JEE EXPERT

SAMPLE PAPER

SCIENCE

Going to XII

Time : 2 Hours **Maximum Marks : 225**

Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.

INSTRUCTIONS

(i) The question paper has 15 printed pages excluding Answer Sheet. Please ensure that the copy of the question paper you have received contains all pages.

(ii) The question paper contains 75 questions. Each question carry 3 marks and all the questions are compulsory. ***There is negative marking. One mark will be deducted for each wrong answer. No mark will be deducted for unattempted question.***

(iii) Each question contains Four alternatives out of which only **ONE** is correct.

(iv) Indicate the correct answer for each question by filling appropriate bubble in your answer sheet.

(v) For rough work, use the space provided in question paper booklet. No extra sheet will be provided for rough work.

(vi) Use of Calculator, Log Table, Slide Rule and Mobile is not allowed.

(vii) The answer(s) of the questions must be marked by shading the circles against the question by dark pencil only. For example if only 'B' choice is correct then,

the correct method for filling the bubble is

A ○ B ● C ○ D ○

the wrong method for filling the bubble are

(a) A ○ B ⊘ C ○ D ○

(b) A ○ B ⊗ C ○ D ○

(c) A ○ B ◐ C ○ D ○

The answer of the questions in wrong or any other manner will be treated as wrong.

Name of the candidate **Regn. Number**

I have read all the instructions and shall abide by them.

.....

Signature of the Candidate

I have verified all the information filled in by the candidate.

.....

Signature of the invigilator

DO NOT BREAK THE SEAL WITHOUT BEING INSTRUCTED TO DO SO BY THE INVIGILATOR

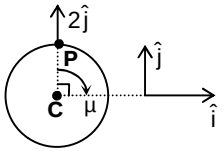
PHYSICS

SECTION – A

(Single Correct Choice Type)

This section contains 17 **multiple choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE is correct.**

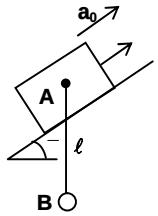
1. A disc, having plane parallel to the horizontal is moving such that velocity of point P with respect to ground on its periphery is 2 m/s $\hat{j}$ as shown in the figure. If radius of disc is R = 1 m and angular speed of disc about vertical axis passing through disc is ω = 2 rad/s, the velocity of centre of disc in m/s is



(A) $2\hat{j}$ (B) $2\hat{i}+2\hat{j}$

(C) $-2\hat{i}+2\hat{j}$ (D) none of these

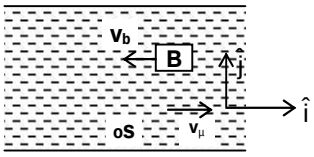
2. A block A is made to move over an inclined plane of inclination θ with constant acceleration a_0 as shown in figure. Initially, bob B hanging from block A by string is held vertical. The magnitude of acceleration of block A relative to bob immediately after bob is released is



(A) a_0 (B) $a_0 \sin\theta$

(C) $a_0 \cos\theta$ (D) $(a_0 - g \sin\theta)$

3. A boat 'B' is moving upstream with velocity 3 m/s with respect to ground. An observer standing on boat observes that a swimmer 'S' is crossing the river perpendicular to the direction of motion of boat. If river flow velocity is 4 m/s and swimmer crosses the river of width 100 m in 50 sec. Then



(A) velocity of swimmer w.r.t ground is $\sqrt{13}$ m/s

(B) drift of swimmer along river is zero

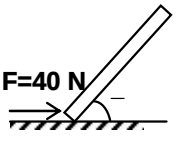
(C) drift of swimmer along river will be 50 m

(D) velocity of swimmer w.r.t ground is 2 m/s

4. A block is resting on a horizontal plate in the xy plane and the coefficient of friction between block and plate is μ. The plate begins to move with velocity $u = bt^2$ in x direction. At what time will the block start sliding on the plate.

