Discover the Star within you and Get Rewarded

Paper Code: 01

CAREER POINT

STAR

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

CLASS - 12th (PCM)

(Class 12th 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**

DO NOT OPEN THE PAPER WITHOUT BEING INSTRUCTED TO DO SO BY THE INVIGILATOR
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SECTION-a [PHYSICS]

Q.1 Three point charges are placed at the corners of an equilateral triangle. Assuming only electrostatic forces are acting -

(1) the system can never be equilibrium

(2) the system will be in equilibrium if the charges rotate about the centre of the triangle

(3) the system will be in equilibrium if the charges have different magnitudes and different signs

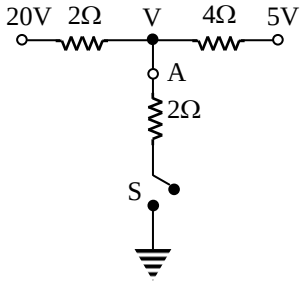
(4) the system will be in equilibrium if the charges have the same magnitude but different signs

Q.2 Two equal charges are placed at a separation d. What value of a third charge be placed so that all the three charges are in equilibrium -

(1) $-\frac{q}{4}$ (2) $\frac{q}{4}$

(3) q (4) $-q$

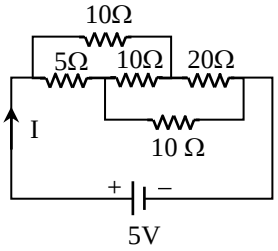
Q.3 A switch S is closed in the circuit shown in 20V figure, current passed through point A is-



(1) 4.5 A (2) 6.0 A

(3) 3.0 A (4) 0

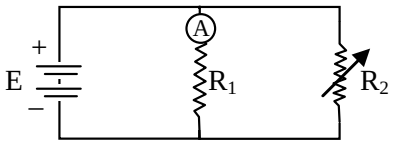
Q.4 The current I drawn from the 5 volt source will be-



(1) 0.17 A (2) 0.33 A

(3) 0.5 A (4) 0.67 A

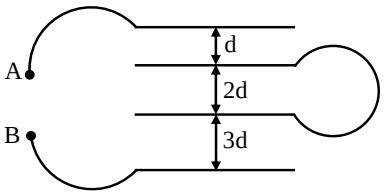
Q.5 In the given circuit in which case the ammeter reading will not change when R_2 is varied



(1) $R_1 = r$ (2) $R_1 = 2r$

(3) $R_1 > R_2$ (4) $r = 0$

Q.6 If area of each plate is A and the successive separations are d, 2d and 3d, then equivalent capacitances across A and B is-

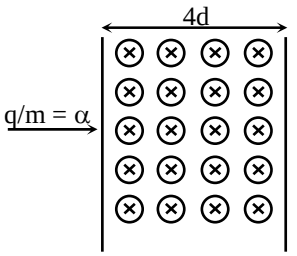


(1) $\frac{\epsilon_0 A}{6d}$ (2) $\frac{\epsilon_0 A}{4d}$

(3) $\frac{3\epsilon_0 A}{4d}$ (4) $\frac{\epsilon_0 A}{3d}$

Space for rough work

Q.7 If a charged particle of charge to mass ratio $\frac{q}{m} = \alpha$ enters in a magnetic field of strength B at a speed $v = (2\alpha d)(B)$, then –



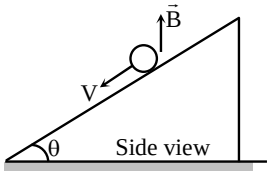
(1) angle subtended by the path of charged particle in magnetic field at the center of circular path is 2π

(2) the charge will move on a circular path and then will come out from magnetic field at some distance from the point of insertion

(3) the time for which particle will be in the magnetic field is $\frac{2\pi}{\alpha B}$

(4) angle subtended by the path of charged particle in magnetic field at the center of circular path is $\pi/2$

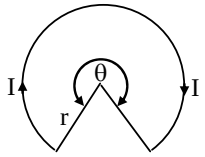
Q.8 A conducting rod of length ℓ and mass m is moving down a smooth inclined plane of inclination θ with constant velocity v. A current i is flowing in the conductor in a direction perpendicular to paper inward. A vertically upward magnetic field $\vec{B}$ exists in space. Then, magnitude of magnetic field $\vec{B}$ is -



