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Paper Code: 02

CAREER POINT

STAR

Scholastic **T**est for **A**nalysis and **R**eward

CLASS - 11th (PCM)

(Class 11th Studying Students)

Duration: 2:00 hours **Maximum marks: 300**

Instructions to Candidates

1. CP Star Test paper consists of total 75 questions and has been divided in three sections as follows:

a.	Physics	25 Questions	Que. No. 01 to 25
b	Chemistry	25 Questions	Que. No. 26 to 50
c.	Mathematics	25 Questions	Que. No. 51 to 75

2. All questions are compulsory.
3. All the answers will be encircled in OMR sheet which is being provided along with this paper.
4. For every correct answer marked by you, **4** marks will be allotted.
5. For every incorrect answer marked by you, **1** marks will be deducted.
5. Use of calculator is not permitted in any case.
7. Any kind of malpractice will expel you from exam immediately.
8. For any confusion please talk to the invigilator in the examination hall.
9. For any kind of suggestions or complaints send Email at **info@cpil.in**

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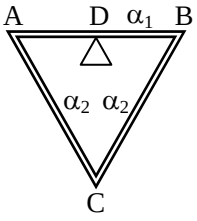
SECTION-a [PHYSICS]

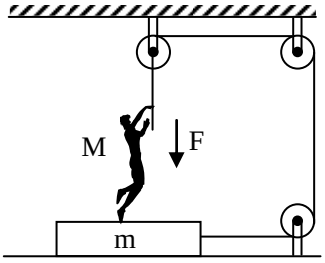
Q.1 Three rods of equal length are joined to form an equilateral triangle ABC. D is the midpoint of AB. The coefficient of linear expansion is α_1 for AB, and α_2 for AC and BC. If the distance DC remains constant for small changes in temperature -



(1) $\alpha_1 = \alpha_2$ (2) $\alpha_1 = 2\alpha_2$

(3) $\alpha_1 = 4\alpha_2$ (4) $\alpha_1 = \frac{1}{2}\alpha_2$

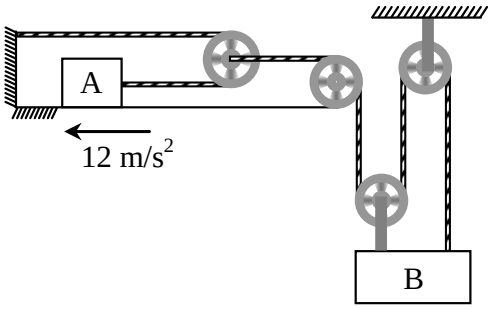
Q.2 The friction coefficient between board and the floor in the figure is μ. The maximum force that the man can exert on the rope so that the board does not slip on the floor is



(1) $\mu (M + m) g$ (2) $\frac{\mu(M+m)g}{1-\mu}$

(3) $\mu (M - m) g$ (4) $\frac{\mu(M+m)g}{1+\mu}$

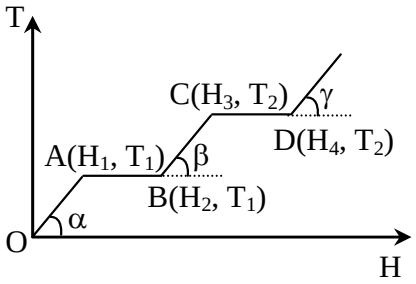
Q.3 For given system, the acceleration of B is given by-



(1) 6 m/s^2 (2) 2 m/s^2

(3) 4 m/s^2 (4) none of these

Q.4 The graph shows the variation of temperature (T) of one kilogram of a material with the heat (H) supplied to it. At O, the substance is in the solid state. From the graph, we can conclude that



(1) T_2 is the melting point of the solid

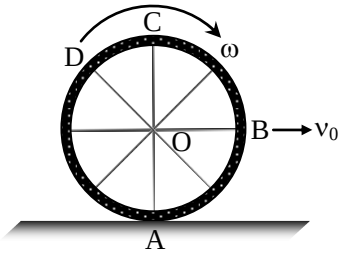
(2) BC represents the change of state from solid to liquid

(3) ($H_2 - H_1$) represents the latent of fusion of the substance

(4) ($H_3 - H_1$) represents the latent heat of vaporization of the liquid

Space for rough work

Q.5 Consider a bicycle wheel rolling without slipping on a rough level road at a linear speed as shown in figure. Then –