(A) $\frac{\mu b}{g}$ (B) $\frac{\mu bg}{2}$ (C) $\frac{\mu g}{b}$ (D) $\frac{\mu g}{2b}$

5. A homogeneous rod of mass 3 kg is pushed along the smooth horizontal surface by a horizontal force F equals to 40 N. The angle θ for which rod has pure translation motion is (g = 10 m/s^2)

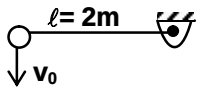


(A) 45° (B) 37°

(C) 53° (D) 60°

Space for Rough Work

6. A small sphere is given vertical velocity of magnitude v_0 = 5 m/s and it swings in a vertical plane about the end of massless string. The angle θ with the vertical at which string will break, knowing that it can withstand a maximum tension equal to twice the weight of the sphere, is [g = 10 m/s^2]



(A) $\cos^{-1}\frac{2}{3}$ (B) $\cos^{-1}\left(\frac{1}{4}\right)$ (C) 60° (D) 30°

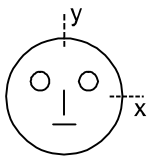
7. A small satellite of mass m is revolving around earth in a circular orbit of radius r_0 with speed v_0. At certain point of its orbit, the direction of motion of satellite is suddenly changed by angle $\theta = \cos^{-1}(3/5)$ by turning its velocity vector, such that speed remains constant. The satellite, consequently goes to elliptical orbit around earth. The ratio of speed at perigee to speed at apogee is

(A) 3 (B) 9 (C) 1/3 (D) 1/9

8. A particle initially at rest moves along x-axis. It is subjected to an acceleration which varies with time according to the equation : a = 2t + 5. Its velocity after 2 second will be

(A) 9 m s^{-1} (B) 12 m s^{-1} (C) 14 m s^{-1} (D) 18 m s^{-1}

9. Look at the drawing given in the figure which has been drawn with ink of uniform line-thickness. The mass of ink used to draw each of the two inner circles, and each of the two line segments is m. The mass of the ink used to draw the outer circle is 6m. The coordinates of the centres of the different parts are: outer circle (0, 0), left inner circle (–a, a), right inner circle (a, a), vertical line (0, 0) and horizontal line (0, –a) The y-coordinate of the centre of mass of the ink in this drawing is :



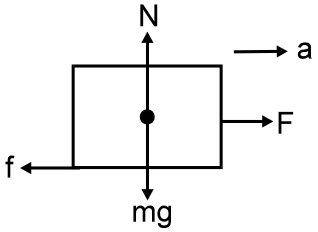
(A) $\frac{a}{10}$ (B) $\frac{a}{8}$

(C) $\frac{a}{12}$ (D) $\frac{a}{3}$

10. A particle describes a horizontal circle on the smooth surface of an inverted cone where the height of the plane of the circle is 9.8 cm above the vertex. The speed of the particle is

(A) 0.098 ms^{-1} (B) 0.98 ms^{-1} (C) 9.8 ms^{-1} (D) 9.8 cm s^{-1}

11. A block of mass m is kept on a rough horizontal floor having coefficient of friction m. A constant horizontal force F is applied on the block towards right due to which it is moving with a constant acceleration a. Free body diagram of the object is shown in the figure.



Choose the correct alternative.

(A) According to Newton's 3rd law, mg is action and N is reaction

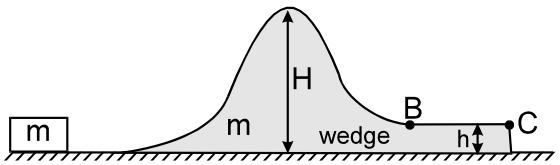
(B) According to Newton's 3rd law, F is action and f is reaction

(C) Friction force f can have any value between 0 to μmg

(D) a = $\frac{F-f}{m}$

Space for Rough Work

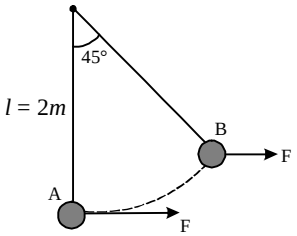
12. Figure shows an irregular wedge of mass m placed on a smooth horizontal surface. Part BC is rough. What minimum velocity should be imparted to a small block of same mass m so that it may reach point B :