(1) $\frac{mg}{i\ell}\sin\theta$ (2) $\frac{mg}{i\ell}\tan\theta$

(3) $\frac{mg\cos\theta}{i\ell}$ (4) $\frac{mg}{i\ell\sin\theta}$

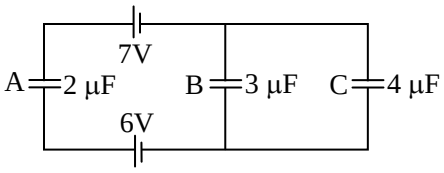
Q.9 A current I is flowing in a loop of radius r as shown in figure. The magnetic field induction at the centre O will be -



(1) $\frac{\mu_0 I\sin\theta}{4\pi r}$ (2) $\frac{2\mu_0 I\sin\theta}{4\pi r}$

(3) $\frac{2\mu_0 I\sin\theta}{4\pi r^2}$ (4) $\frac{\mu_0 I\theta}{4\pi r}$

Q.10 Three capacitors A, B and C are connected in a circuit as shown in the figure. What is the charge in μC on the capacitor B?



(1) 1/3 (2) 2/3

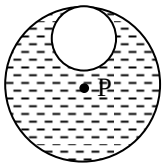
(3) 1 (4) 4/3

Space for rough work

Q.11 A 1.0 μF capacitor is charged to 50V. The charging battery is disconnected and a 10mH coil is connected across the condenser, so that LC oscillations occur. The maximum current in the circuit (R = 0) is
(1) 9.25A (2) 0.5 A (3) 0.75 A (4) 1.0 A

Q.12 In an *LCR* circuit the potential difference between the terminals of the inductance is 60 V, between the terminals of the capacitor is 30 V and that between the terminals of resistance is 40 V. The supply voltage will be :
(1) 25 V (2) 50 V (3) 100 V (4) 200 V

Q.13 A cavity is made inside a negatively charge sphere of volume charge density ρ. Which of the following field pattern is correct in the cavity ?



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

Q.14 The electric field in a region is given by $\vec{E} = \frac{E_0 x}{l}\,\hat{i}$. The charge contained inside a cubical volume bounded by the surfaces x = 0, x = *l*, y = 0, y = *l*, z = 0 and z = *l* is -
(1) $2\varepsilon_0 E_0 l^2$ (2) $\varepsilon_0 E_0 l^2$ (3) $6\varepsilon_0 E_0 l^2$ (4) zero

Q.15 The count rate observed from a radioactive source at t second was N_0 and at 4t second it was $\frac{N_0}{16}$. The count rate observed, at $\left(\frac{11}{2}\right)$ t second will be -
(1) $\frac{N_0}{128}$ (2) $\frac{N_0}{64}$
(3) $\frac{N_0}{32}$ (4) None of these

Q.16 The activity of a radioactive sample is 1.6 curie and its half-life is 2.5 days. Its activity after
10 days will be -
(1) 0.8 curie (2) 0.4 curie
(3) 0.1 curie (4) 0.16 curie

Q.17 Two nuclei have their mass numbers in the ratio of 1 : 3. The ratio of their nuclear densities would be -
(1) $(3)^{1/3} : 1$ (2) 1 : 1
(3) 1 : 3 (4) 3 : 1

Q.18 When stopping potential is applied in an experiment on photoelectric effect, no photocurrent is observed. This means that -
(1) the emission of photoelectrons is stopped
(2) the photoelectrons are emitted but are reabsorbed by the emitter metal
(3) the photoelectrons are accumulated near the collector plate
(4) the photoelectrons are dispersed from the sides of the apparatus

Space for rough work

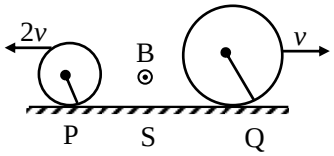
Q.19 If de-broglie wavelength of a moving particle becomes half then change in kinetic energy of particle is -
(1) Equal to initial value
(2) Twice the initial value
(3) Thrice the initial value
(4) Half the initial

Q.20 A concave mirror of focal length 10 cm and a convex mirror of focal length of 15 cm are placed facing each other 40 cm apart. A point object is placed between the mirrors, on their common axis and 15 cm from the concave mirror. Find the position and nature of the image produced by successive reflections, first at the concave mirror and then at the convex mirror.
(1) 12 cm behind convex mirror, real
(2) 9 cm behind convex mirror, real
(3) 6 cm behind convex mirror, virtual
(4) 3 cm behind convex mirror, virtual

