

AIPMT - 2001

Q.1 The dimension of Planck constant equals to that of :

- (1) Energy (2) Momentum
(3) Angular momentum (4) Power

Q.2 Following truth table represent which logic gate –

A	B	C
1	1	0
0	1	1
1	0	1
0	0	1

- (1) XOR (2) NOT
(3) NAND (4) AND

Q.3 Which rays contain (+ Ve) charged particle : -

- (1) α -rays (2) β -rays
(3) γ -rays (4) X-rays

Q.4 An electron having mass 'm' and kinetic energy E enter in uniform magnetic field B perpendicularly, then its frequency will be : -

- (1) $\frac{eE}{qVB}$ (2) $\frac{2\pi m}{eB}$
(3) $\frac{eB}{2\pi m}$ (4) $\frac{2m}{eBE}$

Q.5 A particle is thrown vertically upward. Its velocity at half of the height is 10 m/s. Then the maximum height attained by it : -

(g = 10 m/s²)

- (1) 8 m (2) 20 m (3) 10 m (4) 16 m

Q.6 A particle is projected making angle 45° with horizontal having kinetic energy K. The kinetic energy at highest point will be : -

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

Q.7 A black body has wavelength λ_m corresponding to maximum energy at 2000 K. Its wavelength corresponding to maximum energy at 3000 K will be : -

- (1) $\frac{3}{2}\lambda_m$ (2) $\frac{2}{3}\lambda_m$
(3) $\frac{16}{81}\lambda_m$ (4) $\frac{81}{16}\lambda_m$

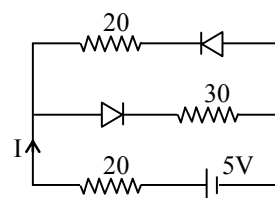
Q.8 Two particles having mass 'M' and 'm' are moving in a circular path having radius R & r respectively. If their time period are same then the ratio of angular velocity will be : -

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

Q.9 A child is sitting on a swing. Its minimum and maximum heights from the ground is 0.75 m and 2 m respectively, its maximum speed will be

- (1) 10 m/s (2) 5 m/s
(3) 8 m/s (4) 15 m/s

Q.10 The current (I) in the circuit will be : -



- (1) $\frac{5}{40}$ A (2) $\frac{5}{50}$ A (3) $\frac{5}{10}$ A (4) $\frac{5}{20}$ A

Q.11 Biological importance of Ozone layer is : -

- (1) It stops ultraviolet rays
(2) Ozone layer reduces green house effect
(3) Ozone layer reflects radio waves
(4) Ozone layer controls O₂/H₂ ratio in atmosphere

Q.12 Two springs A and B having spring constant K_A and K_B. (K_A = 2K_B) are stretched by applying force of equal magnitude. If energy stored in spring A is E then energy stored in B will be : -

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

Q.13 A charge Q μ c is placed at the centre of cube, the flux coming out from any surfaces will be : -

- (1) $\frac{Q}{6\epsilon_0} \times 10^{-6}$ (2) $\frac{Q}{6\epsilon_0} \times 10^{-3}$
(3) $\frac{Q}{2\epsilon_0}$ (4) $\frac{Q}{8\epsilon_0}$

Q.14 X(n, α) ${}^7_3\text{Li}$, then X will be : -

- (1) ${}^{10}_5\text{B}$ (2) ${}^9_5\text{B}$ (3) ${}^{11}_4\text{Be}$ (4) ${}^4_2\text{He}$

- Q.15** Half life of radioactive element is 12.5 Hour and its quantity is 256 gm. After how much time its quantity will remain 1 gm : -
 (1) 50 Hrs (2) 100 Hrs
 (3) 150 Hrs (4) 200 Hrs
- Q.16** A scientist says that the efficiency of his heat engine which work at source temperature 127°C and sink temperature 27°C to 26%, then
 (1) It is impossible
 (2) It is possible but less probable
 (3) It is quite probable
 (4) Data are incomplete
- Q.17** A cricketer catches a ball of mass 150 gm. in 0.1 second moving with speed 20 ms^{-1} . Then he experiences force of : -
 (1) 300 N (2) 30 N (3) 3 N (4) 0.3 N
- Q.18** If the tension and diameter of a sonometer wire of fundamental frequency n is doubled and density is halved then its fundamental frequency will become
 (1) $\frac{n}{4}$ (2) $\sqrt{2}n$ (3) n (4) $\frac{n}{\sqrt{2}}$
- Q.19** The total energy of particle performing SHM depend on : -
 (1) K, a, m (2) K, a
 (3) K, a, x (4) K, x
- Q.20** With what velocity should a particle be projected so that its height becomes equal to radius of earth -
 (1) $\left(\frac{GM}{R}\right)^{1/2}$ (2) $\left(\frac{8GM}{R}\right)^{1/2}$
 (3) $\left(\frac{2GM}{R}\right)^{1/2}$ (4) $\left(\frac{4GM}{R}\right)^{1/2}$
- Q.21** A disc is placed on a surface of pond which has refractive index $\frac{5}{3}$. A source of light is placed 4 m below the surface of liquid. The minimum radius of disc will be so light is not coming out
 (1) ∞ (2) 3m (3) 6m (4) 4m
- Q.22** A ray of light travelling in air haves wavelength λ , frequency n , velocity v and intensity I . If this ray enters into water then these parameter are λ' , n' , v' and I' respectively. Which relation is correct
 (1) $\lambda = \lambda'$ (2) $n = n'$ (3) $v = v'$ (4) $I = I'$
- Q.23** A cylindrical rod having temperature T_1 and T_2 at its end. The rate of flow of heat Q_1 cal/sec. If all the linear dimension are doubled keeping temperature remain const. then rate of flow of heat Q_2 will be : -
 (1) $4Q_1$ (2) $2Q_1$
 (3) $\frac{Q_1}{4}$ (4) $\frac{Q_1}{2}$
- Q.24** If $|\vec{A} + \vec{B}| = |\vec{A}| = |\vec{B}|$ then angle between A and B will be : -
 (1) 90° (2) 120° (3) 0° (4) 60°
- Q.25** Optical fibre are based on : -
 (1) Total internal reflection
 (2) Less scattering
 (3) Refraction
 (4) Less absorption coefficient
- Q.26** Which one among shows particle nature of light.
 (1) P.E.E. (2) Interference
 (3) Refraction (4) Polarization
- Q.27** Two waves having equation
 $x_1 = a \sin(\omega t + \phi_1)$
 $x_2 = a \sin(\omega t + \phi_2)$
 If in the resultant wave the frequency and amplitude remains equals to amplitude of superimposing waves. Then phase diff. between them : -
 (1) $\frac{\pi}{6}$ (2) $\frac{2\pi}{3}$
 (3) $\frac{\pi}{4}$ (4) $\frac{\pi}{3}$
- Q.28** In Thomson mass spectrograph $\vec{E} \perp \vec{B}$ then the velocity of underflected electron beam will be :
 (1) $\frac{|\vec{E}|}{|\vec{B}|}$ (2) $\vec{E} \times \vec{B}$ (3) $\frac{|\vec{B}|}{|\vec{E}|}$ (4) $\frac{E^2}{B^2}$
- Q.29** Energy per unit volume for a capacitor having area A and separation d kept at potential difference V is given by : -
 (1) $\frac{1}{2} \epsilon_0 \frac{V^2}{d^2}$ (2) $\frac{1}{2\epsilon_0} \frac{V^2}{d^2}$
 (3) $\frac{1}{2} CV^2$ (4) $\frac{Q^2}{2C}$