(a) the speed of the particle A is zero

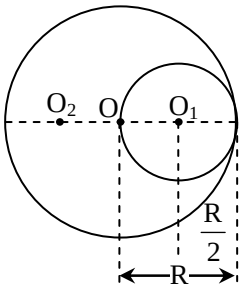
(b) the speed of B, C and D are all equal to v_0

(c) the speed of C is $2v_0$

(d) the speed of B is greater than the speed of O

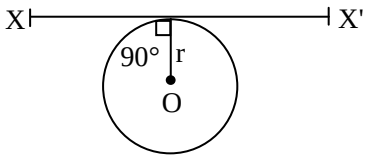
(1) a, b (2) b, c (3) c, d (4) a, c

Q.6 A spherical hollow is made in a lead sphere of radius R, such that its surface touches the outside surface of lead sphere and passes through the centre. What is the shift in the centre of mass of lead sphere due to the hollowing –



(1) $\frac{R}{7}$ (2) $\frac{R}{14}$ (3) $\frac{R}{2}$ (4) R

Q.7 A thin wire of length ℓ and uniform linear mass density ρ is bent into a circular loop with centre O and radius r as shown in figure. The moment of inertia of the loop about the axis XX' is-



(1) $\frac{3\rho\ell^3}{8\pi^2}$ (2) $\frac{\rho\ell^3}{16\pi^2}$ (3) $\frac{3\rho\ell^3}{8\pi^2 r}$ (4) $\frac{\rho\ell^3}{8\pi^2 r}$

Q.8 The velocity of a car is given by

$v = (10\ m/s^2)t - (5\ m/s^3)\ t^2$

Initially car at x = 0 at t = 0. Time taken by the car to reach its maximum positive x-coordinates is –

(1) 0 s (2) 1 s (3) 2 s (4) 1.5 s

Q.9 The pitch of a screw gauge is 1 mm and there are 100 division on its circular scale. When nothing is put between its jaw, the zero of the circular scale lies 4 division below the reference line. When a steel wire is placed between the jaws, two main scale divisions are clearly visible and 67 divisions on the circular scale are observed. The diameter of the wire is-

(1) 2.71 mm (2) 2.67 mm

(3) 2.63 mm (4) 2.65 mm

Q.10 If the volume of a gas is doubled at constant pressure, the average translational kinetic energy of its molecules will-

(1) be doubled

(2) remain the same

(3) increase by a factor $\sqrt{2}$

(4) become four times

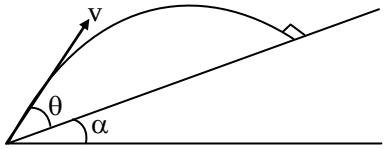
Space for rough work

Q.11 In a simple pendulum, the breaking strength of the string is double the weight of the bob. The bob is released from rest when the string is horizontal. The string breaks when it makes an angle θ with the vertical-

(1) $\theta = \cos^{-1}(1/3)$ (2) $\theta = 60^\circ$

(3) $\theta = \cos^{-1}(2/3)$ (4) $\theta = 0^\circ$

Q.12 A baseball is projected with a velocity v making an angle θ with the incline of inclination angle α as shown in figure. Find the condition that the ball hits the incline at right angle.



(1) $\cot\theta = 2\tan\alpha$ (2) $\sin\theta = \cos\alpha$

(3) $\tan\theta = \sin\alpha$ (4) $\cot\theta = \tan\alpha$

Q.13 A ball of mass m is fired vertically upwards from the surface of the earth with velocity nv_e, where v_e is the escape velocity and $n < 1$. Neglecting air resistance, to what height will the ball rise ? Take radius of the earth as R :

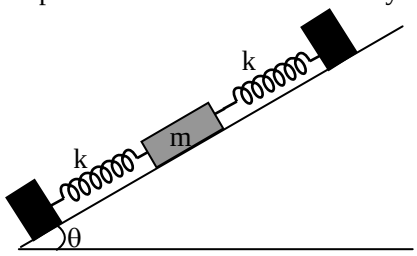
(1) R/n^2 (2) $R/(1-n^2)$

(3) $Rn^2/(1-n^2)$ (4) Rn^2

Q.14 A cubical vessel open from top of side L is filled with a liquid of density ρ then the torque of hydrostatic force on a side wall about an axis passing through one of bottom edges is –

