



SMARTPREP

ACADEMY

IIT- JEE

SAMPLE PAPER

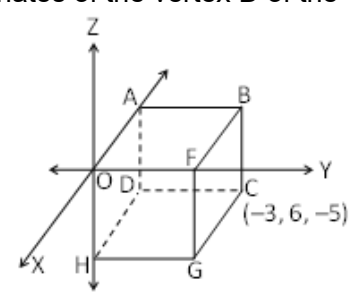
CLASS - 11 ENGG

IMPORTANT INSTRUCTIONS

1. Immediately fill in the particulars on this page of the Test Booklet with *Blue/Black Ball Point Pen*. *Use of pencil is strictly prohibited.*
2. The candidates should not write their Form Number anywhere else (except in the specified space) on the Test Booklet/Answer Sheet.
3. The test is of **2 hours** duration.
4. The Test Booklet consists of **90** questions. The maximum marks are **360**.
5. The distribution of marks subject wise in each part is as under for each correct response.
Part A - Mathematics (120 marks) – 30 Questions.
Questions No. 1 to 30 carry 4 marks each = 120Marks
Part B – Physics (120 marks) – 30 Questions.
Questions No. 31 to 60 carry 4 marks each = 120Marks
Part C – Chemistry (120 marks) – 30 Questions.
Questions No. 61 to 90 carry 4 marks each = 120Marks
6. **One Fourth** mark will be deducted for indicated **incorrect** response of each question. **No deduction** from the total score will be made **if no response** is indicated for an item in the Answer Sheet.
7. Use **Blue/Black Ball Point Pen only** for writing particulars/markings responses on Answer Sheet. **Use of pencil is strictly prohibited.**
8. No candidate is allowed to carry any textual material, printed or written, bits of papers, pager, mobile phone, any electronic device etc, except the admit card inside the examination hall/room.
9. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
10. On completion of the test, the candidate must hand over the Answer Sheet to the invigilator on duty in the Room/Hall. **However, the candidate is allowed to take away this Test Booklet with them.**
11. **Do not fold or make any stray marks on the Answer Sheet.**

Mathematics

- Let U be the set of all prime numbers and $A = \{x : x \in U \text{ and } x \text{ is not a divisor of } 42\}$. Then, the set of those elements of U which do not belong to A , is
A) {2, 3} B) {2, 3, 5} C) {2, 3, 7} D) {3, 5, 7}
- The relation R defined on the set $A = [1, 2, 3, 4, 5]$ by $R = \{(x, y) : |x^2 - y^2| < 16\}$ is given by,
A) [(1, 1), (2, 1) (3, 1), (4, 1), (2, 3)]
B) [(2, 2), (3, 2) (4, 2), (2, 4)]
C) [(3, 3), (3, 4) (5, 4), (4, 3), (3, 1)]
D) None of these
- Let A and B denote the statements
 $A : \cos \alpha + \cos \beta + \cos \gamma = 0$
 $B : \sin \alpha + \sin \beta + \sin \gamma = 0$
 If $\cos(\beta - \gamma) + \cos(\gamma - \alpha) + \cos(\alpha - \beta) = -\frac{3}{2}$, then
A) A is true and B is false
B) A is false and B is true C) Both A and B are true
D) Both A and B are false
- If $x = \sqrt{-16}$, then
A) $x = 4i$ B) $x = 4$ C) $x = -4$ D) All of the above
- If $\frac{1}{2x-7} < 0$, then which of the following conditions does x satisfy?
A) $x > 2/7$ B) $x > 9/2$ C) $x < 9/2$ D) $x < 7/2$
- A five digit number divisible by 3 is to be formed using the numerals 0, 1, 2, 3, 4 and 5 without repetition. The total number of ways this can be done is
A) 216 B) 600 C) 240 D) 3125