- Q.30** On the horizontal surface of a truck a block of mass 1 kg is placed ($\mu = 0.6$) and truck is moving with acceleration 5 m/s^2 then the frictional force on block will be : -
 (1) 5N (2) 6N
 (3) 5.88N (4) 8N
- Q.31** Tangent galvanometer is used to measure : -
 (1) Potential difference
 (2) Current
 (3) Resistance
 (4) In measuring charge
- Q.32** A capacitor of capacity C and reactance X if capacitance and frequency become double then reactance will be : -
 (1) 4X (2) $\frac{X}{2}$
 (3) $\frac{X}{4}$ (4) 2X
- Q.33** A disc is rolling the velocity of its centre of mass is V_{cm} then which one will be correct : -
 (1) The velocity of highest point is $2V_{cm}$ and point of contact is zero
 (2) The velocity of highest point is V_{cm} and point of contact is V_{cm}
 (3) The velocity of highest point is $2V_{cm}$ and point of contact is V_{cm}
 (4) The velocity of highest point is $2V_{cm}$ and point of contact of contact is $2V_{cm}$
- Q.34** If specific resistance of a potentiometer wire is $10^{-7} \Omega \text{m}$ and current flow through it is 0.1 A, cross-sectional area of wire is 10^{-6} m^2 then potential gradient will be : -
 (1) 10^{-2} V/m (2) 10^{-4} V/m
 (3) 10^{-6} V/m (4) 10^{-8} V/m
- Q.35** For a coil having $L = 2 \text{ mh}$, current flow through it is $I = t^2 e^{-t}$ then the time at which emf become zero : -
 (1) 2 s (2) 1 s
 (3) 4 s (4) 3 s
- Q.36** For a common emitter circuit if $\frac{I_C}{I_E} = 0.98$ then current gain for common emitter circuit will be :-
 (1) 49 (2) 98
 (3) 4.9 (4) 25.5
- Q.37** A dipole of moment \vec{p} is placed in uniform electric field \vec{E} then torque acting on it is given by : -
 (1) $\vec{\tau} = \vec{p} \cdot \vec{E}$ (2) $\vec{\tau} = \vec{p} \times \vec{E}$
 (3) $\vec{\tau} = \vec{p} + \vec{E}$ (4) $\vec{\tau} = \vec{p} - \vec{E}$
- Q.38** If number of turn, area and current through it is given by n, A and i respectively then its magnetic moment will be : -
 (1) niA (2) $n^2 iA$
 (3) niA^2 (4) $\frac{ni}{\sqrt{A}}$
- Q.39** The equation of a wave is represented by : -
 $y = 10^{-4} \sin\left(100t - \frac{x}{10}\right) \text{m}$, then the velocity of wave will be : -
 (1) 100 m/s (2) 4 m/s
 (3) 1000 m/s (4) 0.00 m/s
- Q.40** The interplaner distance in a crystal is $2.8 \times 10^{-8} \text{ m}$. The value of maximum wavelength which can be diffracted : -
 (1) $2.8 \times 10^{-8} \text{ m}$ (2) $5.6 \times 10^{-8} \text{ m}$
 (3) $1.4 \times 10^{-8} \text{ m}$ (4) $7.6 \times 10^{-8} \text{ m}$
- Q.41** The energy of hydrogen atom in n^{th} orbit is E_n then the energy in n^{th} orbit of singly ionised helium atom will be : -
 (1) $4 E_n$ (2) $E_n/4$
 (3) $2E_n$ (4) $E_n/2$
- Q.42** Among which the magnetic susceptibility does not depend on the temperature : -
 (1) Dia-magnetis (2) Paramagnetis
 (3) Ferro-magnetism (4) Ferrite
- Q.43** The resistance of each arm of the wheat stone bridge is 10 ohm. A resistance of 10 ohm is connected in series with galvanometer then the equivalent resistance across the battery will be :
 (1) 10 ohm (2) 15 ohm
 (3) 20 ohm (4) 40 ohm
- Q.44** Copper and silicon is cooled from 300 K to 60 K, the specific resistance : -
 (1) Decrease in copper but increase in silicon
 (2) Increase in copper but decrease in silicon
 (3) Increase in both
 (4) Decrease in both

Q.45 In BCC, the distance between two nearest atoms will be : -

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

Q.46 250 N force is required to raise 75 kg mass from a pulley. If rope is pulled 12 m then the load is lifted to 3m, the efficiency of pulley system will be : -

- (1) 25% (2) 33.3%
(3) 75% (4) 90%

Q.47 A photo-cell is illuminated by a source of light, which is placed at a distance d from the cell. If the distance become $d/2$, then number of electrons emitted per second will be : -

- (1) Remain same (2) Four times
(3) Two times (4) One-fourth

Q.48 M_n and M_p represent the mass of neutron and proton respectively. An element having mass M has N neutron and Z -protons, then the correct relation will be : -

- (1) $M < \{N.M_n + Z.M_p\}$ (2) $M > \{N.M_n + Z.M_p\}$
(3) $M = \{N.M_n + Z.M_p\}$ (4) $M = N\{M_n + M_p\}$

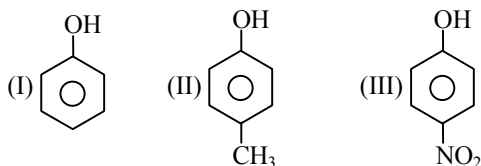
Q.49 A 1 kg stationary bomb is exploded in three parts having mass 1 : 1 : 3 respectively. Parts having same mass move in perpendicular direction with velocity 30 ms^{-1} , then the velocity of bigger part will be : -

- (1) $10\sqrt{2} \text{ ms}^{-1}$ (2) $\frac{10}{\sqrt{2}} \text{ ms}^{-1}$
(3) $15\sqrt{2} \text{ ms}^{-1}$ (4) $\frac{15}{\sqrt{2}} \text{ ms}^{-1}$

Q.50 Energy is released in nuclear fission is due to

- (1) Few mass is converted into energy
(2) Total binding energy of fragments is more than the B.E. of parent element
(3) Total B.E. of fragments is less than the B.E. of parent element
(4) Total B.E. of fragments is equals to the B.E. of parent element

Q.51 The correct acidic order of following is : -



- (1) $I > II > III$ (2) $III > I > II$
(3) $II > III > I$ (4) $I > III > II$

Q.52 $\text{CH}_3\text{---CH}_2\text{---CH---CH}_3$ obtained by chlorination of



n-butane, will be : -

- (1) Meso form (2) Racemic mixture
(3) d-form (4) ℓ -form

Q.53 Which alkene on ozonolysis gives

$\text{CH}_3\text{CH}_2\text{CHO}$ and $\text{CH}_3\text{C}(=\text{O})\text{CH}_3$: -

- (1) $\text{CH}_3\text{CH}_2\text{CH}=\text{C}\begin{matrix} \text{CH}_3 \\ \text{CH}_3 \end{matrix}$
(2) $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_2\text{CH}_3$
(3) $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_3$
(4) $\text{CH}_3\text{---}\text{C}(\text{CH}_3)=\text{CHCH}_3$