(1) $\frac{\rho g L^4}{4}$ (2) $\frac{\rho g L^4}{6}$ (3) $\frac{2\rho g L^4}{3}$ (4) $\frac{\rho g L^4}{3}$

Q.15 On a smooth inclined plane, a body of mass m is attached between two massless springs. The other ends of the springs are fixed to firm supports. If each spring has force constant k, the period of oscillation of the body is :



(1) $2\pi\sqrt{\frac{m}{2k}}$ (2) $2\pi\sqrt{\frac{2m}{k}}$

(3) $2\pi\sqrt{\frac{mg\sin\theta}{2k}}$ (4) $2\pi\sqrt{\frac{2mg\sin\theta}{k}}$

Q.16 The temperature of a hypothetical gas increases to $\sqrt{2}$ times when compressed adiabatically to half the volume. Its equation can be written as -

(1) $PV^{3/2}$ = constant (2) $PV^{5/2}$ = constant

(3) $PV^{7/3}$ = constant (4) $PV^{4/3}$ = constant

Q.17 The highest temperature of the gas, attained if the pressure of an ideal gas varies according to the law $P = P_0 - aV^2$, where P_0 and a are constants, is -

(1) $T_{max} = \frac{2P_0}{2nR}\left(\frac{P_0}{3a}\right)^{1/2}$

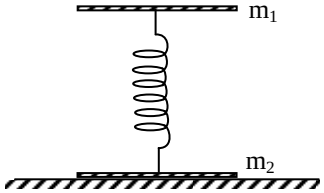
(2) $T_{max} = \frac{2}{3}\frac{P_0}{nR}\left(\frac{P_0}{3a}\right)^{1/2}$

(3) $T_{max} = \frac{P_0}{3nR}\left(\frac{P_0}{3a}\right)^{1/2}$

(4) none of these

Space for rough work

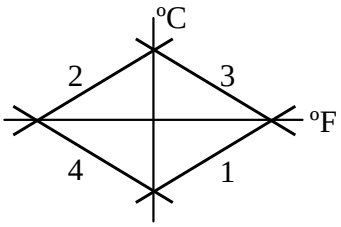
Q.18 Two plates whose masses are m_1 and m_2 respectively are connected by a massless spring as shown. The force to be applied on the upper plate for it to raise the lower one when this force is removed is-



(1) $F = m_1 g$. (2) $F = m_2 g$.

(3) $F < (m_1 - m_2) g$. (4) $F > (m_1 + m_2)g$

Q.19 Which of the curves in figure represents the relation between Celsius and Fahrenheit temperature -



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

Q.20 The position vector of a particle is $\vec{r} = a[\cos \omega t \, \hat{i} + \sin \omega t \, \hat{j}]$. The velocity of the particle is

(1) parallel to position vector

(2) directed towards origin

(3) directed away from origin

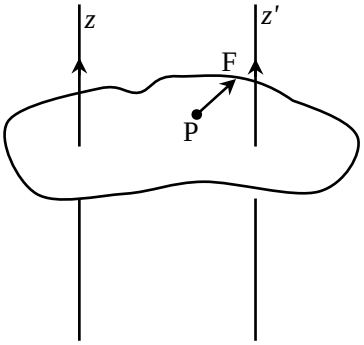
(4) perpendicular to position vector

Q.21 A radioactive nucleus initially at rest it decays by emitting an electron and neutron at right angles to one another . The momentum of the electron is 3.2×10^{-23} kg m/s and the momentum of the neutron is 6.4×10^{-23} kg m/s. The angle of the recoiling neutron nucleus with the direction of the electron motion is -

(1) $\pi - \tan^{-1}(2)$ (2) $\tan^{-1}(2)$

(3) $\tan^{-1}(0.5)$ (4) $\frac{\pi}{2} + \tan^{-1}(2)$

Q.22 Figure shows a lamina in *x*-*y* plane. Two axes *z* and *z*' pass perpendicular to its plane. A force **F** acts in the plane of lamina at point P as shown. Which of the following are true ? (The point P is closer to *z*'-axis than the *z*-axis.)