- The total number of terms in the expansion of $(x + a)^{100} + (x - a)^{100}$ after simplification is
A) 50 B) 202 C) 51 D) None of these
- If the first term of a G.P. a_1, a_2, a_3, \dots is unity such that $4a_2 + 5a_3$ is least, then the common ratio of G.P. is
A) $-\frac{2}{5}$ B) $-\frac{3}{5}$ C) $\frac{2}{5}$ D) None of these
- A line is drawn from the point $P(\alpha, \beta)$, making an angle θ with the positive direction of x -axis, to meet the line $ax + by + c = 0$ at Q . The length of PQ is
A) $-\frac{a\alpha + b\beta + c}{a\cos\theta + b\sin\theta}$ B) $\left| \frac{a\alpha + b\beta + c}{\sqrt{a^2 + b^2}} \right|$ C) $\frac{a\alpha + b\beta + c}{a\cos\theta + b\sin\theta}$
D) none of these
- The area of the circle given by $\vec{r}(\hat{i} + 2\hat{j} + 2\hat{k}) = 15$ and $|\vec{r} - (\hat{j} + 2\hat{k})| = 4$ is
A) (0, 1, 2) B) (1, 3, 4) C) (-1, 3, 4)
D) None of these
- A cuboid whose edges are parallel to the respective axes of the three-dimensional system is shown in the given figure. What are the coordinates of the vertex D of the


A) (0, 0, 0) B) (0, -6, -5) C) (-3, 0, -5)
D) (-3, 6, 0)
- $\lim_{x \rightarrow 0} \frac{\log \cos x}{\sqrt[4]{1+x^2}-1}$ is equal to

- A) 2 B) -2 C) 1 D) -1
13. The weighted mean of the first n natural numbers whose weights are equal to the squares of the corresponding numbers is
 A) $\frac{n+1}{2}$ B) $\frac{3n(n+1)}{2(2n+1)}$ C) $\frac{(n+1)(2n+1)}{6}$ D) $\frac{n(n+1)}{2}$
14. The median of a set of 9 distinct observations is 20.5. If each of the largest 4 observations of the set is increased by 2 then the median of the new set
 A) is increased by 2 B) is decreased by 2
 C) is two times the original median
 D) remains the same as that of the original set
15. If $(\sqrt{3} + i)^{100} = 2^{99} (a + ib)$, then $b =$
 A) $\sqrt{3}$ B) $\sqrt{2}$ C) 1 D) None of these
16. The least positive integer n for which $\left(\frac{1+i}{1-i}\right)^n = \frac{2}{\pi} \left(\sec^{-1} \frac{1}{x} + \sin^{-1} x\right)$, where $x \neq 0, -1 \leq x \leq 1$ is
 A) 2 B) 4 C) 6 D) 8
17. A company has 50 employees – 30 men and 20 women. The average age of the employees of the company is more than 25 years but less than 30 years. If the average age of the male employees (x) is more than or equal to 20 years but less than or equal to 25 years, then what is the range of the average age of the female employees (y)?
 A) $25 \leq y \leq 37.5$ B) $32.5 \leq y \leq 45$ C) $25 \leq y \leq 45$
 D) $25 \leq y \leq 32.5$
18. A trader decides to save money from her income for her future on weekly basis. She decides to save an average of at least ` 250 per week. In a particular month, her savings in the first, second, and third week are ` 250, ` 190, and ` 200 respectively. How much amount of money should she save in the fourth week in order to fulfill her wishes?
 A) ` 210 B) ` 295 C) ` 360 D) ` 375
19. If $S_n = 81 + 54 + 36 + 24 + \dots$ upto n terms, then value of

$$x = \frac{S_n - 4S_{n-1} + 6S_{n-2} - 4S_{n-3} + S_{n-4}}{S_{n-1} - 4S_{n-2} + 6S_{n-3} - 4S_{n-4} + S_{n-5}}$$
 is equal
 A) $\frac{2}{3}$ B) $\frac{3}{2}$ C) $\frac{1}{2}$ D) 2
20. If $\omega (\neq 1)$ is a cube root of unity and $(1 + \omega)^7 = A + B\omega$. Then, (A, B) is equal to
 A) (1, 1) B) (1, 0) C) (-1, 1) D) (0, 1)