Q.54 Intermediates formed during reaction of RCNH_2 with Br_2 and KOH are : -



- (1) RCONHBr and RNCO
(2) RNHCOBr and RNCO
(3) RNH-Br and RCONHBr
(4) RCONBr_2

Q.55 An organic compound $\text{A}(\text{C}_4\text{H}_9\text{Cl})$ on reaction with Na /diethyl ether gives a hydrocarbon which on monochlorination gives only one chloro derivative then, A is : -

- (1) t-butyl chloride
(2) sec. butyl chloride
(3) Iso butyl chloride
(4) n-butyl chloride

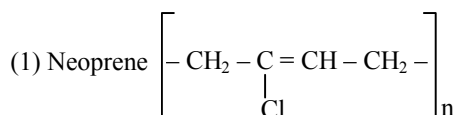
Q.56 Which of the following is incorrect : -

- (1) FeCl_3 is used in detection of phenol
(2) Fehling solution is used in detection of glucose
(3) Tollen reagent is used in detection of unsaturation
(4) NaHSO_3 is used in detection of carbonyl compound

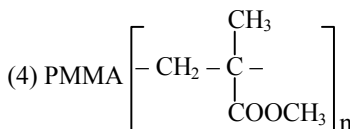
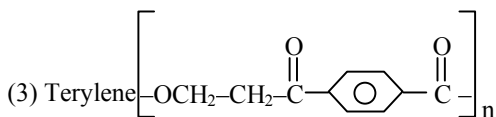
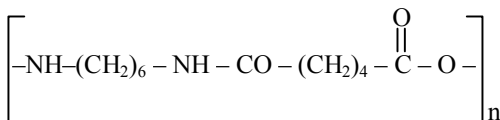
Q.57 Which of following give positive Fehling solution test

- (1) Sucrose (2) Glucose
(3) Fats (4) Protein

Q.58 Which of the following is not correctly matched



(2) Nylon-66



Q.59 Which of the following is correct : -

- (1) Cyclo heptane is an aromatic compound
- (2) Diastase is an enzyme
- (3) Acetophenone is an ether
- (4) All the above

Q.60 The incorrect IUPAC name is : -

- (1) $\text{CH}_3 - \underset{\text{O}}{\parallel} \text{C} - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_3$ 2-methyl-3-butanone
- (2) $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \underset{\text{CH}_2\text{CH}_3}{\text{CH}} - \text{CH}_3$ 2, 3-dimethyl pentane
- (3) $\text{CH}_3 - \text{C} \equiv \text{CCH}(\text{CH}_3)_2$ 4-methyl-2-pentyne
- (4) $\text{CH}_3 - \underset{\text{Cl}}{\text{CH}} - \underset{\text{Br}}{\text{CH}} - \text{CH}_3$ 2-bromo-3-chloro butane

Q.61 In preparation of alkene from alcohol using Al_2O_3 which is effective factor : -

- (1) Porosity of Al_2O_3
- (2) Temperature
- (3) Concentration
- (4) Surface area of Al_2O_3

Q.62 Which of following is correct : -

- (1) Any aldehyde gives secondary alcohol on reduction
- (2) Reaction of vegetable oil with H_2SO_4 give glycerin
- (3) $\text{C}_2\text{H}_5\text{OH}$, iodine with NaOH gives iodoform
- (4) Sucrose on reaction with NaCl give invert sugar

Q.63 Which of the following is correct about H-bonding in nucleotide : -

- (1) A-T G-C
- (2) A-G T-C
- (3) G-T A-C
- (4) A-A T-T

Q.64 Which is correct statement : -

- (1) Starch is polymer of α -glucose
- (2) Amylose is a component of cellulose
- (3) Proteins are composed of only one type of amino acid
- (4) In cyclic structure of fructose, there are four carbons and one oxygen atom

Q.65 $\text{O} \parallel \text{C} - \ddot{\text{N}}\text{H} -$ (peptide bond)

which statement is incorrect about peptide bond : -

- (1) C-N bond length in proteins is longer than usual bond length of N-bond
- (2) Spectroscopic analysis show planar structure of $\text{O} \parallel \text{C} - \text{NH} -$ group
- (3) C-N bond length in proteins is smaller than usual bond length of C-N bond
- (4) None of above

Q.66 In steam distillation of toluene, the pressure of toluene in vapour is : -

- (1) Equal pressure of barometer
- (2) Less than pressure of barometer
- (3) Equal to vapour pressure to toluene in simple distillation
- (4) More than vapour pressure of toluene in simple distillation

Q.67 A compound of molecular formula is C_7H_{16} shows optical isomerism, compound will be

- (1) 2, 3-dimethyl pentane
- (2) 2, 2-dimethyl butane
- (3) 2-methyl hexane
- (4) None of the above

Q.68 Change in enthalpy for reaction



If heat of formation of $\text{H}_2\text{O}_2(\ell)$ and $\text{H}_2\text{O}(\ell)$ are -188 & -286 KJ/mol respectively : -

- (1) -196 KJ/mol
- (2) $+196$ KJ/mol
- (3) $+948$ KJ/mol
- (4) -948 KJ/mol

- Q.69** When 1 mol gas is heated at constant volume temp. is raised from 298 to 308 K. Heat supplied to the gas is 500 J. Then which statement is correct :-
 (1) $q = w = 500 \text{ J}$, $\Delta U = 0$
 (2) $q = \Delta U = 500 \text{ J}$, $w = 0$
 (3) $q = w = 500 \text{ J}$, $\Delta U = 0$
 (4) $\Delta U = 0$, $q = w = -500 \text{ J}$
- Q.70** Enthalpy of $\text{CH}_4 + \frac{1}{2} \text{O}_2 \rightarrow \text{CH}_3\text{OH}$ is negative. If enthalpy of combustion of CH_4 and CH_3OH and x and y respectively. Then which relation is correct :-
 (1) $x > y$ (2) $x < y$ (3) $x = y$ (4) $x \geq y$
- Q.71** For the reaction $2\text{N}_2\text{O}_5 \rightarrow 4\text{NO}_2 + \text{O}_2$ rate and rate constant are 1.02×10^{-4} and $3.4 \times 10^{-5} \text{ sec}^{-1}$ respectively. Then conc. of N_2O_5 at that time will be :-
 (1) 1.732 (2) 3
 (3) 1.02×10^{-4} (4) 3.4×10^5
- Q.72** A human body required the 0.01 Curie activity of radioactive substance after 24 hours. Half life of radioactive is 6 hours. Then max. activity of radioactive substance that can be injected will be :-
 (1) 0.08 (2) 0.04 (3) 0.16 (4) 0.32
- Q.73** When a bio chemical reaction is carried out in laboratory outside the human body in the absence of enzyme, then the rate of reaction obtained is 10^{-6} times, than activation energy of reaction in the presence of enzyme is :-
 (1) $\frac{6}{RT}$
 (2) P is required
 (3) Different from, E_a obtained in laboratory
 (4) Can't say any things
- Q.74** Molarity of liquid HCl if density of liq. HCl is 1.17 gm/cc :-
 (1) 36.5 (2) 18.25 (3) 32.05 (4) 42.10
- Q.75** Percentage of Se in peroxidase anhydrous enzyme is 0.5% by weight (at. wt = 78.4) then minimum molecular weight of peroxidase anhydrous enzymes is :-
 (1) 1.568×10^4 (2) 1.568×10^3
 (3) 15.68 (4) 2.136×10^4
- Q.76** Sp. vol. of cylindrical virus particle is $6.02 \times 10^{-2} \text{ cc/gm}$. Whose radius and length are 7 Å & 10 Å respectively. If $N_A = 6.02 \times 10^{23}$. Find mol. wt. of virus :-
 (1) 1.54 kg/mol.
 (2) $1.54 \times 10^4 \text{ kg/mol}$.
 (3) $3.08 \times 10^4 \text{ kg/mol}$.
 (4) $3.08 \times 10^3 \text{ kg/mol}$.
- Q.77** Pure water can be obtain from sea water by
 (1) Centrifugation (2) Plasmolysis
 (3) Reverse osmosis (4) Sedimentation
- Q.78** Standard electrode potential are
 $\text{Fe}^{+2}/\text{Fe} \quad E^\circ = -0.44$
 $\text{Fe}^{+3}/\text{Fe}^{+2} \quad E^\circ = 0.77$
 If Fe^{+2} , Fe^{+3} and Fe block re kept together, then :-
 (1) Fe^{+3} increases
 (2) Fe^{+3} decreases
 (3) $\frac{\text{Fe}^{+2}}{\text{Fe}^{+3}}$ remains unchanged
 (4) Fe^{+2} decreases
- Q.79** Which is not correct regarding the adsorption of a gas on surface of solid :-
 (1) On increasing temp. adsorption increase continuously
 (2) Enthalpy & entropy change is $-Ve$
 (3) Adsorption is more for some specific substance
 (4) Reversible
- Q.80** $\text{PbO}_2 \rightarrow \text{PbO} \quad \Delta G_{298} < 0$
 $\text{SnO}_2 \rightarrow \text{SnO} \quad \Delta G_{298} > 0$
 Most probable oxidation state of Pb & Sn will be :
 (1) Pb^{+4} , Sn^{+2} (2) Pb^{+4} , Sn^{+2}
 (3) Pb^{+2} , Sn^{+2} (4) Pb^{+2} , Sn^{+4}
- Q.81** Which of the following two species in the pair are isostructural :-
 (1) XeF_2 , IF_2^- (2) NH_3 , BF_3
 (3) CO_3^{2-} , SO_3^{2-} (4) PCl_5 , ICl_5
- Q.82** In which of the following bond angle is maximum :
 (1) NH_3 (2) NH_4^+
 (3) PCl_3 (4) SCl_2