(A) $2\sqrt{gH}$ (B) $\sqrt{2gH}$

(C) $2\sqrt{g(H-h)}$ (D) $\sqrt{gh}$

13. In the given diagram a force F = 10N acts always along horizontal direction on the bob of mass $\sqrt{2}$ kg. Find the velocity of the bob at point B in the Figure. given that g = 10 m/s^2. bob is at rest initially and length of string is l = 2m



(A) $\sqrt{20(\sqrt{2}-1)}$ (B) $\sqrt{20(\sqrt{2}+1)}$

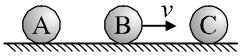
(C) $\sqrt{10(\sqrt{2}-1)}$ (D) $\sqrt{10(\sqrt{2}+1)}$

14. An object is acted upon by the forces $\vec{F}_1 = 4\hat{i}\,N$ and $\vec{F}_2 = (\hat{i}-\hat{j})N$. If the displacement of the object is D = $(\hat{i}+6\hat{j}-6\hat{k})m$, the kinetic energy of the object:

(A) Remain constant (B) Increase by 1J

(C) Decrease by 1J (D) Decrease by 2J

15. Three balls A, B and C ($m_A = m_C = 4m_B$) are placed on a smooth horizontal surface. Ball B collides with ball C with an initial velocity v as shown in figure. Total number of collisions between the balls will be (all collisions are elastic)

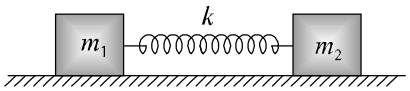


(A) 1 (B) 2 (C) 3 (D) 4

16. The masses and radii of the earth and moon are M_1, R_1 and M_2, R_2 respectively. Their centres are a distance d apart. The minimum speed with which a particle of mass m should be projected from a point midway between the two centres so as to escape to infinity is equal to

(A) $\left[\frac{G(M_1-M_2)}{d}\right]^{1/2}$ (B) $\left[\frac{G(M_1+M_2)}{a}\right]^{1/2}$ (C) $2\left[\frac{G(M_1+M_2)}{md}\right]^{1/2}$ (D) $2\left[\frac{G(M_1-M_2)}{md}\right]^{1/2}$

17. Two blocks m_1 and m_2 are pulled on a smooth horizontal surface, and are joined together with a spring of stiffness k as shown in figure. Suddenly, block m_2 receives a horizontal velocity v_0, then the maximum extension x_m in the spring is :



(A) $v_0\sqrt{\frac{m_1m_2}{m_1+m_2}}$ (B) $v_0\sqrt{\frac{2m_1m_2}{(m_1+m_2)k}}$

(C) $v_0\sqrt{\frac{m_1m_2}{2(m_1+m_2)k}}$ (D) $v_0\sqrt{\frac{m_1m_2}{(m_1+m_2)k}}$

Space for Rough Work

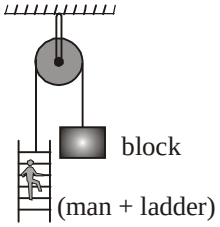
(Assertion-Reason Type)

This section contains **4 questions**. Each question consists of an Assertion & Reason and has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Direction : Given below consists of an Assertion (A) and Reason (R). Use the following key to choose the appropriate answer.
(A) Both **Assertion** and **Reason** are true and **Reason** is correct explanation of **Assertion**
(B) Both **Assertion** and **Reason** are true but **Reason** is not correct explanation of **Assertion**.
(C) **Assertion** is true, **Reason** is false.
(D) **Assertion** is false, **Reason** is true.

18. **Assertion (A)** **:** If mass of (Man + Ladder) is equal to mass of block. If man moves upwards wrt to the ladder the centre of mass of system will not move.