21. If $n(A) = 3, n(B) = 6$ and $A \subseteq B$. Then the number of elements in $A \cup B$ is equal to
22. Let $A = \{1, 2\}, B = \{3, 4\}$. Then, number of subsets of $A \times B$ is
23. If the value of $\cos \frac{2\pi}{15} \cdot \cos \frac{4\pi}{15} \cdot \cos \frac{8\pi}{15} \cdot \cos \frac{14\pi}{15}$ is $\frac{1}{k}$ then find k .
24. The value of $(1 + i)^4 \left(1 + \frac{1}{i}\right)^4$ is
25. If ${}^n P_4 : {}^n P_5 = 1:2$, then $n =$
26. The value of $\lim_{n \rightarrow \infty} \left[\sqrt[3]{(n+1)^2} - \sqrt[3]{(n-1)^2} \right]$ is
27. If the n^{th} term of a sequence is $a_n = (-1)^{n-1} n^3$, then which of the following is 9th term?
28. P is a point on the line segment joining the points (3, 2, -1) and (6, 2, -2). If x-coordinate of P is 5, then its y-coordinate is
29. The distance between the points (6, -4) and (3, 0) is
30. If $z = \frac{\pi}{4} (1 + i)^4 \left(\frac{1 - \sqrt{\pi}i}{\sqrt{\pi} + 1} + \frac{\sqrt{\pi} - i}{1 + \sqrt{\pi}i} \right)$, then find $\left(\frac{|z|}{\text{Amp}(z)} \right)$.

Physics

31. A player hits a baseball at some angle. The ball goes high up in space. Another player runs and catches the ball before it hits the ground. Which of the two has greater displacement?
 A) the player B) the ball C) data is sufficient
 D) both have same displacement
32. If $\vec{A} = 2\hat{i} + 3\hat{j} - \hat{k}$ and $\vec{B} = -\hat{i} + 3\hat{j} + 4\hat{k}$, then projection of \vec{A} on \vec{B} will be
 A) $\frac{3}{\sqrt{13}}$ B) $\frac{3}{\sqrt{26}}$ C) $\sqrt{\frac{3}{26}}$ D) $\sqrt{\frac{3}{13}}$
33. A person sitting in an open car moving at constant velocity throws a ball vertically up into air. The ball falls
 A) outside the car
 B) in the car ahead of the person
 C) in the car to the side of the person
 D) exactly in the hand which threw it up

34. A ball impinges directly on another ball at rest. The first ball is brought to rest by the impact. If half of the kinetic energy is lost by the impact, the value of coefficient of restitution is

- A) $\frac{1}{2}$ B) $\frac{1}{\sqrt{3}}$ C) $\frac{1}{\sqrt{2}}$ D) $\frac{\sqrt{3}}{2}$

35. A large number of particles are placed around the origin, each at a distance R from the origin. The distance of the center of mass of the system from the origin is

- A) $= R$ B) $\geq R$ C) $> R$ D) $\leq R$

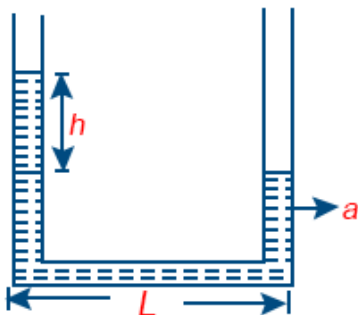
36. Weight of 1 kg becomes $1/6$ on moon. If the radius of moon is 1.768×10^6 m, then the mass of moon will be

- A) 1.99×10^{30} kg B) 7.56×10^{22} kg
C) 5.98×10^{24} kg D) 7.65×10^{22} kg

37. A bimetallic strip is made of aluminium and steel ($\alpha_{Al} > \alpha_{steel}$). On heating, the strip will

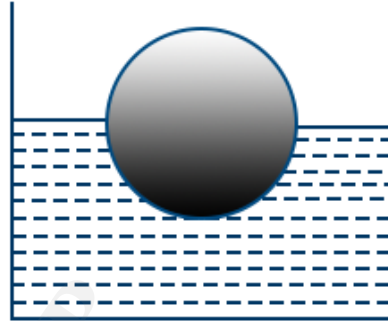
- A) remain straight. B) get twisted.
C) bend with aluminium on concave side.
D) bend with steel on concave side.