- Q.83** Which of the following statement is not correct
 (1) $\text{La}(\text{OH})_3$ is less basic than $\text{Lu}(\text{OH})_3$
 (2) In Lanthanide series ionic radius of Ln^{+3} ions decreases
 (3) La is actually an element of transition series rather Lanthanide
 (4) Atomic radius of Zr and Hf are same because of Lanthanide contraction
- Q.84** Correct order of 1st IP among following elements Be, B, C, N, O is : -
 (1) $\text{B} < \text{Be} < \text{C} < \text{O} < \text{N}$
 (2) $\text{B} < \text{Be} < \text{C} < \text{N} < \text{O}$
 (3) $\text{Be} < \text{B} < \text{C} < \text{N} < \text{O}$
 (4) $\text{Be} < \text{B} < \text{C} < \text{O} < \text{N}$
- Q.85** Which of the following will give maximum number of isomers : -
 (1) $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]$
 (2) $[\text{Ni}(\text{en})(\text{NH}_3)_4]^{+2}$
 (3) $[\text{Ni}(\text{C}_2\text{O}_4)(\text{en})_2]^{-2}$
 (4) $[\text{Cr}(\text{SCN})_2(\text{NH}_3)_4]^+$
- Q.86** Coordination number of Ni in $[(\text{C}_2\text{O}_4)_3]^{-4}$ is
 (1) 3 (2) 6
 (3) 4 (4) 2
- Q.87** Which of following organometallic compound is σ and π bonded : -
 (1) $[\text{Fe}(\eta^5 - \text{C}_5\text{H}_5)_2]$
 (2) $\text{K}[\text{PtCl}_3(\eta^2 - \text{C}_2\text{H}_4)]$
 (3) $[\text{Co}(\text{CO})_5\text{NH}_3]^{+2}$
 (4) $\text{Fe}(\text{CH}_3)_3$
- Q.88** Which statement is incorrect : -
 (1) $\text{Ni}(\text{CO})_4$ - Tetrahedral, paramagnetic
 (2) $\text{Ni}(\text{CN})_4^{2-}$ - Square planar, diamagnetic
 (3) $\text{Ni}(\text{CO})_4$ - Tetrahedral, diamagnetic
 (4) $[\text{Ni}(\text{Cl})_4]^{2-}$ - Tetrahedral, paramagnetic
- Q.89** In $\text{X}-\text{H} \cdots \text{Y}$, X and Y both are electronegative elements : -
 (1) Electro density on X will increase and on H will decrease
 (2) In both electron density will increase
 (3) In both electron density will decrease
 (4) On X electron density will decrease and on H increases
- Q.90** Main axis of a diatomic molecule is z, molecular orbital p_x and p_y overlaps to form, which of the following orbital : -
 (1) π molecular orbital
 (2) σ molecular orbital
 (3) δ molecular orbital
 (4) No bond will form
- Q.91** Which of the following will exhibit maximum ionic conductivity : -
 (1) $\text{K}_4[\text{Fe}(\text{CN})_6]$ (2) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
 (3) $[\text{Cu}(\text{NH}_3)_4]\text{Cl}_2$ (4) $[\text{Ni}(\text{CO})_4]$
- Q.92** The following quantum no's are possible for how many orbital $n = 3, \ell = 2, m = +2$
 (1) 1 (2) 2 (3) 3 (4) 4
- Q.93** In HS^- , I^- , $\text{R}-\text{NH}_2$, NH_3 order of proton accepting tendency will be :-
 (1) $\text{I}^- > \text{NH}_3 > \text{R}-\text{NH}_2 > \text{HS}^-$
 (2) $\text{NH}_3 > \text{R}-\text{NH}_2 > \text{HS}^- > \text{I}^-$
 (3) $\text{RNH}_2 > \text{NH}_3 > \text{HS}^- > \text{I}^-$
 (4) $\text{HS}^- > \text{RNH}_2 > \text{NH}_3 > \text{I}^-$
- Q.94** The Beans are cooked earlier in pressure cooker, because : -
 (1) B.P. increase with increasing pressure
 (2) B.P. decrease with increasing pressure
 (3) Extra pressure of pressure cooker, softens the beans
 (4) Internal energy is not lost while cooking is pressure cooker
- Q.95** The most convenient method to protect the bottom of ship made of iron is : -
 (1) Coating it with Red lead oxide
 (2) White tin plating
 (3) Connecting it with Mg block
 (4) Connecting it with Pb block
- Q.96** Zn convert it's melted state to its solid state, it has HCP structure, then find out nearest no. of nearest atom : -
 (1) 6 (2) 8 (3) 12 (4) 4
- Q.97** Nitrogen form N_2 , but phosphorous form P_2 , it's at a time convert in P_4 , reason is : -
 (1) Triple bond present between phosphorous atom
 (2) $p_\pi - p_\pi$ bonding is weak
 (3) $p_\pi - p_\pi$ bonding is strong
 (4) Multiple bond form easily