Q.21 A thin plano-convex lens acts like a concave mirror of focal length 0.2 m, when silvered on its plane surface. The refractive index of the lens material is 1.5. The radius of curvature of the convex surface of the lens will be-
(1) 0.1 m (2) 0.2 m (3) 0.4 m (4) 0.8 m

Q.22 If a vessel of depth 21 cm is filled with water upto some height then it appears to be half filled. Then height of water column is -
(μ_{Water} = 4/3)
(1) 12 cm (2) 10.5 cm (3) 9 cm (4) 21 cm

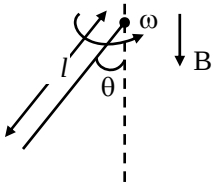
Q.23 Two conducting rings P and Q of radii r and 2r moving uniformly in opposite directions with centre of mass velocities 2*v* and *v* respectively on a conducting surface S. There is a uniform magnetic field of magnitude B perpendicular to the plane of the rings. The potential difference between the highest points of the two rings is



(1) zero (2) 4 B*vr* (3) 8 B*vr* (4) 16 B*vr*

Q.24 A coil is placed in a transverse magnetic field of 0.02 T. If this coil starts shrinking at a rate of 1 mm/s, while its radius remains 4 cm, then what is the value of induced e.m.f. ?
(1) 2 μV (2) 5 μV (3) 8 μV (4) 50 μV

Q.25 A rod of length *l* rotates in the form of a conical pendulum with an angular velocity ω about its axis as shown in figure. The rod makes an angle θ with the axis. The magnitude of the motional e.m.f. developed across the two ends of the rod is



(1) $\frac{1}{2}B\omega l^2$ (2) $\frac{1}{2}B\omega l^2\tan^2\theta$

(3) $\frac{1}{2}B\omega l^2\cos^2\theta$ (4) $\frac{1}{2}B\omega l^2\sin^2\theta$

Space for rough work

SECTION-b [CHEMISTRY]

Q.26 For the reaction, $2NH_3(g) \rightarrow N_2(g) + 3H_2(g)$

$-\frac{d[NH_3]}{dt} = k_1[NH_3]$; $\frac{d[N_2]}{dt} = k_2[NH_3]$;

$\frac{d[H_2]}{dt} = k_3[NH_3]$. The relation between k_1, k_2 and k_3 may be given as -

(1) $1.5\ k_1 = 3k_2 = k_3$ (2) $2\ k_1 = k_2 = 3k_3$

(3) $k_1 = k_2 = k_3$ (4) $k_1 = 3k_2 = 2k_3$

Q.27 The equivalent conductivities at infinite dilution of the cation and the anion of a salt A_2B are 140 and 80 $ohm^{-1}\ cm^2\ eq^{-1}$ respectively. The equivalent conductivity of the salt at infinite dilution is -

(1) 160 $ohm^{-1}\ cm^2\ eq^{-1}$

(2) 220 $ohm^{-1}\ cm^2\ eq^{-1}$

(3) 60 $ohm^{-1}\ cm^2\ eq^{-1}$

(4) 360 $ohm^{-1}\ cm^2\ eq^{-}$

Q.28 A body centered cubic lattice is made up of hollow spheres of B. Spheres of solid A are present in hollow spheres of B. Radius A is half of radius of B. What is the ratio of total volume of spheres of B unoccupied by A in a unit cell and volume of unit cell ?

(1) $\frac{7\sqrt{3\pi}}{64}$ (2) $\frac{7\sqrt{3}}{128}$

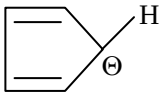
(3) $\frac{7.\pi}{24}$ (4) $\frac{7\pi}{64\sqrt{3}}$

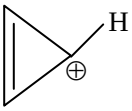
Q.29 A solution of $CaCl_2$ was prepared by dissolving 0.0112 g in 1 kg of distilled water (molar mass of Ca = 41 g mol^{-1} and Cl 35.5 g mol^{-1}). The freezing point constant of water is 2 kg mol^{-1}-. The depression in the freezing point of the solution is -

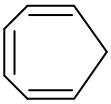
(1) 0.0002 (2) 0.002

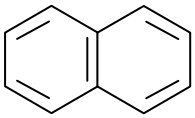
(3) 0.003 (4) 0.0006

Q.30 Which one of the following compounds is not aromatic ?