38. When at rest, a liquid stands at the same level in the tubes as shown in the figure. But as indicated, a height difference h occurs when the system is given an acceleration a towards the right. Then h is equal to



- A) $\frac{aL}{2g}$ B) $\frac{gL}{2a}$ C) $\frac{gL}{a}$ D) $\frac{aL}{g}$

39. A solid uniform ball having volume V and density ρ floats at the interface of two immiscible liquids as shown in Figure. The densities of the upper and the lower liquids are ρ_1 and ρ_2 , respectively, such that $\rho_1 < \rho < \rho_2$. The fraction of the volume of the ball in the lower liquid is



- A) $\frac{\rho - \rho_2}{\rho_1 - \rho_2}$ B) $\frac{\rho_1}{\rho_1 - \rho_2}$ C) $\frac{\rho_1 - \rho}{\rho_1 - \rho_2}$ D) $\frac{\rho_1 - \rho_2}{\rho_2}$

40. Which of the following is a true statement

- A) The total entropy of thermally interacting systems is conserved
B) Carnot engine has 100% efficiency
C) Total entropy does not change in a reversible process
D) Total entropy in an irreversible process can either increase or decrease

41. If γ be the ratio of specific heats of a perfect gas, the number of degrees of freedom of a molecule of the gas is

- A) $(\gamma - 1)$ B) $\frac{3\gamma - 1}{2\gamma - 1}$ C) $\frac{2}{\gamma - 1}$ D) $\frac{9}{2}(\gamma - 1)$

42. Which of the following liquids would have the lowest capillary rise in a capillary tube?

- A) Liquid with high density
B) Liquid with low viscosity
C) Liquid with low surface tension
D) Liquid with high temperature

43. A projectile is fired horizontally with an initial speed of 20 m/s. Its horizontal speed 3 s later will be

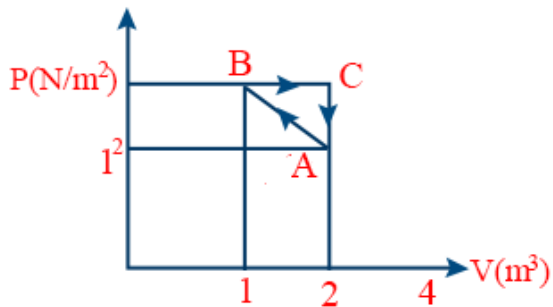
- A) 20 m/s B) 6.67 m/s C) 60 m/s D) 29.4 m/s

44. The equation of motion of a projectile is

$y = 12x - \frac{3}{4}x^2$. Given that $g = 10 \text{ ms}^{-2}$, what is the range of the projectile?

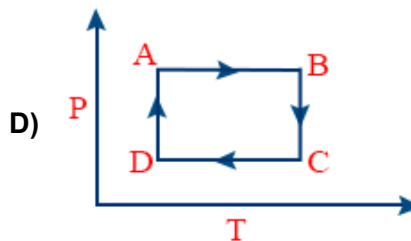
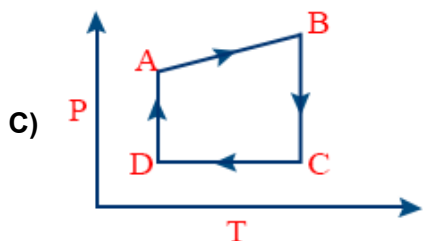
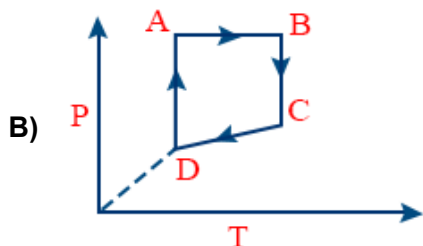
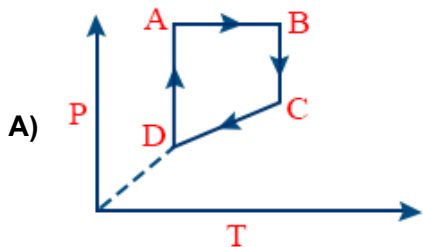
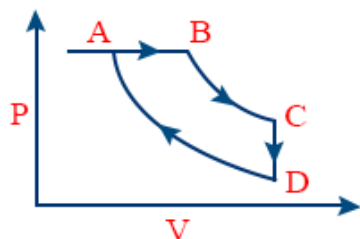
- A) 12 m B) 16 m C) 30 m D) 36 m

45. Corresponding to the process shown in figure, what is the heat given to the gas in the process ABCA?



- A) 1 J B) $\frac{3}{2} J$ C) $\frac{1}{2} J$ D) Zero

46. Pressure temperature graph for the given pressure volume graph is



47. A closed vessel contains 8g of oxygen and 7 g of nitrogen. The total pressure is 10 atm at a given temperature. If now oxygen is absorbed by introducing a suitable absorbent, the pressure of the remaining gas in atm will be