- Q.98** Ionisation constant of CH_3COOH is 1.7×10^{-5} and concentration of H^+ ions is 3.4×10^{-4} . Then find out initial concentration of CH_3COOH molecules : -
 (1) 3.4×10^{-4} (2) 3.4×10^{-3}
 (3) 6.8×10^{-4} (4) 6.8×10^{-3}
- Q.99** Solubility of a M_2S salt is 3.5×10^{-6} then find out solubility product : -
 (1) 1.7×10^{-6} (2) 1.7×10^{-16}
 (3) 1.7×10^{-18} (4) 1.7×10^{-12}
- Q.100** If a ${}^b_a\text{X}$ species emits firstly a positron, then two α and two β and at last one α is also after initially it finally converts into stable ${}^c_d\text{Y}$ species so correct relation will be : -
 (1) $c = b - 12$, $d = a - 5$
 (2) $a = c - 8$, $d = b - 1$
 (3) $a = c - 6$, $d = b - 0$
 (4) $a = c - 4$, $a = b - 2$
- Q.101** Independent assortment of genes does not take place when : -
 (1) Genes are located on homologous chromosomes
 (2) Genes are linked and located on same chromosome
 (3) Genes are located on non-homologous chromosome
 (4) All the above
- Q.102** What is true for monoclonal antibodies : -
 (1) These antibodies obtained from one parent and for one antigen
 (2) These obtained from different parents and for one antigen
 (3) These obtained from one parent and for many antigens
 (4) These obtained from many parents and for many antigen
- Q.103** In Negative operon : -
 (1) Inducer binds with repressor
 (2) Co-repressor does not bind with repressor
 (3) Corepressor binds with inducer
 (4) CAMP have negative effect on lac operon
- Q.104** What is true for plasmid : -
 (1) Plasmids are widely used in gene transfer
 (2) These are found in virus
 (3) Plasmid contain gene for vital activities
 (4) These are main part of chromosome
- Q.105** Mendel obtained wrinkled seeds in pea due to deposition of sugars instead of starch. It was due to which enzyme : -
 (1) Amylase
 (2) Invertase
 (3) Diastase
 (4) Absence of starch branching enzyme
- Q.106** Before the European invader which vegetable was absent in India : -
 (1) Potato and Tomato
 (2) Simla mirch and Brinjal
 (3) Maize and chichinda
 (4) Bitter gourd
- Q.107** Which of the following is true pair of biofertilizers : -
 (1) Azolla and BGA
 (2) Nostoc and legume
 (3) Rhizobium and grasses
 (4) Salmonella & E. Coli
- Q.108** Ratio of complementary genes is : -
 (1) 9 : 3 : 4 (2) 12 : 3 : 1
 (3) 9 : 3 : 3 : 4 (4) 9 : 7
- Q.109** When dominant and recessive alleles express itself together it is called : -
 (1) Co-dominance
 (2) Dominance
 (3) Amphidominance
 (4) Pseudo dominance
- Q.110** A and B genes are linked. What shall be genotype of progeny in a cross between AB/ab and ab/ab : -
 (1) AAbb and aabb (2) AaBb and aabb
 (3) AABB and aabb (4) None
- Q.111** Which statement correct about centre of origin of plant : -
 (1) More diversity in improved variety
 (2) Frequency of dominant gene is more
 (3) Climatic condition more favourable
 (4) None

- Q.112** Probability of four son to a couple is : -
 (1) $\frac{1}{4}$ (2) $\frac{1}{8}$ (3) $\frac{1}{16}$ (4) $\frac{1}{32}$
- Q.113** Two nonallelic genes produces the new phenotype when present together but fail to do so independently then it is called : -
 (1) Epistasis
 (2) Polygene
 (3) Non complimentary gene
 (4) Complimentary gene
- Q.114** Which of the following cut the DNA from specific places : -
 (1) Restriction endonuclease (EcoRI)
 (2) Ligase
 (3) Exonuclease
 (4) Alkaline phosphate
- Q.115** Tetradynamous conditions occur in : -
 (1) Cruciferae (2) Malvaceae
 (3) Solanaceae (4) Liliaceae
- Q.116** Which is correct pair for edible part : -
 (1) Tomato – Thalamus
 (2) Maize - Cotyledons
 (3) Guava - Mesocarp
 (4) Date palm - Pericarp
- Q.117** Bicarpellary gynoecium and oblique ovary occurs in : -
 (1) Mustard (2) Banana
 (3) Pisum (4) Brinjal
- Q.118** Edible part of Banana : -
 (1) Epicarp
 (2) Mesocarp and less developed endocarp
 (3) Endocarp and less developed mesocarp
 (4) Epicarp & mesocarp
- Q.119** In *Hydra*, waste material of food digestion and nitrogenous waste material removed from : -
 (1) Mouth and mouth
 (2) Body wall and body wall
 (3) Mouth and body wall
 (4) Mouth and tentacles
- Q.120** In which of the following animal post anal tail is found
 (1) Earthworm (2) Lower invertebrate
 (3) Scorpion (4) Snake
- Q.121** In which of the following haemocyanin pigment is found : -
 (1) Annelida (2) Echinodermata
 (3) Insecta (4) Lower chordata
- Q.122** Anemophily type of pollination is found in
 (1) Salvia (2) Bottle brush
 (3) Vallisneria (4) Coconut
- Q.123** What is the eye of potato : -
 (1) Axillary bud (2) Accessory bud
 (3) Adventitious bud (4) Apical bud
- Q.124** Due to discovery of which of the following in 1980, the evolution was termed as RNA world :
 (1) m-RNA, t-RNA- r-RNA synthesise proteins
 (2) In some virus RNA is genetic material
 (3) RNA have enzymatic property
 (4) RNA is not found in all cells
- Q.125** Which pair is wrong : -
 (1) C₃ – Maize
 (2) C₄ – Kranz anatomy
 (3) Calvin cycle - PGA
 (4) Hatch and Slake cycle – O.A.A.
- Q.126** Which breaks dormancy of potato tuber : -
 (1) Gibberellin (2) IAA
 (3) ABA (4) Zeatin
- Q.127** Hormone responsible for senescence : -
 (1) ABA (2) Auxin
 (3) GA (4) Cytokinin
- Q.128** Which of the following prevents the fall of fruits : -
 (1) GA₃ (2) NAA
 (3) Eethylene (4) Zeatin
- Q.129** Loading of phloem is related to : -
 (1) Increase of sugar in phloem
 (2) Elongation of phloem cell
 (3) Separation of phloem parenchyma
 (4) Strengthening of phloem fiber
- Q.130** Which pigment system inactivated in red drop : -
 (1) PS-I and P.S-II (2) PS – I
 (3) PS – II (4) None
- Q.131** Which plant is LDP : -
 (1) Tobacco (2) *Glycine max*
 (3) *Mirabilis jalapa* (4) Spinach