(1) Torque $\boldsymbol{\tau}$ caused by **F** about z-axis is along $-\hat{k}$

(2) Torque $\boldsymbol{\tau}'$ caused by **F** about z' axis is along $-\hat{k}$

(3) Total torque is given by $\boldsymbol{\tau} = \boldsymbol{\tau} + \boldsymbol{\tau}'$.

(4) Total torque is given by $\boldsymbol{\tau} = \boldsymbol{\tau} - \boldsymbol{\tau}'$.

Space for rough work

Q.23 A particle of mass m is moving in a circular path of constant radius r such that its centripetal acceleration a_c is varying with time as $a_c = k^2rt^4$, where k is a constant. The power delivered to the particle by the forces acting on it is -

(1) 0 (2) $mk^2r^2t^2$

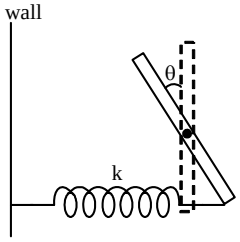
(3) $\frac{1}{3}mk^2r^2t^2$ (4) $2mk^2r^2t^3$

Q.24 A body of density d and volume V floats with volume V_1 of its total volume V immersed in a liquid of density d_1 and the rest of the volume V_2 immersed in another liquid of density d_2 (< d_1). The volume V_1 immersed in liquid of density d_1 is -

(1) $\left(\frac{d-d_2}{d_1-d_2}\right)V$ (2) $\left(\frac{d+d_2}{d_1+d_2}\right)V$

(3) $\left(\frac{d_1-d_2}{d_1}\right)V$ (4) $\frac{d_1}{d_2}V$

Q.25 A uniform rod of length *l* and mass m is fixed at the centre. A spring of spring constant k is connected to rod and wall as shown in figure. The rod is displaced by small angle θ and released. Find time period of oscillation.



(1) $2\pi\sqrt{\frac{m}{k}}$ (2) $2\pi\sqrt{\frac{m}{2k}}$

(3) $2\pi\sqrt{\frac{3m}{k}}$ (4) $2\pi\sqrt{\frac{m}{3k}}$

SECTION-b [CHEMISTRY]

Q.26 The ratio of pH of 0.05 M and 0.005 M H_2SO_4 solutions will be –

(1) 2 : 1 (2) 1 : 2

(3) 1 : 1.5 (4) 1.5 : 1

Q.27 A buffer that is a mixture of acetic acid ($K_a = 2 \times 10^{-5}$) and potassium acetate has pH = 5.18. The $\frac{[CH_3COO^-]}{[CH_3COOH]}$ ratio in this buffer is approx -

(1) 1 : 1 (2) 3 : 1

(3) 5 : 1 (4) 1 : 3

Q.28 M $(OH)_x$ has a K_{sp} of 4×10^{-9} and its solubility is 10^{-3} M. The value of x is :

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

Q.29 What is the conjugate acid of HPO_4^{2-} ?

(1) H_3PO_4 (2) $H_2PO_4^-$

(3) H_3O^+ (4) PO_4^{3-}

Q.30 At temperature, *T*, a compound $AB_{2(g)}$ dissociates according to the reaction $2AB_{2(g)} \rightleftharpoons 2AB_{(g)} + B_{2(g)}$ with a degree of dissociation *x*, which is small compared with unity. The expression for K_p, in terms of *x* and the total pressure, *P* is :

(1) $\frac{Px^3}{2}$ (2) $\frac{Px^2}{3}$ (3) $\frac{Px^3}{3}$ (4) $\frac{Px^2}{2}$

Space for rough work

Q.31 The value of K_c at 721 K temperature for following reaction is 50.
$N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$ if equilibrium concentration of N_2 and O_2 is 0.5 M then value of K_p is -

(1) 0.02 (2) 0.2 (3) 50.0 (4) $\frac{50}{RT}$

Q.32 The equilibrium constant for equilibria,

$SO_2(g) + \frac{1}{2} O_2(g) \rightleftharpoons SO_3(g)$ and

$2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)$ are K_1 and K_2 respectively. Then -