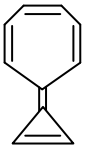
(1) 

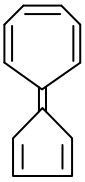
(2) 

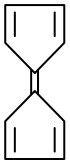
(3) 

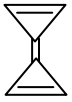
(4) 

Q.31 Which of the following molecules is expected to have the greatest resonance stabilization ?

(1) 

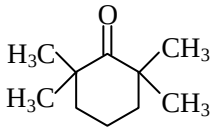
(2) 

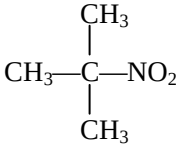
(3) 

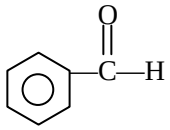
(4) 

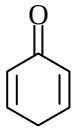
Space for rough work

Q.32 Which can show tautomerism ?

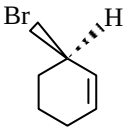
(1) 

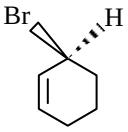
(2) 

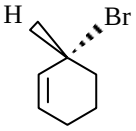
(3) 

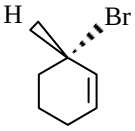
(4) 

Q.33 Which of the following statements about the relationship of the structure (P), (Q), (R) and (S) is incorrect ?


(P)


(Q)


(R)


(S)

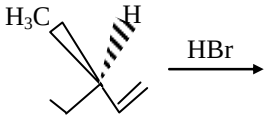
(1) P and R are enantiomers

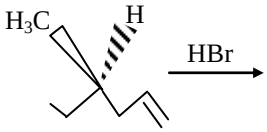
(2) P and R are identical

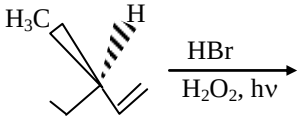
(3) Q and S are identical

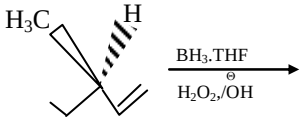
(4) P and Q are enantiomers

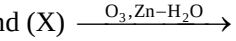
Q.34 Which of the follwing reactions results in the formation of a pair of diastereomers ?

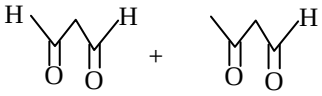
(1) 

(2) 

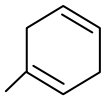
(3) 

(4) 

Q.35 Compound (X) 

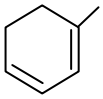


Find the structure of (X) -

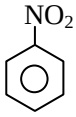
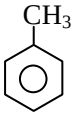
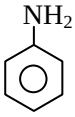
(1) 

(2) 

(3) 

(4) 

Q.36 Which shows Friedel craft reaction -

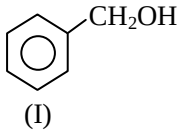
(a)  (b)  (c)  (d) 

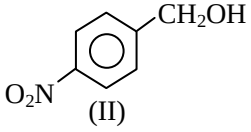
(1) a, b, c and d (2) a, b and c

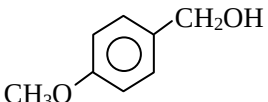
(3) a and c (4) a, c and d

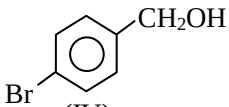
Space for rough work

Q.37 Consider the following alcohols :


(I)


(II)


(III)

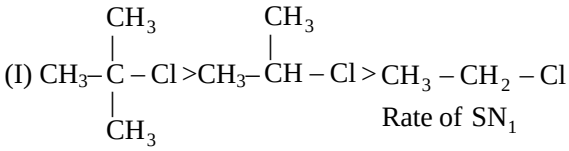

(IV)

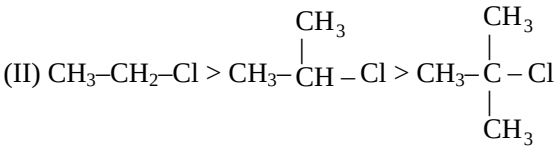
The order of decreasing reactivities of these alcohols towards substitution with HBr is-

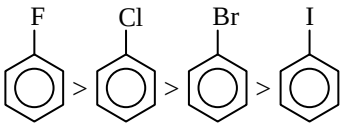
(1) III > I > IV > II (2) III > I > II > IV

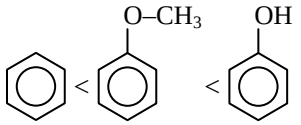
(3) I > III > IV > II (4) I > III > II > IV