- Q.132** What is true for photolithotrops : -
 (1) Obtain energy from radiations and hydrogen from organic compounds
 (2) Obtain energy from radiations and hydrogen from inorganic compounds
 (3) Obtain energy from organic compounds
 (4) Obtain energy from inorganic compounds
- Q.133** In which of the following plant sunken stomata are found : -
 (1) Nerium (2) Hydrilla
 (3) Mango (4) Guava
- Q.134** What is the best pH of the soil for cultivation of plants : -
 (1) 3.4 – 5.4 (2) 6.5 – 7.5
 (3) 4.5 – 8.5 (4) 5.5 – 6.5
- Q.135** Which fish selectively feed on larva of mosquito : -
 (1) Gambusia (2) Rohu
 (3) Clarias (4) Exocoetus
- Q.136** Which one of the following is correct match
 (1) Reserpine – Tranquilliser
 (2) Cocaine – opiate narcotic
 (3) Morphine – Hallucinogenic
 (4) Bhang – Analgesic
- Q.137** What is B.O.D. : -
 (1) The amount of O_2 utilised by organisms in water
 (2) The amount of O_2 utilized by micro organisms for decomposition
 (3) The total amount of O_2 present in water
 (4) All of the above
- Q.138** In grasses what happens in micro spore mother cell for the formation of mature pollen grains : -
 (1) One meiotic and two mitotic divisions
 (2) One meiotic & one mitotic divisions
 (3) One meiotic division
 (4) One mitotic division
- Q.139** What is the intensity of sound in normal conversation : -
 (1) 10 – 20 decibal (2) 30 – 60 decibal
 (3) 70 – 90 decibal (4) 120 – 150 decibal
- Q.140** Adventive embryony in citrus is due to : -
 (1) Nucellus (2) Integuments
 (3) Zygotic embryo (4) Fertilized egg
- Q.141** L.S.D. is : -
 (1) Hallucinogenic (2) Sedative
 (3) Stimulant (4) Tranquilliser
- Q.142** Which set is similar : -
 (1) Corpus luteum – graffian follicles
 (2) Sebum-sweat
 (3) Bundle of his – Pace macker
 (4) Vita B_7 - Niacin
- Q.143** Salmonella is related with : -
 (1) Typhoid (2) Polio
 (3) T.B. (4) Tetanus
- Q.144** Difference in gram \oplus and gram \ominus bacteria is due to -
 (1) Cell wall (2) Cell membrane
 (3) Ribosome (4) Cytoplasm
- Q.145** What is sarcomere : -
 (1) Part between two H-line
 (2) Part between two A-line
 (3) Part between two I-band
 (4) Part between two Z-line
- Q.146** Which statement is correct for muscle contraction : -
 (1) Length of H-zone become decrease
 (2) Length of A-band remains constant
 (3) Length of I-band become increase
 (4) Length of two Z-line become increase
- Q.147** Characteristics character of human cornea
 (1) Secreted by conjunctiva and glandular
 (2) It has lacrimal gland which secrete tears
 (3) Blood circulation is absent in cornea
 (4) In old age it become harden and white layer deposite on it which causes the cataract
- Q.148** Which of the most infectious disease is : -
 (1) Hepatitis -B (2) AIDS
 (3) Cough and cold (4) Malaria
- Q.149** Interferons are synthesized in response to
 (1) Mycoplasma (2) Bacteria
 (3) Viruses (4) Fungi
- Q.150** Cauliflower mosaic virus contains : -
 (1) ss RNA (2) ds RNA
 (3) ds DNA (4) ss DNA
- Q.151** Reason of lung cancer : -
 (1) Coal mining (2) Calcium fluoride
 (3) Cement factory (4) Bauxite mining

- Q.152** When water moves through a semipermeable membrane then which of the following pressure develops : -
 (1) O.P. (2) S.P. (3) T.P. (4) W.P.
- Q.153** Proteinaceous pigment which control the activities concerned with light : -
 (1) Phytochrome (2) Chlorophyll
 (3) Anthocyanin (4) Carotenoids
- Q.154** Glycolate induces opening of stomata in : -
 (1) Presence of oxygen (2) Low CO₂ conc.
 (3) High CO₂ (4) CO₂ absent
- Q.155** Enzyme first used for nitrogen fixation : -
 (1) Nitrogenase (2) Nitroreductase
 (3) Transferase (4) Transaminase
- Q.156** Maximum number of bases in plasmids discovered so far : -
 (1) 50 kilo base (2) 500 kilo base
 (3) 5000 kilo base (4) 5 kilo base
- Q.157** Passive absorption of minerals depend on
 (1) Temperature
 (2) Temperature and metabolic inhibitor
 (3) Metabolic inhibitor
 (4) Humidity
- Q.158** Half life period of C¹⁴ is : -
 (1) 500 years (2) 5000 years
 (3) 50 years (4) 5×10^4 years
- Q.159** Which one correctly matched : -
 (1) Vit. E – Tocoferole
 (2) Vit. D – Riboflavin
 (3) Vit. B – Calciferole
 (4) Vit. A – Thiamine
- Q.160** *E. Coli* about to replicate was placed in a medium containing radio active thymidine for five minutes. Then it was made to replicate in a normal medium. Which of the following observation shall be correct : -
 (1) Both the strands of DNA will be radio active
 (2) One strand radio active
 (3) Each strand half radio active
 (4) None is radio active
- Q.161** Most abundant organic compound on earth is
 (1) Protein (2) Cellulose
 (3) Lipids (4) Steroids
- Q.162** Male XX and female XY sometime occur due to
 (1) Deletion
 (2) Transfer of segments in X and Y chromosomes
 (3) Aneuploidy
 (4) Hormonal imbalance
- Q.163** No. of Bar Body in XXXX female : -
 (1) 1 (2) 2
 (3) 3 (4) 4
- Q.164** Types of RNA polymerase required in nucleus for RNA synthesis : -
 (1) 1 (2) 2
 (3) 3 (4) 4
- Q.165** What is true for Archaeobacteria : -
 (1) All Halophiles (2) All photosynthetic
 (3) All fossils (4) Oldest living beings
- Q.166** Extranuclear inheritance occurs in : -
 (1) Killer paramaecium
 (2) Killer Amoeba
 (3) Euglena
 (4) Hydra
- Q.167** Extranuclear chromosomes occur in : -
 (1) Peroxisome, Ribosome
 (2) Chloroplast and Mitochondria
 (3) Mitochondria and Ribosome
 (4) Chloroplast and Lysosome
- Q.168** Spoilage of oil can be detected by which fatty acid : -
 (1) Oleic acid (2) Linolenic acid
 (3) Linoleic acid (4) Erusic acid
- Q.169** When we migrate from dark to light, we fail to see for sometimes but after a time visibility becomes normal. It is example of
 (1) Accomodation
 (2) Adaptation
 (3) Mutation
 (4) Photoperiodism
- Q.170** In plants inulin and pectin are
 (1) Reserved material
 (2) Wastes
 (3) Excretory material
 (4) Insect attracting material