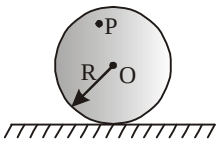
Reason (R) **:** For a system having net external force zero and initial $v_{cm} = 0$, position of centre of mass of system will not change.



19. A uniform disc rolls without slipping on a rough horizontal surface with uniform angular velocity.

Assertion (A) **:** The velocity of point P on the disc changes in magnitude with time.

Reason (R) **:** The tangential acceleration of point P w.r. to 'O' on the disc is always zero.



20. **Assertion (A)** **:** Refrigerator transfers heat from lower temperature to higher temperature.

Reason (R) **:** Heat can be transferred from lower temperature to higher temperature by doing some work.

21. **Assertion (A)** **:** If an Ideal gas is allowed to expand freely in vacuum in an insulated container, then $\Delta Q = \Delta W = \Delta U =$ zero.

Reason (R) **:** Temperature of gas remain constant during expansion.

Space for Rough Work

CHEMISTRY

SECTION – B

(Single Correct Choice Type)

This section contains **17 multiple choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE is correct.**

22. 2 moles of each HCl and NaOH are dissolved in 500 ml of water. What will be the equilibrium constant of neutralization reaction. (Given Kw = 1×10^{-14} and conc. of H_2O after dissolving HCl & NaOH = 55.5)
(A) 1 (B) 1×10^{14} (C) 5.5×10^{15} (D) 1.8×10^{-14}

23. The ionization constant of NH_4^+ in water is 5.6×10^{-10} at 25°C. The rate constant for the reaction of NH_4^+ and OH^- to form NH_3 and H_2O at 25°C is 3.4×10^{10} L mol^- S^{-1}. What will be the rate constant for proton transfer form water to NH_3?
(A) 1.66×10^{-7} (B) 5.6×10^{4} (C) 1.7×10^{-5} (D) 6.07×10^{5}

24. Of these molecules, which two have the identical shape ?
(A) CO_2 and O_3 (B) O_3 and CH_2O (C) O_3 and SO_2 (D) CH_2O and SO_2

25. A gas obeys the equation of state $\left(P+\frac{a}{V^2}\right)V = RT$, where a = 12.4 bar L^2/mol^2. What is the value of the compressibility factor for 1 mol of gas in a 6.34 L container at 250°C ?
(A) 0.906 (B) 0.955 (C) 1.045 (D) 1.094

26. Which of the following has the highest reactivity towards water ?
(A) Na (B) Rb (C) Li (D) K

27. A piece of magnesium ribbon is heated to redness in an atmosphere of nitrogen and on cooling with water, the product evolves a gas. The gas is :
(A) N_2O (B) NO_2 (C) N_2O_4 (D) NH_3

28. A hydrogen ion (H^+) strikes an electron of energy 0 ev, resulting in the formation of a neutral hydrogen atom in the ground state. As a result only one photon is emitted. The wavelength of the emitted photon is :

(A) $\frac{6.62\times10^{-27}\times3\times10^{10}}{13.6\times1.6\times10^{-19}}$ (B) $\frac{6.62\times10^{-34}\times3\times10^{8}}{13.6\times1.6\times10^{-19}}$

(C) $\frac{6.62\times10^{-34}\times3\times10^{8}}{3.4\times1.6\times10^{-19}}$ (D) $\frac{6.62\times10^{-24}\times3\times10^{10}}{3.4\times1.6\times10^{-19}}$

29. Which energy level in Li^{2+} has same energy as the fourth energy level of H-atom :
(A) 2 (B) 4 (C) 10 (D) 12

Space for Rough Work

30. In Bohr's model of the hydrogen atom the ratio between the period of revolution of an electron in the orbit n = 1 to the period revolution of the electron in the orbit n = 2 is :
(A) 1 : 2 (B) 2 : 1 (C) 1 : 4 (D) 1 : 8

