alloy containing a non-metal as a constituent in it. [AIPMT 2012 (Prelims)]

- (1) Invar (2) Steel
 (3) Bell metal (4) Bronze

Scan or tap for the full solution 

Q.85 Which of the statements is not true?

[AIPMT 2012 (Prelims)]

- (1) On passing H_2S through acidified $\text{K}_2\text{Cr}_2\text{O}_7$ solution, a milky colour is observed.
 (2) $\text{Na}_2\text{Cr}_2\text{O}_7$ is preferred over $\text{K}_2\text{Cr}_2\text{O}_7$ in volumetric analysis.
 (3) $\text{K}_2\text{Cr}_2\text{O}_7$ solution in acidic medium is orange.
 (4) $\text{K}_2\text{Cr}_2\text{O}_7$ solution becomes yellow on increasing the pH beyond 7.

Scan or tap for the full solution 

Q.86 Which one of the following is an outer orbital complex and exhibits paramagnetic behaviour?

[AIPMT 2012 (Prelims)]

- (1) $[\text{Ni}(\text{NH}_3)_6]^{2+}$ (2) $[\text{Zn}(\text{NH}_3)_6]^{2+}$
 (3) $[\text{Cr}(\text{NH}_3)_6]^{3+}$ (4) $[\text{Co}(\text{NH}_3)_6]^{3+}$

Scan or tap for the full solution 

Q.87 50 mL of each gas A and of gas B takes 150 and 200 seconds respectively for effusing through a pin hole under the similar conditions. If molecular mass of gas B is 36, the molecular mass of gas A will be

[AIPMT 2012 (Prelims)]

- (1) 96 (2) 128.74 (3) 20.25 (4) 64.42

Scan or tap for the full solution 

Q.88 Which one of the alkali metals, forms only, the normal oxide, M_2O on heating in air?

[AIPMT 2012 (Prelims)]

- (1) Rb (2) K (3) Li (4) Na

Scan or tap for the full solution 

Q.89 The ease of adsorption of the hydrated alkali metal ions on an ion-exchange resin follows the order :

[AIPMT 2012 (Prelims)]

- (1) $\text{Li}^+ < \text{K}^+ < \text{Na}^+ < \text{Rb}^+$ (2) $\text{Rb}^+ < \text{K}^+ < \text{Na}^+ < \text{Li}^+$
 (3) $\text{K}^+ < \text{Na}^+ < \text{Rb}^+ < \text{Li}^+$ (4) $\text{Na}^+ < \text{Li}^+ < \text{K}^+ < \text{Rb}^+$

Scan or tap for the full solution 

Q.90 Which one of the following is not a condensation polymer?

[AIPMT 2012 (Prelims)]

- (1) Melamine (2) Glyptal
 (3) Dacron (4) Neoprene

Scan or tap for the full solution 

Q.91 Which of the following statements is false?

[AIPMT 2012 (Prelims)]

- (1) Artificial silk is derived from cellulose.
 (2) Nylon-6, 6 is an example of elastomer.
 (3) The repeat unit in natural rubber is isoprene.
 (4) Both starch and cellulose are polymers of glucose.

Scan or tap for the full solution 

Q.92 A metal crystallises with a face-centred cubic lattice. The edge of the unit cell is 408 pm. The diameter of the metal atom is [AIPMT 2012 (Prelims)]

- (1) 288 pm (2) 408 pm (3) 144 pm (4) 204 pm

Scan or tap for the full solution 

Q.93 The number of octahedral void(s) per atom present in a cubic close-packed structure is

[AIPMT 2012 (Prelims)]

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

Scan or tap for the full solution 

Q.94 In Freundlich adsorption isotherm, the value of $\frac{1}{n}$ is

[AIPMT 2012 (Prelims)]

- (1) between 0 and 1 in all cases
 (2) between 2 and 4 in all cases
 (3) 1 in case of physical adsorption
 (4) 1 in case of chemisorption.

Scan or tap for the full solution 

Q.95 Which one of the following statements is incorrect about enzyme catalysis? [AIPMT 2012 (Prelims)]

- (1) Enzymes are mostly proteinous in nature.
- (2) Enzyme action is specific.
- (3) Enzymes are denatured by ultraviolet rays and at high temperature.
- (4) Enzymes are least reactive at optimum temperature.

Scan or tap for the full solution



Q.96 The protecting power of lyophilic colloidal sol is expressed in terms of [AIPMT 2012 (Prelims)]

- (1) coagulation value
- (2) gold number
- (3) critical micelle concentration
- (4) oxidation number

Scan or tap for the full solution



Q.97 In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with [AIPMT 2012 (Prelims)]

- (1) carbon monoxide
- (2) copper (I) sulphide
- (3) sulphur dioxide
- (4) iron (II) sulphide.