- Q.171** Gene and cistron words are sometimes used synonymously because : -
 (1) One cistron contains many genes
 (2) One gene contains many cistrons
 (3) One gene contains one cistron
 (4) One gene contains no cistron
- Q.172** Element necessary for the middle lamella
 (1) Ca (2) Zn
 (3) K (4) Cu
- Q.173** *Cycas* have two cotyledons but not included in angiosperms because of : -
 (1) Naked ovules
 (2) Seems like monocot
 (3) Circinate ptyxis
 (4) Compound leaves
- Q.174** Plant Decomposers are : -
 (1) Monera and fungi
 (2) Fungi and plants
 (3) Protista and Animalia
 (4) Anibalia and Mogna
- Q.175** What is true for cyano bacteria : -
 (1) Oxygenic with nitrogenase
 (2) Oxygenic without nitrogenase
 (3) Non oxygenic with nitrogenase
 (4) Non oxygenic without nitrogenase
- Q.176** m-RNA is synthesised on DNA template in which direction : -
 (1) 5' → 3' (2) 3' → 5'
 (3) Both (4) Any
- Q.177** Cytochrome is : -
 (1) Metallo flavo protein
 (2) Fe containing porphyrin pigment
 (3) Glycoprotein
 (4) Lipid
- Q.178** Which of the following less general in characters as compared to genus : -
 (1) Species (2) Division
 (3) Class (4) Family
- Q.179** Adhesive pad of fungi penetrate the host with the help of : -
 (1) Mechanical pressure and enzymes
 (2) Hooke and suckers
 (3) Softening by enzymes
 (4) Only by mechanical pressure
- Q.180** Microtubules absent in : -
 (1) Mitochondria (2) Flagella
 (3) Spindle fibres (4) Centriole
- Q.181** Which aquatic fern performs nitrogen fixation : -
 (1) Azolla (2) Nostoc
 (3) Salvia (4) Salvinia
- Q.182** Roots of which plant contains a red pigment which have affinity for oxygen : -
 (1) Carrot (2) Soyabean
 (3) Mustard (4) Radish
- Q.183** Triticale is obtained by crossing wheat with
 (1) Oat (2) Barley (3) Maize (4) Rye
- Q.184** At the time of organogenesis genes regulate the process at different levels and at different time due to :
 (1) Promoter (2) Regulator
 (3) Intron (4) Exon
- Q.185** A mutant strain of T₄ – Bacteriophage, R-II, fails to lyse the *E-Coli* but when two strains R-II^x and R-II^y are mixed then they lyse the *E.Coli*. What may be the possible reason : -
 (1) Bacteriophage transforms in wild
 (2) It is not mutated
 (3) Both strains have similar cistrons
 (4) Both strains have different cistrons
- Q.186** Reason of diversity in living being : -
 (1) Mutation
 (2) Long term evolutionary change
 (3) Gradual change
 (4) Short term evolutionary change
- Q.187** Sickle cell anaemia is due to : -
 (1) Change of Amino Acid in α-chain of Haemoglobin
 (2) Change of Amino Acid in β-chain of Haemoglobin
 (3) Change of Amino acid in both α and β chain of Haemoglobin
 (4) Change of Amino acid either α or β chain of Haemoglobin
- Q.188** Similarities in organism with different genotype indicates : -
 (1) Microevolution
 (2) Macroevolution
 (3) Convergent evolution
 (4) Divergent evolution

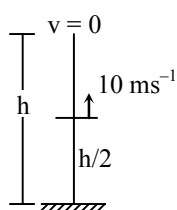
- Q.189** What is correct for Blood group 'O' : -
 (1) No antegens but both a and b antibodies are present
 (2) A antegen and b antibody
 (3) Antigen and Antibody both absent
 (4) A and B antigens and a, b, antibodies
- Q.190** Which of the following is closest relative of man : -
 (1) Chimpanzee (2) Gorilla
 (3) Orangutan (4) Gibbon
- Q.191** Which of the following is correct order of the evolutionary history of man : -
 (1) Peking man, Homo sapiens, Neanderthel man, Cromagnon man
 (2) Peking man, Neanderthal man, Homosapiens Cromagnon man
 (3) Peking man, Hedalberg man, Neanderthal man, Cromagnon man
 (4) Peking man, Neanderthal man, Homosapiens Hedalberg man
- Q.192** Which cells do not form layer and remains structurally separete : -
 (1) Epithelial cells (2) Muscle cells
 (3) Nerve cells (4) Gland cells
- Q.193** During an injury Nasal septum gets damaged and for it's recovery which cartilage prefered : -
 (1) Elastic cartilage (2) Hyaline cartilage
 (3) Calcified cartilage (4) Fibrous cartilage
- Q.194** First life on earth was : -
 (1) Cyanobacteria
 (2) Chemohetrotrophs
 (3) Autotrophs
 (4) Photoautotrophs
- Q.195** Frequency of an allele in an isolated population may change due to : -
 (1) Genetic drift (2) Gene flow
 (3) Mutation (4) Natural selection
- Q.196** In lederberg's replica plating experiment what shall be used to obtain streptomycin resistant strain : -
 (1) Minimal medium and streptomycine
 (2) Complete medium and streptomycine
 (3) Only minimal medium
 (4) Only complete medium
- Q.197** Forecomming generations are less adaptive than their parental generation due to : -
 (1) Natural selection (2) Mutation
 (3) Genetic drift (4) Adaptation
- Q.198** During regeneration, modification of an organ to other organ is known as : -
 (1) Morphallogenesis
 (2) Epimorphosis
 (3) Morphallaxis
 (4) Accretionary growth
- Q.199** Occurence of endemic species in south america and Australia due to : -
 (1) These species has been extinct from other regions
 (2) Continental separation
 (3) These is no terrestrial route to these places
 (4) Retrogressive evolution
- Q.200** Darwins theory of pangenesis shows similarity with theory of inheritance of acquired characters then what shall be correct according to it : -
 (1) Useful organs become strong and developed while useless organs become extinct. These organs help in struggle for survival
 (2) Size of organs increase with aging
 (3) Development of organs is due to will power
 (4) There should be some physical basis of inheritance

ANSWER KEY (AIPMT-2001)

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	3	3	1	3	3	2	2	3	2	2	1	1	1	1	2	1	2	3	2	1
Ques.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	2	2	2	2	1	1	2	1	1	1	2	3	1	1	1	1	2	1	3	2
Ques.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	1	1	1	1	2	3	2	1	1	2	2	2	1	1	1	3	2	3	2	1
Ques.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans.	2	3	1	1	1	2	1	1	2	2	2	3	3	3	1	1	3	2	1	4
Ques.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ans.	1	2	1	1	4	2	3	1	1	1	1	1	3	1	3	3	2	4	2	1
Ques.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ans.	2	2	1	1	4	1	1	4	1	2	2	3	4	1	1	4	4	3	3	4
Ques.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Ans.	1	4	1	3	1	1	1	2	1	3	4	2	1	4	1	1	2	1	2	1
Ques.	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
Ans.	1	1	1	1	4	1,2	3	1	3	3	3	1	1	2	1	2	1	2	1	2
Ques.	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Ans.	2	2	3	3	4	1	2	4	2	1	3	1	1	1	1	1	2	1	1	1
Ques.	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Ans.	1	2	4	4	4	2	2	3	1	1	3	3	2	2	1	2	2	2	2	4

HINTS & SOLUTIONS

5.



$$v^2 = u^2 - 2g \frac{h}{2}$$

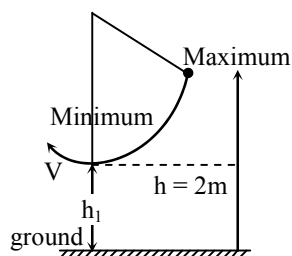
$$0 = (10)^2 - 10h$$

$$h = 10 \text{ m}$$

6.

$$K' = K \cos^2 45^\circ = K/2$$

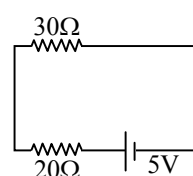
9.

Apply COME between max^m and min point

$$mgh = Mgh_1 + \frac{1}{2} MV^2$$

10.

Equivalent ckt is



$$I = \frac{5V}{(30 + 20)\Omega}$$

$$I = \frac{5}{50} \text{ A}$$

12.

$$E = \frac{kx^2}{2} = \frac{k^2 x^2}{2k} \Rightarrow E = \frac{f^2}{2k}$$

$$\therefore \text{Force is equal} \quad \therefore E \propto \frac{1}{k}$$

16.