- A) 2 B) 10 C) 4 D) 5

48. Mean free path of gas molecule of constant temperature is inversely proportional to

- A) P B) V C) m D) n (number density)

49. Which one of the following is a wrong statement in kinetic theory of gases?

- A) The gas molecules are in random motion.
 B) The gas molecules are perfect elastic spheres.
 C) The volume occupied by the molecules of a gas is negligible
 D) The force of attraction between the molecules is negligible.
 E) The collision between molecules is inelastic

50. The temperature of an ideal gas is increased from 27°C to 127°C , then percentage increase in V_{rms} is

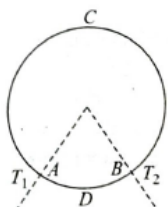
- A) 37% B) 11% C) 33% D) 15.5%

51. The acceleration 'a' in ms^{-2} of a particle is given by $a = 3t^2 + 2t + 2$, where t is the time. If the particle starts with a velocity $v = 2 \text{ ms}^{-1}$ at $t = 0$ then velocity at the end of 2 sec is (in ms^{-1})_____.

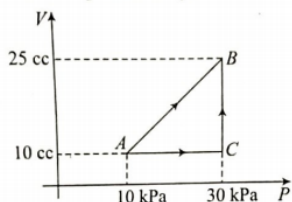
52. The value of n so that vector $2\hat{i} + 3\hat{j} - 2\hat{k}$, $5\hat{i} + n\hat{j} + \hat{k}$ and $-\hat{i} + 2\hat{j} + 3\hat{k}$ may be coplanar, will be

53. A bullet weighing 50 gm leaves the gun with a velocity of 30 ms^{-1} . If the recoil speed imparted to the gun is 1 ms^{-1} , the mass of the gun is (in Kg)_____.

54. From an automatic gun a man fires 360 bullet per minute with a speed of 360 *km/hour*. If each weighs 20 g, the power of the gun is (in Watts)_____.
55. The time period of a satellite of earth is 5 h. If the separation between the earth and the satellite is increased to 4 times the previous value, the new time period(in Hrs) will become_____.
56. Length of an elastic string is x metre when longitudinal tension is 3 N and y metre when it is 5 N . If length of string is found to be $2.5y - 1.5x$, calculate tension in the string in N
57. A ring consisting of two parts ADB and ACB of same conductivity K carries an amount of heat H . The ADB part is now replaced with another metal keeping the temperature T_1 and T_2 constant. The heat carried increases to $2H$. The conductivity of the new ADB part is $\frac{x}{3}K$. Find the value of x . (Given: $\frac{ACB}{ADB} = 3$)



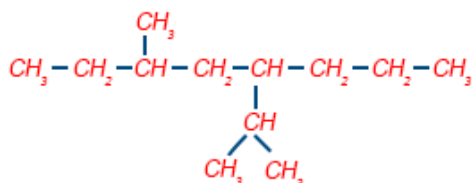
58. An iron tyre is to be fitted into a wooden wheel 1.0 m in diameter. The diameter of the tyre is 6 mm smaller than that of wheel. The tyre should be heated so that its temperature increases by a minimum of (coefficient of volumetric expansion of iron is $3.6 \times 10^{-5}/^\circ\text{C}$)_____ $^\circ\text{C}$.
59. An ideal gas is heated inside a thermally insulated rigid container by a filament of resistance 150Ω through a current of 2 A for 3 minute. The change in internal energy of the gas is kJ.
60. The figure shows two paths through which a gas can be taken from state A to state B . If the ratio of work done by the gas in the two paths is x/y , then find $(x + y)$.