Scan or tap for the full solution



Q.98 Aluminium is extracted from alumina (Al_2O_3) by electrolysis of a molten mixture of [AIPMT 2012 (Prelims)]

- (1) $\text{Al}_2\text{O}_3 + \text{HF} + \text{NaAlF}_4$
- (2) $\text{Al}_2\text{O}_3 + \text{CaF}_2 + \text{NaAlF}_4$
- (3) $\text{Al}_2\text{O}_3 + \text{Na}_3\text{AlF}_6 + \text{CaF}_2$
- (4) $\text{Al}_2\text{O}_3 + \text{KF} + \text{Na}_3\text{AlF}_6$

Scan or tap for the full solution



Q.99 Which one of the following is a mineral of iron? [AIPMT 2012 (Prelims)]

- (1) Malachite
- (2) Cassiterite
- (3) Pyrolusite
- (4) Magnetite

Scan or tap for the full solution



Q.100 Which one of the following statements regarding photochemical smog is not correct? [AIPMT 2012 (Prelims)]

- (1) Carbon monoxide does not play any role in photochemical smog formation.
- (2) Photochemical smog is an oxidising agent in character.
- (3) Photochemical smog is formed through photochemical reaction involving solar energy.
- (4) Photochemical smog does not cause irritation in eyes and throat.

Scan or tap for the full solution



Q.101 Which statement is wrong for viruses? [AIPMT 2012 (Prelims)]

- (1) All are parasites.
- (2) All of them have helical symmetry.
- (3) They have ability to synthesize nucleic acids and proteins.
- (4) Antibiotics have no effect on them.

Scan or tap for the full solution



Q.102 Maximum nutritional diversity is found in the group [AIPMT 2012 (Prelims)]

- (1) fungi
- (2) animalia
- (3) monera
- (4) plantae

Scan or tap for the full solution



Q.103 Nuclear membrane is absent in [AIPMT 2012 (Prelims)]

- (1) *Penicillium*
- (2) *Agaricus*
- (3) *Volvox*
- (4) *Nostoc*

Scan or tap for the full solution



Q.104 The cyanobacteria are also referred to as [AIPMT 2012 (Prelims)]

- (1) protists
- (2) golden algae
- (3) slime moulds
- (4) blue green algae

Scan or tap for the full solution



Q.105 The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are the ones categorised as [AIPMT 2012 (Prelims)]

- (1) cyanobacteria
- (2) archaeobacteria
- (3) chemosynthetic autotrophs
- (4) heterotrophic bacteria

Scan or tap for the full solution



Q.106 Which one single organism or the pair of organisms is correctly assigned to its or their named taxonomic group? [AIPMT 2012 (Prelims)]

- (1) *Paramecium* and *Plasmodium* belong to the same kingdom as that of *Penicillium*.
 (2) Lichen is a composite organism formed from the symbiotic association of an alga and a protozoan.
 (3) Yeast used in making bread and beer is a fungus.
 (4) *Nostoc* and *Anabaena* are examples of protista.

Scan or tap for the full solution



Q.107 Which one of the following microbes forms symbiotic association with plants and helps them in their nutrition? [AIPMT 2012 (Prelims)]

- (1) *Azotobacter* (2) *Aspergillus*
 (3) *Glomus* (4) *Trichoderma*

Scan or tap for the full solution



Q.108 Which one of the following is common to multicellular fungi, filamentous algae and protonema of mosses? [AIPMT 2012 (Prelims)]

- (1) Diplontic life cycle
 (2) Members of Kingdom Plantae
 (3) Mode of Nutrition
 (4) Multiplication by fragmentation

Scan or tap for the full solution



Q.109 Which one of the following is a correct statement? [AIPMT 2012 (Prelims)]

- (1) Pteridophyte gametophyte has a protonemal and leafy stage.
 (2) In gymnosperms, female gametophyte is free-living.
 (3) Antheridiophores and archegoniophores are present in pteridophytes.
 (4) Origin of seed habit can be traced in pteridophytes.

Scan or tap for the full solution



Q.110 *Cycas* and *Adiantum* resemble each other in having [AIPMT 2012 (Prelims)]

- (1) seeds (2) motile sperms
 (3) cambium (4) vessels

Scan or tap for the full solution



Q.111 Placentation in tomato and lemon is [AIPMT 2012 (Prelims)]

- (1) parietal (2) free central
 (3) marginal (4) axile

Scan or tap for the full solution



Q.112 Cymose inflorescence is present in [AIPMT 2012 (Prelims)]

- (1) *Solanum* (2) *Sesbania*
 (3) *Trifolium* (4) *Brassica*

Scan or tap for the full solution



Q.113 Phyllode is present in [AIPMT 2012 (Prelims)]

- (1) *Asparagus* (2) *Euphorbia*
 (3) Australian *Acacia* (4) *Opuntia*

Scan or tap for the full solution



Q.114 The gynoecium consists of many free pistils in flowers of [AIPMT 2012 (Prelims)]

- (1) *Aloe* (2) tomato (3) *Papaver* (4) *Michelia*

Scan or tap for the full solution



Q.115 How many plants in the list given below have composite fruits that develop from an inflorescence? Walnut, poppy, radish, fig, pineapple, apple, tomato, mulberry. [AIPMT 2012 (Prelims)]