Carnot engine is an Ideal engine so its efficiency will be maximum

$$\therefore \eta_{\max} = \frac{400 - 300}{400} \times 100\% = 25\%$$

therefore 26% efficient engine is impossible

17.

Impulse = change in momentum

$$F = \frac{\Delta P}{\Delta t} = \frac{150 \times 10^{-3} \times 20}{0.1} = 30 \text{ N}$$

$$18. \quad n = \frac{1}{2\ell} \sqrt{\frac{T}{\pi r^2 \rho}}$$

$$\rho_1 = \frac{\rho}{2}, T^1 = 2T \text{ and } D^1 = 2D \text{ या } r_1 = 2r$$

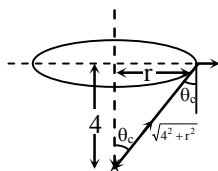
$$n^1 = \frac{1}{2\ell} \sqrt{\frac{2T}{\pi(2r)^2 \frac{\rho}{2}}} = \frac{1}{2\ell} \sqrt{\frac{T}{\pi r^2 \rho}} = n$$

\Rightarrow No change

$$20. \quad \text{Apply energy conservation } \frac{-GMm}{R} + \frac{1}{2}mv^2$$

$$= -\frac{GMm}{2R} \Rightarrow v = \sqrt{\frac{GM}{R}}$$

21.



$$\sin \theta_c = \frac{1}{\mu} = \frac{1}{5/3}$$

$$\Rightarrow \frac{r}{\sqrt{4^2 + r^2}} = \frac{3}{5}$$

$$\Rightarrow \boxed{r=3}$$

$$23. \quad \text{Heat flow rate} = \frac{KA(T_1 - T_2)}{L} = Q$$

when linear dimensions are doubled

$$A_1 \propto r_1^2, \quad L_1 = L$$

$$A_2 \propto 4r_1^2, \quad L_1 = 2L_1 \text{ so } Q_2 = 2Q_1$$

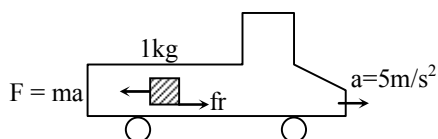
$$24. \quad \left| \vec{A} + \vec{B} \right|^2 = A^2 + B^2 + 2AB \cos \theta$$

$$\Rightarrow A^2 = A^2 + A^2 + 2A^2 \cos \theta$$

$$\Rightarrow \cos \theta = -\frac{1}{2} \Rightarrow \theta = 120^\circ$$

$$29. \quad \text{Energy density} = \frac{1}{2} \epsilon_0 \frac{v^2}{d^2}$$

30.



$$fr_L = \mu_s N$$

$$= \mu_s mg$$

$$= 0.6 \times 1 \times 10$$

$$= 6N$$

$\therefore F < fr_L$ block does not move

static friction = applied force

$$\Rightarrow \boxed{fr = 5N}$$

$$34. \quad \text{Solve by } x = \frac{I_p}{A}$$

$$35. \quad I = t^2 e^{-t}$$

$$e = L \frac{d\ell}{dt} \text{ here emf is zero when } \frac{d\ell}{dt} = 0$$

$$\frac{d\ell}{dt} = 2te^{-t} - t^2 e^{-t} = 0$$

$$\Rightarrow te^{-t}(t-2) = 0 \Rightarrow t = 2 \text{ sec}$$

$$36. \quad \frac{I_C}{I_E} = \alpha = 0.98; \quad \frac{I_C}{I_B} = \beta = \frac{\alpha}{1-\alpha} = 49$$

$$40. \quad 2d \sin \theta = n\lambda \because -1 \leq \sin \theta \leq 1$$

$$\text{Therefore } \lambda_{\max} = 2d \Rightarrow \lambda_{\max} = 2 \times 2.8 \times 10^{-8} \text{ m}$$

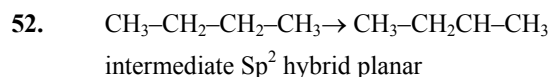
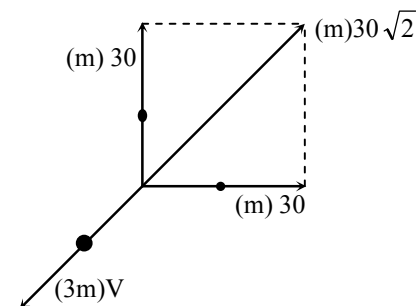
$$\Rightarrow \lambda_{\max} = 5.6 \times 10^{-8} \text{ m}$$

$$46. \quad \eta = \frac{\text{useful work}}{\text{total work}} = \frac{mgh}{F \times d} = \frac{(75g) \times 3}{250 \times 12} = 0.75$$

$$49. \quad \text{Apply conservation of linear momentum}$$

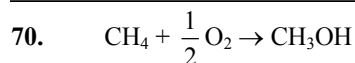
$$\Rightarrow 3mV = 30\sqrt{2} \text{ m}$$

$$\Rightarrow V = 10\sqrt{2}$$



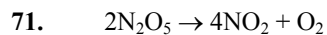
shape $\xrightarrow{\text{Cl}}$ racemic mix

planar shape (समतलीय आकृति) पर reagent का आक्रमण दोनों तरफ से हो सकता है।



$$\Delta H = x - y \quad \text{given } \Delta H = - \text{ve}$$

$$\text{Hence } x - y < 0 < x < y$$



this is a first order reaction

$$\therefore \text{rate} = K[\text{N}_2\text{O}_5] \quad [\text{N}_2\text{O}_5] = \frac{\text{rate}}{K}$$

72. At the end of 25 hrs. activity = 0.01 M

half life = 6 hrs

$$\text{In 24 hrs. there are } \frac{24}{6} = 4 \text{ half life}$$

$$\text{Activity of substance after } n \text{ half life} = \frac{(A)}{2^n}$$

$$\Rightarrow \frac{(A)}{2^4} = 0.01 \quad (A) = 0.16$$

74. Density = 1.17 gm/cc.

\Rightarrow 1cc. solu. contains 1.17 gm of HCl

$$\therefore \text{molarity} = \frac{1.17 \times 1000}{36.5 \times 1}$$

75. In peroxidase anhydrous enzyme 0.55 Se is present means, 0.5gm. Se is present in 100gm of enzyme

In a molecule of enzyme one Se atom must be present hence 78.4 gm Se will be present in

$$\frac{100}{0.5} \times 0.55 = 1.568 \times 10^4$$

76. Sp. vol (vol. of 1gm) cylindrical virus particle = $6.02 \times 10^{-2} \text{ cc/gm}$

$$\text{radius of virus } r = 7\text{\AA} = 7 \times 10^{-8} \text{ cm}$$

$$\text{length of virus} = \pi r^2 \ell$$

$$= \frac{22}{7} \times (7 \times 10^{-8})^2 \times 10 \times 10^{-8} = 154 \times 10^{-23} \text{ cc}$$

$$\text{wt. of one virus particle} = \frac{\text{Vol.}}{\text{Sp.vol.}}$$

$$\Rightarrow \frac{154 \times 10^{-23}}{6.02 \times 10^{-2}} \text{ gm}$$

$$\therefore \text{mol. wt. of virus} = \text{wt. of } N_A \text{ particles}$$

$$= \frac{154 \times 10^{-23}}{6.02 \times 10^{-2}} \times 6.02 \times 10^{23} \text{ gm/mol}$$

$$= 15400 \text{ gm/mol} = 15.4 \text{ kg/mol}$$