31. Select the correct statements :
(I) The magnitude of spin angular momentum of the electron is constant
(II) Orbital angular momentum is a vector quantity and can have different orientations relative to the chosen axis
(III) Orbital angular momentum is constant irrespective of the orbital
(A) I & II (B) II & III (C) 1 & III (D) 1, II, & III

32. $CaO + C \longrightarrow X +$ a gas
$X + N_2 \longrightarrow Y + C$
$Y + H_2O \longrightarrow$ a solid + Z
Z is :
(A) $CaCN_2$ (B) NH_4OH (C) $Ca(NO_3)_2$ (D) $Ca(NO_2)_2$

33. The bond angle of NH_3, NH_2^- and NH_4^+ are in the order :
(A) $NH_2^- > NH_3 > NH_4^+$ (B) $NH_4^+ > NH_3 > NH_2^-$ (C) $NH_3 > NH_2^- > NH_4^+$ (D) $NH_3 > NH_4^+ > NH_2^-$

34. A gas mixture contain twice as many moles of O_2 as N_2 ($O_2 : N_2 = 2 : 1$). Addition of 0.2 moles of argon to this mixture increase the pressure from 0.8 atm to 1.1 atm. How many moles of O_2 are in the mixture:
(A) 0.355 mol (B) 0.178 mol (C) 0.533 mol (D) 0.208 mol

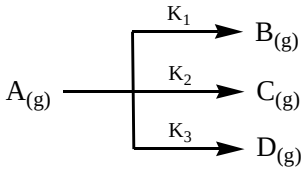
35. For a certain reaction the variation of the rate constant with temperature is given by the equation
$\ln k_t = \ln k_0 + 0.0693\ t$ ($t \geq 0°C$) ($\ln 2 = 0.693$)
The value of the temperature coefficient of the reaction rate is therefore
(A) 0.1 (B) 1.0 (C) 10 (D) 2

36. On introduction of a catalyst at 500 K, the rate of a first order reaction increases by 1.718 times. If the activation energy in the presence of a catalyst is 4.15 kJ mol^{-1}. Then the E_a in absence of catalyst is ($\ln 1.718 = 0.541$)
(A) 4.15 kJ (B) 2.08 kJ (C) 6.4 kJ (D) 8.3 kJ.

37. 200 gm of $CaCO_3$(s) taken in 4 ltr container at a certain temperature. K_c for the dissociation of $CaCO_3$ at this temperature is found to be 1/4 mole ltr^{-1}. Then the concentration of CaO in mole/litre is
[Given $\rho_{CaO} = 1.12$ gm cm^{-3}] [Ca = 40, O = 16]
(A) $\frac{1}{2}$ (B) $\frac{1}{4}$ (C) 0.02 (D) 20

Space for Rough Work

38.



$K_1 = 10^{-3}$ sec^{-1}

$K_2 = 2 \times 10^{-3}$ sec^{-1}

$K_3 = 3 \times 10^{-3}$ sec^{-1}

Initial pressure of A = 8 atm. After 100 sec. partial pressure of A is found to be 4.4 atm. What is the partial pressure of B at that time ?

(A) 2 atm (B) 0.6 atm (C) 1.25 atm (D) 0.24 atm

(Assertion-Reason Type)

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(C) **Assertion** is true, **Reason** is false.

(D) **Assertion** is false, **Reason** is true.

39. **Assertion (A)** **:** In SO_3^{2-} all S—O bonds are equal in length
Reason (R) **:** SO_3^{-2} is a triangular planar, symmetrical.

40. **Assertion (A)** **:** The van der Waals co-efficients 'a' and 'b' can be negative and are independent of temperature.
Reason (R) **:** The van der Waals co-efficient '*a*' and '*b*' are characteristics of a gas.

41. **Assertion (A)** **:** Heavier gases effuse at slower rate, under similar conditions.
Reason (R) **:** Heavier gases have smaller root mean square speed.

42. **Assertion (A)** **:** Lithium has the highest oxidation potential out of all alkali metals.
Reason (R) **:** IP of lithium is less than that of any alkali metal.