- (1) Four (2) Five (3) Two (4) Three

Scan or tap for the full solution



Q.116 The coconut water and the edible part of coconut are equivalent to [AIPMT 2012 (Prelims)]

- (1) endosperm (2) endocarp
 (3) mesocarp (4) embryo

Scan or tap for the full solution



Q.117 Vexillary aestivation is characteristic of the family [AIPMT 2012 (Prelims)]

- (1) Fabaceae (2) Asteraceae
 (3) Solanaceae (4) Brassicaceae

Scan or tap for the full solution



Q.118 Which one out of A - D given below correctly represents the structural formula of the basic amino acid? [AIPMT 2012 (Prelims)]

A	B	C	D
$\begin{array}{c} \text{NH}_2 \\ \\ \text{H}-\text{C}-\text{COOH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{C}=\text{O} \\ \\ \text{OH} \end{array}$	$\begin{array}{c} \text{NH}_2 \\ \\ \text{H}-\text{C}-\text{COOH} \\ \\ \text{CH}_2 \\ \\ \text{OH} \end{array}$	$\begin{array}{c} \text{CH}_2\text{OH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH}_2 \end{array}$	$\begin{array}{c} \text{NH}_2 \\ \\ \text{H}-\text{C}-\text{COOH} \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{CH}_2 \\ \\ \text{NH}_2 \end{array}$

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

Scan or tap for the full solution



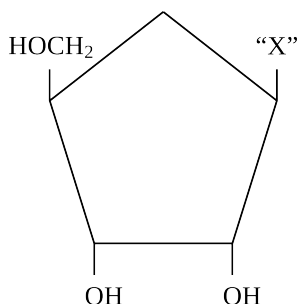
Q.119 Which one is the most abundant protein in the animal world? [AIPMT 2012 (Prelims)]

- (1) Trypsin (2) Haemoglobin
(3) Collagen (4) Insulin

Scan or tap for the full solution



Q.120 The given diagrammatic representation shows one of the categories of small molecular weight organic compounds in the living tissues. Identify the category shown and the one blank component "X" in it. [AIPMT 2012 (Prelims)]



- (1)

Category	Component
Cholesterol	Guanine
- (2)

Category	Component
Amino acid	NH ₂
- (3)

Category	Component
Nucleotide	Adenine
- (4)

Category	Component
Nucleoside	Uracil

Scan or tap for the full solution



Q.121 Which one of the following is wrong statement?

[AIPMT 2012 (Prelims)]

- (1) *Anabaena* and *Nostoc* are capable of fixing nitrogen in free-living state also.
(2) Root nodule forming nitrogen fixers live as aerobes under free-living conditions.
(3) Phosphorus is a constituent of cell membranes, certain nucleic acids and all proteins.
(4) *Nitrosomonas* and *Nitrobacter* are chemo-autotrophs.

Scan or tap for the full solution



Q.122 During gamete formation, the enzyme recombinase participates during [AIPMT 2012 (Prelims)]

- (1) metaphase I (2) anaphase II
(3) prophase I (4) prophase II.

Scan or tap for the full solution



Q.123 A process that makes important difference between C₃ and C₄ plants is [AIPMT 2012 (Prelims)]

- (1) transpiration (2) glycolysis
(3) photosynthesis (4) photorespiration.

Scan or tap for the full solution



Q.124 The correct sequence of cell organelles during photorespiration is [AIPMT 2012 (Prelims)]

- (1) chloroplast, Golgi-bodies, mitochondria
(2) chloroplast, rough endoplasmic reticulum, dictyosomes
(3) chloroplast, peroxisome, mitochondria
(4) chloroplast, vacuole, peroxisome.

Scan or tap for the full solution



Q.125 People who have migrated from the plains to an area adjoining Rohtang Pass about six months back [AIPMT 2012 (Prelims)]

- (1) have more RBCs and their haemoglobin has a lower binding affinity to O₂
(2) are not physically fit to play games like football
(3) suffer from altitude sickness with symptoms like nausea, fatigue, etc.
(4) have the usual RBC count but their haemoglobin has very high binding affinity to O₂.

Scan or tap for the full solution



Q.126 Both, autogamy and geitonogamy are prevented in [AIPMT 2012 (Prelims)]

- (1) Papaya (2) cucumber
(3) castor (4) maize.

Scan or tap for the full solution



Q.127 An organic substance that can withstand environmental extremes and cannot be degraded by any enzyme is [AIPMT 2012 (Prelims)]

- (1) cuticle (2) sporopollenin
(3) lignin (4) cellulose.

Scan or tap for the full solution



Q.128 Which one of the following is correctly matched? [AIPMT 2012 (Prelims)]

- (1) Onion – Bulb (2) Ginger – Sucker
(3) *Chlamydomonas* – Conidia (4) Yeast – Zoospores

Scan or tap for the full solution



Q.129 Even in absence of pollinating agents seed-setting is assured in [AIPMT 2012 (Prelims)]

- (1) *Commelina* (2) *Zostera*
(3) *Salvia* (4) fig.