Q.38 Which is correct order -


Rate of SN_1


Rate of SN_2 reaction


Rate of SNAR


Rate of EAS

(1) I, III, IV only (2) I, II, III, IV

(3) I, II, III only (4) I, II only

Q.39 During dehydration of alcohols to alkenes by heating with conc. H_2SO_4, the initiation step is -

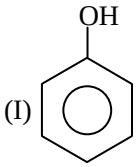
(1) elimination of water

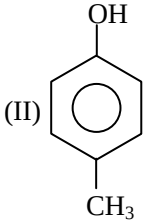
(2) formation of an ester

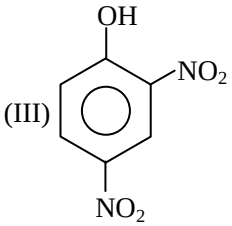
(3) formation of carbocation

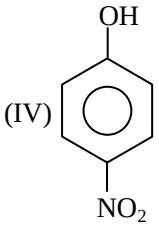
(4) protonation of alcohol molecule

Q.40 The strength of acidity is in the order -


(I)


(II)


(III)


(IV)

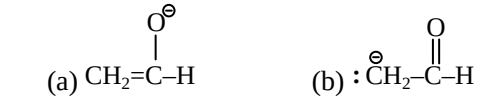
(1) II > I > III > IV (2) III > IV > I > II

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

Q.41 $CH_3–CHO \xrightarrow{OH^-} CH_3CH(OH)CH_2CHO$

In the aldol condensation of acetaldehyde represented above, which of the following intermediate species are involved -

(a)

(b) 

(c)

(1) Only a (2) Only b

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

Space for rough work

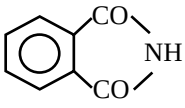
Q.42 Hydration formation of the following is on order –

$CCl_3 - CHO$ [I] $\qquad CF_3CHO$ [II]

$CH_3 - \overset{\overset{O}{\|}}{C} - CH_3$ [III] $\qquad CCl_3 - \overset{\overset{O}{\|}}{C} - CH_3$ [IV]

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

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

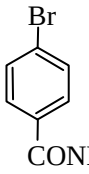
Q.43  $\xrightarrow{KOH}$ A $\xrightarrow{C_2H_5Br}$ B $\xrightarrow[H^+]{HOH}$ C + D , C and D in the sequence are-

(1) Benzoic acid + aniline

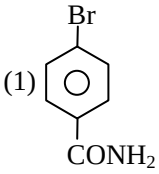
(2) Phthalic acid + ethylamine

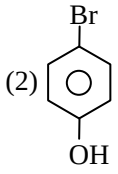
(3) Phthalic acid + aniline

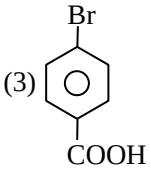
(4) Benzoic acid + ethylamine

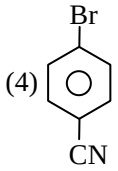
Q.44  $\xrightarrow[\Delta]{P_2O_5}$ [A] $\xrightarrow{dil.H_2SO_4}$ [B]

The end product [B] will be -

(1) 

(2) 

(3) 

(4) 

Q.45 The compound $(SiH_3)_3N$ is expected to be :

(1) pyramidal and more basic than $(CH_3)_3N$

(2) planar and less basic than $(CH_3)_3N$

(3) pyramidal and less basic than $(CH_3)_3N$

(4) planer and more basic than $(CH_3)_3N$

Q.46 The property of halogen acids, that indicated incorrect is:

(1) HF > HCl > HBr > HI ..... acidic strength

(2) HI > HBr > HCl > HF ..... reducing strength

(3) HI > HBr > HCl > HF ..... bond length

(4) HF > HCl > HBr > HI ..... thermal stability

Q.47 Which of the following statements is correct ?