Chemistry

61. From 392 mg of H_2SO_4 , 1.204×10^{21} molecules are removed. The number of moles of H_2SO_4 left are
- A) 2.0×10^{-3} B) 1.2×10^{-3} C) 4.0×10^{-3}

- D) 1.5×10^{-3}
62. The electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$. This represents
- A) excited state B) ground state C) cationic form
- D) anionic form
63. In the dichromate dianion
- A) 4 Cr—O bonds are equivalent
- B) 6 Cr—O bonds are equivalent
- C) all Cr—O bonds are equivalent
- D) all Cr—O bonds are non-equivalent
64. The internal energy when a system goes from state A to B is 40 kJ/mol. If the system goes from A to B by a reversible path and returns to state A by an irreversible path, what would be the net change in internal energy?
- A) 40 KJ B) $> 40\text{ KJ}$ C) $< 40\text{ KJ}$ D) zero
65. Write the units of rate constant for the following reaction:
 $pA + qB + rC \longrightarrow \text{Products}$
- A) $\left(\frac{\text{moles}}{\text{litre}}\right)^{1-(p+q+r)} \text{sec}^{-1}$ B) $\left(\frac{\text{moles}}{\text{litre}}\right) \text{sec}^{-1}$
- C) $\left(\frac{\text{moles}}{\text{litre}}\right)^{1+(p+q+r)} \text{sec}^{-1}$
- D) $\left(\frac{\text{moles}}{\text{litre}}\right)^{1-(p+q+r)} \text{sec}$
66. In the reaction,
 $3\text{Br}_2 + 6\text{CO}_3^{2-} + 3\text{H}_2\text{O} \rightarrow 5\text{Br}^- + \text{BrO}_3^- + 6\text{HCO}_3^-$
- A) bromine is oxidized and carbonate is reduced
- B) bromine is reduced and water is oxidized
- C) bromine is neither reduced nor oxidized
- D) bromine is both reduced and oxidized
67. Which of the following compound(s) is/are possible?
- A) B_2Cl_4 , BCl_2 , Cl_2B B) GaCl_2 , GaS
- C) $\text{Ga}[\text{GaCl}_4] \cdot \text{Ga}_2\text{S}_2$ D) All of these
68. IUPAC name of the compound



- A) 4-isopropyl 1-6-methyl octane
 B) 3-methyl-5(1' -methylethyl) octane
 C) 3-methyl-5-isopropyl octane
 D) 6-methyl-4-(1' methylethyl) octane
69. The hybridization of carbon atoms in C-C single bond of $\text{HC}\equiv\text{C}-\text{CH}=\text{CH}_2$ is
 A) sp^3-sp^3 B) sp^2-sp^3 C) sp^2-sp D) sp^3-sp
70. The maximum number of carbon atoms arranged linearly in the molecule, $\text{CH}_3-\text{C}\equiv\text{C}-\text{CH}=\text{CH}_2$ are
 A) 3 B) 4 C) 5 D) 6
71. Which factor is NOT considered a limitation of the octet rule?
 A) Existence of odd-electron molecules
 B) Formation of multiple bonds
 C) Importance of formal charges
 D) Presence of metallic bonds
72. The equilibrium constant (K_c) for the reaction $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2 \text{NO}(\text{g})$ at temperature T is 4×10^{-4} . The value of K_c for the reaction $\text{NO}(\text{g}) \rightarrow \frac{1}{2} \text{N}_2(\text{g}) + \frac{1}{2} \text{O}_2(\text{g})$ at the same temperature is
 A) 0.02 B) 2.5×10^2 C) 4×10^{-4} D) 50.0
73. In the addition of HBr to propene in presence of peroxide, most stable free radical formed is
 A) $\text{CH}_3\overset{\bullet}{\text{C}}\text{HCH}_3$ B) $\text{BrCH}_2\overset{\bullet}{\text{C}}\text{HCH}_3$
 C) $\overset{\bullet}{\text{C}}\text{H}_2\text{CH}_2\text{CH}_3$
 D) $\text{CH}_2\overset{\bullet}{\text{C}}\text{HCH}_3$
 Br
74. If the value of ΔH in a reaction is positive, then the reaction is called
 A) exothermic B) endothermic C) polymorphic
 D) polytropic
75. The heat of neutralisation of HCl by NaOH is $-55.9 \text{ kJ mole}^{-1}$. If the heat of neutralization of HCN by NaOH is -12.1 kJ/mole , the energy of dissociation of HCN per mole is
 A) -43.8 kJ B) 43.8 kJ C) 68.0 kJ D) -68.0 kJ
76. In a Bohr's model of atom when an electron jumps from $n = 1$ to $n = 3$, how much energy will be emitted or absorbed
 A) $2.15 \times 10^{-11} \text{ erg}$ B) $0.1911 \times 10^{-10} \text{ erg}$
 C) $2.389 \times 10^{-12} \text{ erg}$ D) $0.239 \times 10^{-10} \text{ erg}$
77. The energy required to dislodge electron from excited isolated H-atom, $IE_1 = 13.6 \text{ eV}$ is
 A) $= 13.6 \text{ eV}$ B) $> 13.6 \text{ eV}$
 C) < 13.6 and $> 3.4 \text{ eV}$ D) $\leq 3.4 \text{ eV}$
78. The number of significant figures in 306.45 and 40440 are respectively
 A) 4, 5 B) 5, 5 C) 5, 4 D) 4, 6
79. Convert 60 miles h^{-1} into SI Units
 A) 26.8 ms^{-1} B) 25.8 ms^{-1} C) 24.9 ms^{-1}
 D) 25.9 ms^{-1}
80. Which one of the following set of units represents the smallest and largest amount of energy respectively?
 A) J and erg B) erg and cal C) cal and eV
 D) eV and L-atm
81. 1.520 g of the hydroxide of a metal on ignition gave 0.995 g of oxide. The equivalent mass of metal is : _____
82. The atomic masses of 'He' and 'Ne' are 4 and 20 a.m.u., respectively. The value of the de Broglie wavelength of 'He' gas at -73°C is 'M' times that of the de Broglie wavelength of 'Ne' at 727°C 'M' is
83. The number of elements present in the fifth period of periodic table is _____.
84. The atomic number of an element is 14. The number of dots to be drawn in its Lewis symbol is
85. The heat of neutralisation of HCl by NaOH is $-55.9 \text{ kJ mole}^{-1}$. If the heat of neutralization of HCN by NaOH is -12.1 kJ/mole , the energy of dissociation of HCN per mole is _____ kJ.