Scan or tap for the full solution



Q.130 A normal-visioned man whose father was colour-blind, marries a woman whose father was also colour-blind. They have their first child as a daughter. What are the chances that this child would be colour-blind? [AIPMT 2012 (Prelims)]

- (1) 50% (2) 25%
(3) 100% (4) Zero percent

Scan or tap for the full solution



Q.131 F_2 generation in a Mendelian cross showed that both genotypic and phenotypic ratios are same as 1 : 2 : 1. It represents a case of [AIPMT 2012 (Prelims)]

- (1) Monohybrid cross with incomplete dominance
(2) Co-dominance
(3) Monohybrid cross with complete dominance
(4) Dihybrid cross

Scan or tap for the full solution



Q.132 Removal of introns and joining of exons in a defined order during transcription is called [AIPMT 2012 (Prelims)]

- (1) Looping (2) Inducing
(3) Slicing (4) Splicing

Scan or tap for the full solution



Q.133 If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA strand sequence [AIPMT 2012 (Prelims)]

- (1) ATCGU (2) UAGAC
(3) AACTG (4) TTAGU

Scan or tap for the full solution



Q.134 Ribosomal RNA is actively synthesized in [AIPMT 2012 (Prelims)]

- (1) Nucleolus (2) Ribosomes
(3) Lysosomes (4) Nucleoplasm

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Q.135 Which one of the following is not a part of a transcription unit in DNA? [AIPMT 2012 (Prelims)]

- (1) The structural gene (2) The inducer
(3) A terminator (4) A promoter

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Q.136 Removal of RNA polymerase-III from nucleoplasm will affect the synthesis of [AIPMT 2012 (Prelims)]

- (1) tRNA (2) hnRNA (3) rRNA (4) mRNA

Scan or tap for the full solution



Q.137 Which one of the following is a case of wrong matching? [AIPMT 2012 (Prelims)]

- (1) Somatic hybridization - Fusion of two diverse cells
(2) Callus - Unorganised mass of cells produced in tissue culture
(3) Vector DNA - Site for tRNA synthesis
(4) Micropropagation - In vitro production of plants in large numbers

Scan or tap for the full solution



Q.138 Which part would be most suitable for raising virus-free plants for micropropagation? [AIPMT 2012 (Prelims)]

- (1) Vascular tissue (2) Node
(3) Bark (4) Meristem

Scan or tap for the full solution



Q.139 *Monascus purpureus* is a yeast used commercially in the production of: [AIPMT 2012 (Prelims)]

- (1) Ethanol
(2) Streptokinase for removing clots from the blood vessels
(3) Citric acid
(4) Blood cholesterol lowering statins

Scan or tap for the full solution



Q.140 A patient brought to a hospital with myocardial infarction is normally immediately given [AIPMT 2012 (Prelims)]

- (1) Penicillin (2) Streptokinase
(3) Cyclosporin A (4) Statins

Scan or tap for the full solution



Q.141 A nitrogen-fixing microbe associated with *Azolla* in rice fields is [AIPMT 2012 (Prelims)]

- (1) *Tolypothrix* (2) *Spirulina*
(3) *Frankia* (4) *Anabaena*

Scan or tap for the full solution



Q.142 Which one of the following is an example of carrying out biological control of pests/diseases using microbes? [AIPMT 2012 (Prelims)]

- (1) *Trichoderma* sp. against certain plant pathogens
(2) Ladybird beetle against aphids in mustard
(3) Nucleopolyhedrovirus against white rust in *Brassica*
(4) Bt-cotton to increase cotton yield

Scan or tap for the full solution



Q.143 PCR and Restriction Fragment Length Polymorphism are the methods for [AIPMT 2012 (Prelims)]

- (1) Genetic transformation
(2) Genetic fingerprinting
(3) Study of enzymes
(4) DNA sequencing

Scan or tap for the full solution



Q.144 Which one of the following is not a gaseous biogeochemical cycle in ecosystem? [AIPMT 2012 (Prelims)]

- (1) Sulphur cycle (2) Nitrogen cycle
(3) Phosphorus cycle (4) Carbon cycle

Scan or tap for the full solution



Q.145 Identify the possible link "A" in the following food chain:

Plant → insect → frog → "A" → Eagle

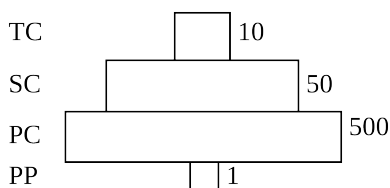
[AIPMT 2012 (Prelims)]

- (1) Wolf (2) Rabbit (3) Cobra (4) Parrot

Scan or tap for the full solution



Q.146 Given below is an imaginary pyramid of numbers. What could be one of the possibilities about certain organisms at some of the different levels? [AIPMT 2012 (Prelims)]