(1) $[Cu(NH_3)_6]^{2+}$ is a colourless ion

(2) $[Ni(CN)_4]^{2-}$ ion has a tetrahedral shape

(3) $[Zn(H_2O)_6]^{2+}$ ion is blue coloured

(4) Nickel dimethylglyoxime is red in colour

Q.48 *IUPAC* name of $[Cr(NH_3)_5(NCS)]\,[ZnCl_4]$ is

(1) Pentaminethiocyanato-N-chromium(III) tetrachloridozincate (II)

(2) thiocyanato-N-pentaminechromium(III) tetrachloridozincate (II)

(3) tetrachloridozinc(II) pentaminethiocyanatochromate (III)

(4) Pentammineisothiocynatochromium (III) tetrachlorozincate (II)

Q.49 Which of the following is correct electronic distribution for $[Cr(NH_3)_6]Cl_3$

(1) t_2g^3, eg^0 (2) eg^2, t_2g^1

(3) eg^3, t_2g^0 (4) t_2g^2, eg^1

Space for rough work

Q.50 Extraction of zinc from zinc blende is achieved by -

(1) Electrolytic reduction

(2) Roasting followed by reduction with carbon

(3) Roasting followed by reduction with another metal

(4) roasting followed by self reduction

SECTION-C [MATHEMATICS]

Q.51 The last three digits of the number $N = 7^{100} - 3^{100}$ are

(1) 100 (2) 300

(3) 500 (4) 000

Q.52 If $f(x) = \begin{vmatrix} a & -1 & 0 \\ ax & a & -1 \\ ax^2 & ax & a \end{vmatrix}$, then $f(2x) - f(x)$ equals :

(1) $a(2a + 3x)$ (2) $ax(2x + 3a)$

(3) $ax(2a + 3x)$ (4) $x(2a + 3x)$

Q.53 $\lim\limits_{x \to \pi/6} \left[\dfrac{3\sin x - \sqrt{3}\cos x}{6x - \pi} \right] =$

(1) $\sqrt{3}$ (2) $\dfrac{1}{\sqrt{3}}$

(3) $-\sqrt{3}$ (4) $-\dfrac{1}{\sqrt{3}}$

Q.54 Function $f : R \to R$, $f(x) = x^2 + x$ is-

(1) One-one onto (2) One-one into

(3) Many one onto (4) Many one into

Q.55 Consider the function

$f(x) = \begin{bmatrix} 2 + x^3 & \text{if} & x \le 1 \\ 3x & \text{if} & x > 1 \end{bmatrix}$, then

(1) f is continuous on [–1, 2] but is not differentiable on (–1, 2)

(2) Mean value theorem is not applicable for the function on [–1, 2]

(3) Mean value theorem is applicable on [–1, 2] and the value of c = 1

(4) Mean value theorem is applicable on [–1, 2] and the value of c is $\pm \dfrac{\sqrt{5}}{3}$

Q.56 If $\begin{vmatrix} y+z & x & x \\ y & z+x & y \\ z & z & x+y \end{vmatrix} = k(xyz)$, then k is equal to -

(1) 4 (2) –4

(3) 0 (4) None of these

Q.57 There are four balls of different colours and four boxes of colours same as those of the balls. The number of ways in which the balls, one in each box, could be placed such that a ball does not go to box of its own colour is -

(1) 8 (2) 7

(3) 9 (4) None

Space for rough work

Q.58 If a variable tangent to the curve $x^2y = c^3$ makes intercepts a, b on x and y axis respectively, then the value of a^2b is

(1) $27\ c^3$ (2) $\frac{4}{27}c^3$

(3) $\frac{27}{4}c^3$ (4) $\frac{4}{9}c^3$

Q.59 If $A = \begin{bmatrix} 1 & 2 & -1 \\ -1 & 1 & 2 \\ 2 & -1 & 1 \end{bmatrix}$, then det.(adj(adjA)) is

(1) $(14)^4$ (2) $(14)^3$

(3) $(14)^2$ (4) $(14)^1$

Q.60 $\int_0^{\pi/2} \sin^8 x \cos^2 x\ dx =$

(1) $\frac{7\pi}{52}$ (2) $\frac{7\pi}{51}$

(3) $\frac{7\pi}{12}$ (4) $\frac{7\pi}{512}$

Q.61 If A is a square matrix satisfying the equation $A^2 - 4A - 5I = O$, then $A^{-1} =$

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

(3) $\frac{1}{4}(A - 4I)$ (4) $\frac{1}{5}(A - 4I)$

Q.62 The area of the region enclosed between the curve $x^2 = 2y$ and the straight line $y = 2$ equals

(1) 4/3 (2) 8/3

(3) 16/3 (4) 32/3

Q.63 If $f(x) = x^5 - 20x^3 + 240x$, then f (x) satisfies which of the following

(1) It is decreasing everywhere

(2) It is decreasing only in $(0, \infty)$

(3) It is increasing every where

(4) It is increasing only in $(-\infty, 0)$

Q.64 The equation of the plane containing the line $\frac{x+1}{-3} = \frac{y-3}{2} = \frac{z+2}{1}$ and the point (0, 7, –7) is -