Space for Rough Work

MATHEMATICS

SECTION – C

(Single Correct Choice Type)

This section contains **17 multiple choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE is correct.**

43. If any two numbers a, b(a < b) are selected from the interval $\left[-\frac{1}{2}, 2\right]$. Then maximum value of $a\sqrt{4-b^2} - b\sqrt{4-a^2}$ is :

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

44. If p, q, r, s $\in Q^+$ such that r + s – rs = 0 then minimum value of $\left(\frac{p^r}{r} + \frac{q^s}{s}\right)$ is :

(A) p + q (B) pq (C) p – r (D) p/q

45. A circle is passing through the origin and touches the line x = 1, x + y = 2, then radius of the circle is a root of the equation :

(A) $(3 - 2\sqrt{2})\, t^2 - 2\sqrt{2}\, t + 2 = 0$ (B) $(3 - 2\sqrt{2})\, t^2 - 2\sqrt{2}\, t - 2 = 0$

(C) $(3 + 2\sqrt{2})\, t^2 - 2\sqrt{2}\, t + 2 = 0$ (D) None of these

46. Find the number of values of the real parameter 'a' for which 'ai' ($i = \sqrt{-1}$) is a solutions of polynomial equation $z^4 - 2z^3 + 7z^2 - 4z + 10 = 0$

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

47. If a, b, –c, are positive integers. The equation $ax^2 + bx + c = 0$ has one root in (–1, 0) and other root in (0, 1). If the least value of a+ c is k then k must be :

(A) 0 (B) 1 (C) 2 (D) 3

48. Number of positive real solutions (a, b, c, d) of the system
a + b + c + d = 12 and abcd = 27 + ab + bc + ac + ad + bd + cd is

(A) Exactly one (B) Exactly $4\lfloor 4$ (C) $\lfloor 3$ (D) None of these

49. The abscissa of centre of circle which are orthogonal to the curve | z | = 1 and | z – 1 | = 4 is :

(A) –1 (B) –3 (C) –7 (D) None of these

Space for Rough Work

50. If l, m, n be the three positive roots of the equation $x^3 - ax^2 + bx - 48 = 0$, then the minimum value of $(1/\ell) + (2/m) + (3/n)$ equals :

(A) 1 (B) 2 (C) 3/2 (D) 5/2

51. The sum of values of x satisfying the equation $(31+8\sqrt{15})^{x^2-3}+1=(32+8\sqrt{15})^{x^2-3}$ is :

(A) 3 (B) 0 (C) 2 (D) none of these

52. If $2^{(\log_2 3)^x} = 3^{(\log_3 2)^x}$ then the value of x is equal to :

(A) $\frac{1}{2}$ (B) $\frac{1}{4}$ (C) $\frac{1}{3}$ (D) $\frac{1}{6}$

53. The smallest positive value of x (in degrees) for which

$\tan x = \frac{\cos 5^o \cos 20^o + \cos 35^o \cos 50^o - \sin 5^o \sin 20^o - \sin 35^o \sin 50^o}{\sin 5^o \cos 20^o - \sin 35^o \cos 50^o + \cos 5^o \sin 20^o - \cos 35^o \sin 50^o}$

is equal to :

(A) 30^o (B) 60^o (C) 75^o (D) 120^o

54. The value of x satisfying the equation $\sqrt{2}^{\log_2 2^{\log_2 2^{\log_2 2^{\log_2 x}}}} = 5$, is :

(A) 5 (B) 16 (C) 25 (D) 32

55. Suppose that θ is a positive acute angle such that $\tan\left(\frac{\theta}{2}\right) = \sqrt{\frac{x-1}{2x}}$, then the value of tan θ is :

(A) x (B) $\frac{\sqrt{x-1}}{x+1}$ (C) $\sqrt{x^2-1}$ (D) $\frac{\sqrt{x^2-1}}{x}$