- (1) Level PC is "rats" and level SC is "cats"
(2) Level PP is "phytoplankton" in sea and "whale" on top level TC
(3) Level PP is "pipal trees" and the level SC is "sheep"
(4) Level PC is "insects" and level SC is "small insectivorous birds"

Scan or tap for the full solution



Q.147 Which one of the following is not a functional unit of an ecosystem? [AIPMT 2012 (Prelims)]

- (1) Energy flow (2) Decomposition
(3) Productivity (4) Stratification

Scan or tap for the full solution



Q.148 The upright pyramid of numbers is absent in [AIPMT 2012 (Prelims)]

- (1) Pond (2) Grassland
(3) Lake (4) Forest

Scan or tap for the full solution



Q.149 Which one of the following areas in India is a hotspot of biodiversity? [AIPMT 2012 (Prelims)]

- (1) Western Ghats (2) Gangetic plain
(3) Sunderbans (4) Eastern Ghats

Scan or tap for the full solution



Q.150 Gymnosperms are also called softwood spermatophytes because they lack [AIPMT 2012 (Prelims)]

- (1) Cambium (2) Thick-walled tracheids
(3) Phloem fibres (4) Xylem fibres

Scan or tap for the full solution



Q.151 Water containing cavities in vascular bundles are found in [AIPMT 2012 (Prelims)]

- (1) Maize (2) Cycas
(3) Sunflower (4) Pinus

Scan or tap for the full solution



Q.152 Closed vascular bundles lack [AIPMT 2012 (Prelims)]

- (1) Ground tissue (2) Conjunctive tissue
(3) Cambium (4) Pith

Scan or tap for the full solution



Q.153 The highest number of species in the world is represented by [AIPMT 2012 (Prelims)]

- (1) Fungi (2) Mosses (3) Algae (4) Lichens

Scan or tap for the full solution



Q.154 Companion cells are closely associated with

[AIPMT 2012 (Prelims)]

- (1) Sieve elements (2) Trichomes
(3) Vessel elements (4) Guard cells

Scan or tap for the full solution



Q.155 The common bottle cork is a product of

[AIPMT 2012 (Prelims)]

- (1) Phellogen (2) Xylem
(3) Vascular Cambium (4) Dermatogen

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Q.156 Select the correct statement from the following regarding cell membrane

[AIPMT 2012 (Prelims)]

- (1) Na^+ and K^+ ions move across cell membrane by passive transport
(2) Lipids are arranged in bilayer with polar heads towards the inner part
(3) Proteins make up 60 to 70% of the cell membrane
(4) Fluid mosaic model of cell membrane was proposed by Singer and Nicolson

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Q.157 What is true about ribosomes ?

[AIPMT 2012 (Prelims)]

- (1) These are self-splicing introns of some RNAs.
(2) These are found only in eukaryotic cells
(3) These are composed of ribonucleic acid and proteins
(4) The prokaryotic ribosomes are 80 S, where 'S' stands for sedimentation coefficient.

Scan or tap for the full solution



Q.158 Which one of the following does not differ in *E. coli* and *Chlamydomonas* ?

[AIPMT 2012 (Prelims)]

- (1) Chromosomal Organization
(2) Cell wall
(3) Ribosomes
(4) Cell membrane

Scan or tap for the full solution



Q.159 Yeast is used in the production of

[AIPMT 2012 (Prelims)]

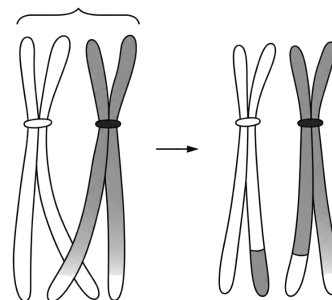
- (1) Citric acid and lactic acid
(2) Lipase and pectinase
(3) Bread and beer
(4) Cheese and butter

Scan or tap for the full solution



Q.160 Given below is the representation of a certain event at a particular stage of a type of cell division.

Which is this stage? [AIPMT 2012 (Prelims)]



- (1) Prophase of Mitosis
(2) Both prophase and metaphase of mitosis
(3) Prophase I during meiosis
(4) Prophase-II during meiosis

Scan or tap for the full solution



Q.161 Best defined function of manganese in green plants is

[AIPMT 2012 (Prelims)]

- (1) photolysis of water (2) Calvin cycle
(3) nitrogen fixation (4) water absorption

Scan or tap for the full solution



Q.162 Which one of the following is correctly matched?

[AIPMT 2012 (Prelims)]

- (1) Passive transport of nutrients – ATP
(2) Apoplast – Plasmodesmata
(3) Potassium – Readily immobilisation
(4) Bakane of rice seedlings – F. Skoog

Scan or tap for the full solution



Q.163 In an area where DDT had been used extensively, the population of birds declined significantly because :

[AIPMT 2012 (Prelims)]

- (1) Earthworms in the area got eradicated
(2) Cobras were feeding exclusively on birds
(3) Birds stopped laying eggs
(4) Many of the birds' eggs laid did not hatch

Scan or tap for the full solution



Q.164 Which one of the following is a wrong statement?