(1) $x + y + z = 1$ (2) $x + y + z = 2$

(3) $x + y + z = 0$ (4) None of these

Q.65 The solution of differential equation $\frac{dy}{dx} = \frac{y-x}{y+x}$ is -

(1) $\log_e (x^2 + y^2) + 2 \tan^{-1} \frac{y}{x} = c$

(2) $\frac{y^2}{2} + xy = x_3 - \frac{x^2}{2} + c$

(3) $\left(1+\frac{x}{y}\right)y = \left(1-\frac{x}{y}\right)x + c$

(4) $y = x - 2 \log_e y + c$

Space for rough work

Q.66 The plane $\frac{x}{2} + \frac{y}{3} + \frac{z}{4} = 1$, cuts the axes in A, B, C. Then the area of the ΔABC is-

(1) $\sqrt{29}$ (2) $\sqrt{41}$

(3) $\sqrt{61}$ (4) None

Q.67 The general solution of the equation $\frac{dy}{dx} = 1 + xy$ is -

(1) $y = ce^{-\frac{x^2}{2}}$ (2) $y = ce^{\frac{x^2}{2}}$

(3) $y = (x + c)e^{-\frac{x^2}{2}}$ (4) none of these

Q.68 If $\vec{a}$ $\vec{b}$, $\vec{c}$ are three non-coplanar vectors and $\vec{p}$, $\vec{q}$, $\vec{r}$ are defined by the relations

$\vec{p} = \frac{\vec{b} \times \vec{c}}{[\vec{a}\,\vec{b}\,\vec{c}]}$, $\vec{q} = \frac{\vec{c} \times \vec{a}}{[\vec{a}\,\vec{b}\,\vec{c}]}$, $\vec{r} = \frac{\vec{a} \times \vec{b}}{[\vec{a}\,\vec{b}\,\vec{c}]}$, then

$(\vec{a} + \vec{b}) . \vec{p} + (\vec{b} + \vec{c}) . \vec{q} + (\vec{c} + \vec{a}) . \vec{r} =$

(1) 0 (2) 1

(3) 2 (4) 3

Q.69 $\int_0^2 \sqrt{x + \sqrt{x + \sqrt{x + \ldots \infty}}}\, dx$ is equal to (x > 0)

(1) $\frac{19}{6}$ (2) $\frac{17}{6}$

(3) $\frac{13}{6}$ (4) $\frac{15}{6}$

Q.70 If $\vec{u}, \vec{v}, \vec{w}$ are vectors such that $\vec{u} + \vec{v} + \vec{w} = 0$, $|\vec{u}| = 3$, $|\vec{v}| = 4$ and $|\vec{w}| = 5$, then $\vec{u}.\vec{v} + \vec{v}.\vec{w} + \vec{w}.\vec{u}$ is equal to

(1) 0 (2) 25

(3) 47 (4) – 25

Q.71 A line makes same angle θ, with each of the *x* and *z*-axis. If the angle β, which it makes with *y*-axis, is such that $\sin^2\beta = 3\sin^2\theta$, then $\cos^2\theta$ equals :

(1) 2/3 (2) 1/5

(3) 3/5 (4) 2/5

Q.72 If $\sqrt{1 + \cos 2x} = \sqrt{2} \sin^{-1} \sin x$, $\forall\, x \in [-\pi, \pi]$. Then number of solutions is

(1) 2 (2) 3

(3) 4 (4) 5

Q.73 An unbiased coin is tossed n times. If the probability that head occurs 6 times is equal to the probability that head occurs 8 times, then n =

(1) 7 (2) 14

(3) 16 (4) 19

Space for rough work

Q.74 Let A and B be two events such that

$P(A \cap B') = 0.20$, $P(A' \cap B) = 0.15$,

$P(A' \cap B') = 0.1$, then $P(A/B)$ is equal to-

(1) 11/14 (2) 2/11

(3) 2/7 (4) 1/7

Q.75 If $\int \frac{1}{x + x^5} dx = f(x) + C$, then $\int \frac{x^4}{x + x^5} dx$ is

equal to -

(1) $\log | x | - f(x) + k$

(2) $\log | x | + f(x) + k$

(3) $x f(x) + k$

(4) $x \log | x | + k$

Space for rough work

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