(1) $K_2 = K_1$ (2) $K_2 = K_1^2$

(3) $K_2 = 1/K_1$ (4) $K_2 = 1/K_1^2$

Q.33 Which oxide of nitrogen is the most stable :

(1) $2NO_{2(g)} \rightleftharpoons N_{2(g)} + 2O_{2(g)}$;
$K = 6.7 \times 10^{16}$ mol litre^{-1}

(2) $2NO_{(g)} \rightleftharpoons N_{2(g)} + O_{2(g)}$;
$K = 2.2 \times 10^{30}$ mol litre^{-1}

(3) $2N_2O_{5(g)} \rightleftharpoons 2N_{2(g)} + 5O_{2(g)}$;
$K = 1.2 \times 10^{34}$ mol litre^{-1}

(4) $2N_2O_{(g)} \rightleftharpoons 2N_{2(g)} + O_{2(g)}$;
$K = 3.5 \times 10^{33}$ mol litre^{-1}

Q.34 The relative rates of effusion of O_2 to CH_4 through a container containing O_2 and CH_4 in 3 : 2 mass ratio will be -

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

(3) $\frac{3}{2\sqrt{2}}$ (4) none of these

Q.35 Equation for Boyle's law is

(1) $\frac{d^2P}{P} = -\frac{dV}{dT}$ (2) $\frac{d^2P}{P} = \frac{+d^2V}{P}$

(3) $\frac{-dP}{dV} = \frac{K}{V^2}$ (4) $\frac{dP}{P} = \frac{+dV}{V}$

Q.36 What is the total pressure in 10 litre flask at 27°C of a sample of gas that contain 6 gram of hydrogen, 15.2 gram of N_2 and 16.8 gram of helium -

(1) 1.91 atm (2) 2.46 atm
(3) 5.89 atm (4) 19.1 atm

Q.37 The number of spectral lines produced according to Bohr's concept when one electron jumps from 5^{th} to 2^{nd} shell are -

(1) 6 (2) 8
(3) 10 (4) 12

Q.38 The K.E. of electron in 2^{nd} orbit of Li^{+2} ion -

(1) – 30.6 eV (2) + 30.6 eV
(3) +13.6 eV (4) +27.4 eV

Q.39 The number of radial nodes of 3s and 2p-orbitals are respectively :

(1) 2, 0 (2) 0, 2
(3) 1, 2 (4) 2, 1

Q.40 Maximum value (n + ℓ + m) for unpaired electrons in second excited state of chlorine $_{17}Cl$ is :

(1) 28 (2) 25 (3) 20 (4) 30

Space for rough work

Q.41 The energies E_1 and E_2 for two radiations are 2.5 eV and 5.0 eV respectively. The relation between their wavelengths i.e., λ_1 and λ_2 will be -

(1) $\lambda_1 = \frac{1}{2}\lambda_2$ (2) $\lambda_1 = \lambda_2$

(3) $\lambda_1 = 2\lambda_2$ (4) $\lambda_1 = 4\lambda_2$

Q.42 The electronic configuration of few elements are given below. Arrange them in correct order of their electron affinity –

I. $1s^2\ 2s^2\ 2p^5$ II. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^5$

III. $1s^2\ 2s^2\ 2p^4$ IV. $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$

(1) I < II < III < IV (2) I < III < II < IV

(3) II > I > IV > III (4) II > I > III > IV

Q.43 The correct order of radii is -

(1) N < Be < B

(2) $F^- < O^{2-} < N^{3-}$

(3) Na < Li < K

(4) $Fe^{3+} < Fe^{2+} < Fe^{4+}$

Q.44 Which species has the maximum ionic radius -

(1) Na^+ (2) O^{2-} (3) F^- (4) Mg^{2+}

Q.45 Select correct statements about $NO[BF_4]$

(a) It has 5σ and 2π bonds

(b) Nitrogen-oxygen bond length is higher than nitric oxide (NO)

(c) It has diamagnetic species

(d) B–F bond length in this compounds is lower than in BF_3

(1) a, c (2) a, c, d

(3) a, b, c (4) b, c, d

Q.46 Among LiCl, $BeCl_2$, BCl_3 and CCl_4, the covalent bond character follows the order-