86. The equilibrium constant k_{p1} and k_{p2} for the reactions $\mathbf{X} \rightleftharpoons \mathbf{2Y}$ and $\mathbf{Z} \rightleftharpoons \mathbf{P + Q}$ respectively are in the ratio of 1 : 9. If the degree of dissociation of X and Z be equal then calculate the value of $\sqrt{\frac{P_2}{P_1}}$ _____
87. The most common oxidation state of an element is - 2. The number of electrons present in its outermost shell is _____.
88. The atomic number of element having condensed electronic configuration $[\mathbf{Rn}]5f^{14}6d^{10}7s^27p^2$ is.
89. Number of isomers of molecular formula $\mathbf{C_2H_2Br_2}$ are
90. How many compound give ketone when reacts with $\mathbf{Hg^{+2}/H_2SO_4}$
- (a) $\mathbf{HC \equiv CH}$
- (b) $\mathbf{CH_3 - C \equiv CH}$
- (c) $\mathbf{Ph - C \equiv CH}$
- (d) $\mathbf{Ph - C \equiv C - Ph}$
- (e)
$$\begin{array}{c} \mathbf{CH_3 - CH - C \equiv CH} \\ | \\ \mathbf{CH_3} \end{array}$$
- (f) $\mathbf{CH_3 - CH_2 - C \equiv CH}$
- (g) $\mathbf{CH_3 - C \equiv C - Et}$

SMARTPREP

Time : 2 Hours 0 Minutes

: ANSWER KEY :

1) C 2) D 3) C 4) A 5) D 6) A 7) C 8) A 9) A 10) B 11) C 12) B
13) B 14) D 15) A 16) B 17) C 18) C 19) A 20) A 21) 6 22) 16 23) 16 24) 16
25) 6 26) 0 27) 729 28) 2 29) 5 30) 4 31) D 32) B 33) D 34) A 35) B 36) D
37) D 38) D 39) C 40) C 41) C 42) C 43) A 44) B 45) A 46) A 47) D 48) D
49) E 50) D 51) 18 52) 18 53) 1.5 54) 600 55) 40 56) 8 57) 7 58) 500 59) 108 60) 5
61) A 62) B 63) B 64) D 65) A 66) D 67) D 68) B 69) C 70) B 71) D 72) D
73) B 74) D 75) B 76) B 77) D 78) C 79) A 80) D 81) 9 82) 5 83) 18 84) 4
85) 43.8 86) 6 87) 6 88) 114 89) 3 90) 6.00



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