[AIPMT 2012 (Prelims)]

- (1) Most of the forests have been lost in tropical areas
- (2) Greenhouse effect is a natural phenomenon
- (3) Ozone in upper part of atmosphere is harmful to animals
- (4) Eutrophication is a natural phenomenon in freshwater bodies

Scan or tap for the full solution



Q.165 Measuring biochemical oxygen demand (BOD) is a method used for [AIPMT 2012 (Prelims)]

- (1) Working out the efficiency of oil driven automobile engines
- (2) Estimating the amount of organic matter in sewage water
- (3) Measuring the activity of *Saccharomyces cerevisiae* in producing curd on a commercial scale
- (4) Working out the efficiency of R.B.Cs. about their capacity to carry oxygen

Scan or tap for the full solution



Q.166 *Pheretima* and its close relatives derive nourishment from [AIPMT 2012 (Prelims)]

- (1) sugarcane roots
- (2) decaying fallen leaves and soil organic matter
- (3) soil insects
- (4) small pieces of fresh fallen leaves of maize, etc.

Scan or tap for the full solution



Q.167 In which one of the following, the genus name, its two characters and its phylum are not correctly matched, whereas the remaining three are correct? [AIPMT 2012 (Prelims)]

	Genus name	Two characters	Class/Phylum
(1)	Pila	(a) Body segmented (b) Mouth with radula	Mollusca
	Genus name	Two characters	Class/Phylum
(2)	Asterias	(a) Spiny skinned (b) Water vascular system	Echinodermata
	Genus name	Two characters	Class/Phylum
(3)	Sycon	(a) Pore bearing (b) Canal system	Porifera
	Genus name	Two characters	Class/Phylum
(4)	Periplaneta	(a) Jointed appendages (b) Chitinous exoskeleton	Arthropoda

Scan or tap for the full solution



Q.168 Which one of the following is the correct statement for respiration in humans? [AIPMT 2012 (Prelims)]

- (1) Cigarette smoking may lead to inflammation of bronchi.
- (2) Neural signals from pneumotaxic centre in pons region of brain can increase the duration of inspiration.
- (3) Workers in grinding and stone-breaking industries may suffer from lung fibrosis.
- (4) About 90% of carbon dioxide (CO₂) is carried by haemoglobin as carbamino-haemoglobin.

Scan or tap for the full solution



Q.169 A certain road accident patient with unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor? [AIPMT 2012 (Prelims)]

- (1) Blood group B
- (2) Blood group AB
- (3) Blood group O
- (4) Blood group A

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Q.170 The maximum amount of electrolytes and water (70 – 80 percent) from the glomerular filtrate is reabsorbed in which part of the nephron? [AIPMT 2012 (Prelims)]

- (1) Ascending limb of loop of Henle
- (2) Distal convoluted tubule
- (3) Proximal convoluted tubule
- (4) Descending limb of loop of Henle

Scan or tap for the full solution



Q.171 Select the correct statement regarding the specific disorder of muscular or skeletal system. [AIPMT 2012 (Prelims)]

- (1) Muscular dystrophy – Age related shortening of muscles
- (2) Osteoporosis – Decrease in bone mass and higher chances of fractures with advancing age
- (3) Myasthenia gravis – Autoimmune disorder which inhibits sliding of myosin filaments
- (4) Gout – Inflammation of joints due to extra deposition of calcium

Scan or tap for the full solution



Q.172 The human hind brain comprises three parts, one of which is [AIPMT 2012 (Prelims)]

- (1) spinal cord
- (2) corpus callosum
- (3) cerebellum
- (4) hypothalamus.

Scan or tap for the full solution



Q.173 Which part of the human ear plays no role in hearing as such but is otherwise very much required? [AIPMT 2012 (Prelims)]

- (1) Eustachian tube (2) Organ of Corti
(3) Vestibular apparatus (4) Ear ossicles

Scan or tap for the full solution



Q.174 A person entering an empty room suddenly finds a snake right in front on opening the door. Which one of the following is likely to happen in his neuro-hormonal control system? [AIPMT 2012 (Prelims)]

- (1) Sympathetic nervous system is activated releasing epinephrine and norepinephrine from adrenal medulla.
(2) Neurotransmitters diffuse rapidly across the cleft and transmit a nerve impulse.
(3) Hypothalamus activates the parasympathetic division of brain.
(4) Sympathetic nervous system is activated releasing epinephrine and norepinephrine from adrenal cortex.

Scan or tap for the full solution



Q.175 Which one of the following pairs of hormones are the examples of those that can easily pass through the cell membrane of the target cell and bind to a receptor inside it (mostly in the nucleus)? [AIPMT 2012 (Prelims)]

- (1) Insulin, glucagon
(2) Thyroxine, insulin
(3) Somatostatin, oxytocin
(4) Cortisol, testosterone

Scan or tap for the full solution



Q.176 What is correct to say about the hormone action in humans? [AIPMT 2012 (Prelims)]

- (1) Glucagon is secreted by β -cells of islets of Langerhans and stimulates glycogenolysis.
(2) Secretion of thymosins is stimulated with aging.
(3) In females, FSH first binds with specific receptors on ovarian cell membrane.
(4) FSH stimulates the secretion of estrogen and progesterone.