(1) $LiCl < BeCl_2 > BCl_3 > CCl_4$

(2) $LiCl > BeCl_2 < BCl_3 < CCl_4$

(3) $LiCl < BeCl_2 < BCl_3 < CCl_4$

(4) $LiCl > BeCl_2 > BCl_3 > CCl_4$

Q.47 Which of the following two 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.48 The correct order of increasing C—O bond length of CO, CO_3^{2-}, CO_2 is -

(1) $CO_3^{2-} < CO_2 < CO$

(2) $CO_2 < CO_3^{2-} < CO$

(3) $CO < CO_3^{2-} < CO_2$

(4) $CO < CO_2 < CO_3^{2-}$

Q.49 Number of electrons present in 3.6 mg of NH_4^+ are:

(1) 1.2×10^{21} (2) 1.2×10^{20}

(3) 1.2×10^{22} (4) 2×10^{-3}

Q.50 1.5 g of a divalent metal displaced 4 g of copper (at. Wt. = 64) from a solution of copper sulphate. The atomic weight of the metal is -

(1) 12 (2) 24

(3) 48 (4) 6

Space for rough work

SECTION-c [MATHEMATICS]

Q.51 Value of $\log_6\left(\sqrt{2-\sqrt{3}}+\sqrt{2+\sqrt{3}}\right)$ is

(1) Negative integer
(2) Rational but not integer
(3) Irrational
(4) Prime

Q.52 Value of $\frac{(x-1)^3+(2x-1)^3-(3x-2)^3}{(x-1)(2x-1)(3x-2)}$ is equal to

(1) –3 (2) 0
(3) 1 (4) 3

Q.53 Let n is the number of natural numbers N such that $\log_2 N = 5 + m_1$ and $\log_5 N = 2 + m_2$ where $m_1, m_2 \in [0, 1)$, then n is

(1) Divisible by 3 (2) Divisible by 5
(3) Divisible by 4 (4) None of these

Q.54 The value of
$\sin 660° - \cos 1230° - (\tan 47° - \tan 23°)\cos 270°$
is

(1) 0 (2) 1
(3) $-\frac{\sqrt{3}}{2}$ (4) $-\sqrt{3}$

Q.55 $\frac{\cot^2\frac{\pi}{6}+\operatorname{cosec}\frac{5\pi}{6}+3\tan^2\frac{7\pi}{6}}{2\cos^2\frac{\pi}{3}+\operatorname{cosec}^2\frac{7\pi}{6}.\cot^2\frac{\pi}{3}}$ is equal to

(1) $\frac{1}{11}$ (2) $\frac{12}{11}$ (3) $\frac{36}{11}$ (4) $\frac{84}{11}$

Q.56 If $\operatorname{cosec} x = \frac{2}{\sqrt{3}}$ and $\cot x = -\frac{1}{\sqrt{3}}$, $x \in [0, 2\pi]$ then value of $\cos x + \cos 2x + \cos 3x$ is equal to

(1) 0 (2) $-\frac{1}{2}$
(3) $\frac{1}{2}$ (4) $\frac{\sqrt{3}}{2}$

Q.57 If θ_1, θ_2, θ_3 are three different values of $\theta \in [0, 2\pi]$ for which $\sin\theta = \lambda$, then the value of $\tan\frac{\theta_1}{3}.\tan\frac{\theta_2}{3} + \tan\frac{\theta_2}{3}.\tan\frac{\theta_3}{3} + \tan\frac{\theta_1}{3}.\tan\frac{\theta_3}{3}$ is equal to (λ is constant)

(1) 1 (2) $\sqrt{3}$ (3) 3 (4) – 3

Q.58 If $\sec\theta - \tan\theta = 3$, then value of $\sin 3\theta$ is equal to

(1) $-\frac{108}{125}$ (2) $\frac{108}{125}$
(3) $\frac{44}{125}$ (4) $-\frac{44}{125}$

Q.59 The real value of 'a' for which exactly one root of equation $(a^2 + 2a - 3)x^2 + (a^2 - 2a - 15)x + a^2 = 1$ lies at infinity is

(1) – 3 (2) – 1 (3) 1 (4) None

Q.60 If the equations $x^2 + ax + a = 0$ & $x^2 + 2x + a = 0$ where $a \in R$ has at least one common root, then number of different values of 'a' is

(1) 0 (2) 1
(3) 2 (4) more than 2

Space for rough work

Q.61 If range of $f(x) = x^2 - 2ax + 4$ is $[0, \infty)$, then which of following is correct ?