56. Number of possible value of θ with $0^o < \theta < 360^o$ such that $\log_2(-3\sin\theta) = 2\log_2(\cos\theta) + 1$ is :

(A) 0 (B) 1 (C) 2 (D) infinite

57. The expression $E = \sin^2\alpha + \sin^2\beta + \sin^2\left(\frac{\pi}{2} - \alpha - \beta\right) + 2\sin\alpha \cdot \sin\beta \cdot \sin\left(\frac{\pi}{2} - \alpha - \beta\right)$ is :

(A) independent of both α and β (B) independent of α but dependent on β

(C) independent of β but dependent on α (D) dependent on both α and β

58. The expression $\frac{\left(\log_{\frac{a}{b}} p\right)^2 + \left(\log_{\frac{b}{c}} p\right)^2 + \left(\log_{\frac{c}{a}} p\right)^2}{\left(\log_{\frac{a}{b}} p + \log_{\frac{b}{c}} p + \log_{\frac{c}{a}} p\right)^2}$, wherever defined, simplifies to :

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

59. The sum to n terms of the series 1.3.5 + 3.5.7 + 5.7.9 + ... is :

(A) $n^3 + 12n^2 - 2n - 3$ (B) $n(2n^3 + 8n^2 + 7n - 2)$

(C) $n(8n^3 + 11n^2 - n - 3)$ (D) None of these

Space for Rough Work

(Assertion-Reason Type)

This section contains **4 questions**. Each question consists of an Assertion & Reason and has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Direction : Given below consists of an Assertion (A) and Reason (R). Use the following key to choose the appropriate answer.
(A) Both **Assertion** and **Reason** are true and **Reason** is correct explanation of **Assertion**
(B) Both **Assertion** and **Reason** are true but **Reason** is not correct explanation of **Assertion**.
(C) **Assertion** is true, **Reason** is false.
(D) **Assertion** is false, **Reason** is true.

60. Two tangents to the parabola $x^2 = 6y$ meet at the point $\left(-1, -\frac{3}{2}\right)$.

Assertion (A) : The tangents are perpendicular to each other.
Reason (R) : Mutually perpendicular tangents to the parabola meet on the line $2y + 3 = 0$.

61. Let $z_1 = r_1 e^{i\theta_1}$ and $z_2 = r_2 e^{i\theta_2}$, where $r_1 > 1$, $r_2 > 1$.

Assertion (A) : $|1 - \bar{z}_1 z_2| > |z_1 - z_2|$
Reason (R) : $|z_1 - z_2| < |z_1| + |z_2|$

62. **Assertion (A) :** $1 \cdot 3 \cdot 5 \cdot \ldots \cdot (2n - 1) > n^n$, $n \in N$.
Reason (R) : The sum of the first n odd natural numbers is equal to n^2.

63. Let a, b, c be real such that $ax^2 + bx + c = 0$ and $x^2 + x + 1 = 0$ have a common root.
Assertion (A) : $a = b = c$.
Reason (R) : Two quadratic equations with real coefficients cannot have only one imaginary root common.

Space for Rough Work

JEE EXPERT

Going - XII

(SAT)[20.01.2019]

ANSWERS

Physics

1.	C	2.	C	3.	A	4.	D
5.	B	6.	B	7.	B	8.	C
9.	A	10.	B	11.	D	12.	A
13.	A	14.	C	15.	B	16.	B
17.	D	18.	D	19.	B	20.	A
21.	C						

Chemistry

22.	C	23.	D	24.	C	25.	B
26.	B	27.	D	28.	B	29.	D
30.	D	31.	A	32.	B	33.	A
34.	B	35.	D	36.	C	37.	D
38.	B	39.	C	40.	D	41.	A
42.	C						

Mathematics

43.	A	44.	B	45.	A	46.	C
47.	B	48.	A	49.	C	50.	C
51.	B	52.	A	53.	D	54.	C
55.	C	56.	B	57.	A	58.	A
59.	B	60.	A	61.	B	62.	D
63.	A						