Scan or tap for the full solution



Q.177 Which one of the following statements is false in respect of viability of mammalian sperm? [AIPMT 2012 (Prelims)]

- (1) Viability of sperm is determined by its motility
(2) Sperms must be concentrated in a thick suspension
(3) Sperm is viable for only up to 24 hours
(4) Survival of sperm depends on the pH of the medium and is more active in alkaline medium

Scan or tap for the full solution



Q.178 Signals for parturition originate from :

[AIPMT 2012 (Prelims)]

- (1) Placenta only
(2) Fully developed foetus only
(3) Both placenta as well as fully developed foetus
(4) Oxytocin released from maternal pituitary

Scan or tap for the full solution



Q.179 In a normal pregnant woman, the amount of total gonadotropin activity was assessed. The result expected was : [AIPMT 2012 (Prelims)]

- (1) High levels of FSH and LH in uterus to stimulate endometrial thickening
(2) High level of circulating HCG to stimulate estrogen and progesterone synthesis
(3) High level of circulating FSH and LH in the uterus to stimulate implantation of the embryo
(4) High level of circulating HCG to stimulate endometrial thickening

Scan or tap for the full solution



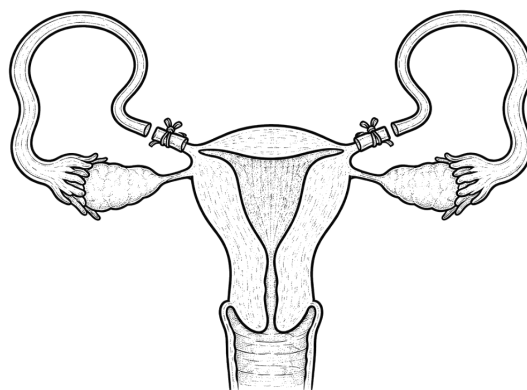
Q.180 The Leydig's cells as found in the human body are the secretory source of [AIPMT 2012 (Prelims)]

- (1) Glucagon (2) Androgens
(3) Progesterone (4) Intestinal mucus

Scan or tap for the full solution



Q.181 What is the figure given below showing in particular ? [AIPMT 2012 (Prelims)]



- (1) Uterine cancer (2) Vasectomy
(3) Tubectomy (4) Ovarian cancer

Scan or tap for the
full solution



Q.182 The test-tube baby programme employs which one of the following techniques ? [AIPMT 2012 (Prelims)]

- (1) Intra cytoplasmic sperm injection (ICSI)
(2) Gamete intra fallopian transfer (GIFT)
(3) Intra uterine insemination (IUI)
(4) Zygote intra fallopian transfer (ZIFT)

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full solution



Q.183 Evolution of different species in a given area starting from a point and spreading to other geographical areas is known as

[AIPMT 2012 (Prelims)]

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

Scan or tap for the
full solution



Q.184 Which one of the following options gives one correct example each of convergent evolution and divergent evolution ? [AIPMT 2012 (Prelims)]

- (1) Convergent evolution → Thorns of *Bougainvillea* and tendrils of *Cucurbita* & Divergent evolution → Eyes of octopus and mammals
(2) Convergent evolution → Eyes of octopus and mammals & Divergent evolution → Bones of forelimbs of mammals and vertebrates
(3) Convergent evolution → Thorns of *Bougainvillea* and tendrils of *Cucurbita* & Divergent evolution → Wings of butterflies and birds
(4) Convergent evolution → Bones of forelimbs of vertebrates & Divergent evolution → Wings of butterfly and birds

Scan or tap for the
full solution



Q.185 What was the most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors ?

[AIPMT 2012 (Prelims)]

- (1) Upright posture
(2) Increasing cranial capacity
(3) Shortening of jaws
(4) Binocular vision

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full solution



Q.186 The extinct human who lived 1,00,000 to 40,000 years ago, in Europe, Asia and parts of Africa, with short stature, heavy eyebrows, retreating foreheads, large jaws with heavy teeth, stocky bodies, a lumbering gait and stooped posture was :

[AIPMT 2012 (Prelims)]

- (1) Neanderthal human (2) *Homo habilis*
(3) Cro-Magnon humans (4) *Ramapithecus*

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full solution



Q.187 Motile zygote of *Plasmodium* occurs in

[AIPMT 2012 (Prelims)]

- (1) Human liver
(2) Salivary glands of *Anopheles*
(3) Human RBCs
(4) Gut of female *Anopheles*

Scan or tap for the
full solution



Q.188 Common cold differs from pneumonia in that

[AIPMT 2012 (Prelims)]

- (1) Pneumonia is a communicable disease whereas the common cold is a nutritional deficiency disease
(2) Pneumonia can be prevented by a live attenuated bacterial vaccine whereas the common cold has no effective vaccine
(3) Pneumonia is caused by a virus while the common cold is caused by the bacterium *Haemophilus influenzae*
(4) Pneumonia pathogen infects alveoli whereas the common cold affects nose and respiratory passage but not the lungs

Scan or tap for the
full solution



Q.189 Which one of the following is not a property of cancerous cells whereas the remaining three are ?