(1) $\forall\ a \in [-2, 2]$

(2) $a = -2$ or 2

(3) $\forall\ a \in (-\infty, -2] \cup [2, \infty)$

(4) None of these

Q.62 The sum of maximum & minimum distance from the point (2, 2) to circle $x^2 + y^2 + 4x - 10y - 7 = 0$ is

(1) 10 (2) 11 (3) 12 (4) 16

Q.63 Locus of image of point (–1, 1) in the line $(5x - 2y - 7) + \lambda (2x - 3y + 6) = 0$ $(\lambda \in R)$ is

(1) $x^2 + y^2 + 6x + 8y = 0$

(2) $x^2 + y^2 + 6x + 8y + 25 = 0$

(3) $x^2 + y^2 - 6x - 8y - 25 = 0$

(4) $x^2 + y^2 - 6x - 8y = 0$

Q.64 Let x is GM of two positive number and y and z are two AM inserted between the numbers then $\frac{(2y - z)(2z - y)}{x^2}$ equals

(1) 2 (2) 1 (3) 3 (4) None

Q.65 If the roots of equation $ax^3 + bx^2 - x + 1 = 0$ are in H.P then $\left|\frac{b_{max}}{a_{min}}\right|$ equals

(1) 3 (2) 6 (3) 9 (4) None

Q.66 The three distinct points $A(t_1^2, 2t_1)$, $B(t_2^2, 2t_2)$, C(0, 1) are collinear, if

(1) $t_1t_2 = -1$ (2) $t_1t_2 = 1$

(3) $2t_1t_2 = t_1 + t_2$ (4) $t_1 + t_2 = 1$

Q.67 The slope of straight line through A(4, 3) is $\frac{4}{3}$. The co-ordinate of point on the line that are 5 unit away from A is

(1) (1, 1) (2) (–1, 1)

(3) (1, –1) (4) (–1, –1)

Q.68 Let $f(x) = 2x^2 - p(p + 1)x + 100$.
${}^pC_r$ and ${}^pC_{r-1}$ are roots of equation $f(x) = 0$ where 'p' is prime number then

${}^{10p+2}C_{r+1} + \sum_{r=2}^{9} {}^{10p+r}C_{r+2}$ equals to

(1) ${}^{59}C_{10}$ (2) ${}^{59}C_{11}$

(3) ${}^{60}C_{11}$ (4) ${}^{60}C_{40}$

Q.69 Let a^2, a (b – 3), 4b are first three terms of an increasing A.P. where $a, b \in I$ and $5 \le b \le 15$ then value of $\left(\frac{b}{a}\right)$ is equal to

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

Q.70 In the above ques, if S_n is sum of first n terms of given AP then $\left(\frac{S_7 - S_4}{19}\right)$ is equal to

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

Q.71 If $(1 + x)^n = C_0 + C_1x + C_2x^2 + ... + C_nx^n$ then the value of $C_0 + 2C_1 + 3C_2 + ... (n + 1)C_n$ with be

(1) $(n + 2)\ 2^{n-1}$ (2) $(n + 1)\ 2^n$

(3) $(n + 1)\ 2^{n-1}$ (4) $(n + 2)\ 2^n$

Space for rough work

Q.72 If letters of word SACHIN arranged in all possible ways and these words are written out as in dictionary, then the word SACHIN appears at serial number

(1) 603 (2) 602

(3) 601 (4) 600

Q.73 Number of six digit number divisible by 5 such that they can be formed using the digit 4, 2, 5, 0, 6, 7 each digit to be used exactly once is

(1) 308 (2) 240

(3) 216 (4) None

Q.74 Two non congruent circles are externally tangent. The product of their radii is an integer k between 1 and 100 inclusive. Number of values of 'k' for which the length of an external tangent is also an integer is

(1) 10 (2) 9

(3) 8 (4) 7

Q.75 What is sum of coefficients of the polynomial after expansion of

$(25 - 60x + 22x^2 + 18x^3 - 6x^8)^{2013}$

(1) 1 (2) – 1

(3) 5262 (4) 0

Space for rough work

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