[AIPMT 2012 (Prelims)]

- (1) They do not remain confined in the area of formation
(2) They divide in an uncontrolled manner
(3) They compete with normal cells for vital nutrients
(4) They show contact inhibition

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full solution



Q.190 Cirrhosis of liver is caused by the chronic intake of

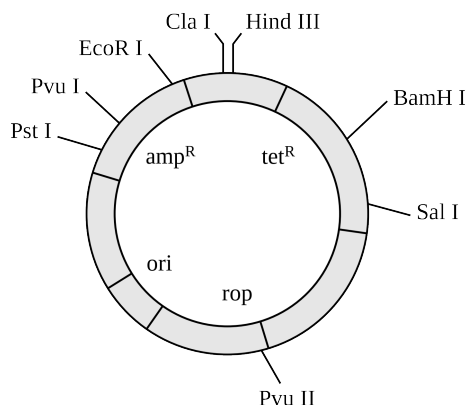
[AIPMT 2012 (Prelims)]

- (1) Cocaine (2) Alcohol
(3) Tobacco (Chewing) (4) Opium

Scan or tap for the
full solution



- Q.191** The figure below is the diagrammatic representation of the *E. coli* vector pBR322. Which one of the given options correctly identifies its certain component(s)? [AIPMT 2012 (Prelims)]



- (1) ori - original restriction enzyme
- (2) amp^R , tet^R - antibiotic resistance genes
- (3) rop - reduced osmotic pressure
- (4) Hind III, EcoR I - selectable markers

Scan or tap for the full solution



- Q.192** A single strand of nucleic acid tagged with a radioactive molecule is called

[AIPMT 2012 (Prelims)]

- (1) Probe
- (2) Selectable marker
- (3) Vector
- (4) Plasmid

Scan or tap for the full solution



- Q.193** Which one is a true statement regarding DNA polymerase used in PCR? [AIPMT 2012 (Prelims)]

- (1) It is used to ligate introduced DNA in recipient cell
- (2) It remains active at high temperature
- (3) It serves as a selectable marker
- (4) It is isolated from a virus

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- Q.194** For transformation, microparticles coated with DNA to be bombarded with gene gun are made up of [AIPMT 2012 (Prelims)]

- (1) Gold or tungsten
- (2) Platinum or zinc
- (3) Silver or platinum
- (4) Silicon or platinum

Scan or tap for the full solution



- Q.195** Consumption of which one of the following foods can prevent the kind of blindness associated with vitamin 'A' deficiency? [AIPMT 2012 (Prelims)]

- (1) Flavr Savr tomato
- (2) Canola
- (3) Bt-brinjal
- (4) Golden rice

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- Q.196** Compared to those of humans, the erythrocytes in frog are : [AIPMT 2012 (Prelims)]

- (1) Without nucleus but with haemoglobin
- (2) Very much smaller and fewer
- (3) Nucleated and with haemoglobin
- (4) Nucleated and without haemoglobin

Scan or tap for the full solution



- Q.197** Select the correct statement from the ones given below with respect to *Periplaneta americana* [AIPMT 2012 (Prelims)]

- (1) Males bear a pair of short thread like anal styles
- (2) There are 16 very long Malpighian tubules present at the junctions of midgut and hindgut
- (3) Nervous system located dorsally, consists of segmentally arranged ganglia joined by a pair of longitudinal connectives
- (4) Grinding of food is carried out only by the mouth parts

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- Q.198** Widal Test is carried out to test :

[AIPMT 2012 (Prelims)]

- (1) HIV/AIDS
- (2) Typhoid fever
- (3) Malaria
- (4) Diabetes mellitus

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- Q.199** In which one of the following options the two examples are correctly matched with their particular type of immunity? [AIPMT 2012 (Prelims)]

Examples	Types of immunity
(1) Polymorphonuclear leukocytes and monocytes	Cellular
Examples	Types of immunity
(2) Anti-tetanus and antisnake bite injection	Active immun
Examples	Types of immunity
(3) Saliva in mouth and Tear in eyes	Physical barriers
Examples	Types of immunity
(4) Mucus coating of epithelium lining the urinogenital tract	

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- Q.200** Anxiety and eating spicy food together in an otherwise normal human, may lead to

[AIPMT 2012 (Prelims)]

- (1) indigestion
- (2) jaundice
- (3) diarrhoea
- (4) vomiting

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ANSWER KEY

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

Ques.	190	191	192	193	194	195	196
Ans.	2	2	1	2	1	4	3
Ques.	197	198	199	200			
Ans.	1	2	1	1			