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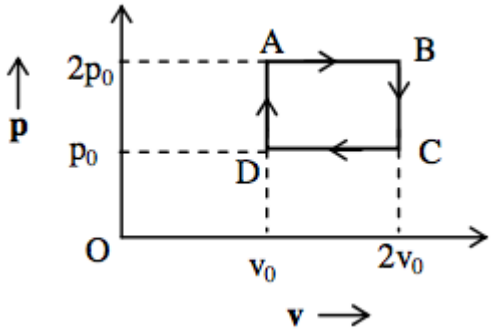
JEE MAIN SAMPLE PAPER

Paper 1 for B.Tech

SET A

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Physics



Q1.
The above p-v diagram represents the thermodynamic cycle of an engine, operating with an ideal monoatomic gas. The amount of heat extracted from the source in a single cycle is
1. $(13/12)p_0$ v
2. $(11/2)p_0$ v
3. 4 p_0 v
4. p_0 v

Correct. 2

Q2. A sonometer wire of length 1.5 m is made of steel. The tension in it produces an elastic strain of 1 %. What is the fundamental frequency of steel if density and elasticity of steel are 7.7×10^3 kg/m^3 and $2.2 \times 1011N/m^2$ respectively?
1. 178.2 Hz
2. 200.5 Hz
3. 770 Hz
4. 188.5 Hz

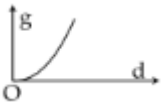
Correct. 1

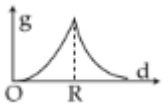
Q3. Unpolarized light of intensity I passes through an ideal polarizer A. Another identical polarizer B is placed behind A. The intensity of light beyond B is found to be 1/2. Now another identical polarizer C is placed between A and B. The intensity beyond B is now found to be 1/8 . The angle between polarizer A and C is :
1. 0°
2. 30°
3. 45°
4. 60°

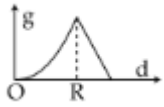
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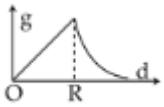
Correct. 3

Q4. The variation of acceleration due to gravity g with distance d from centre of the earth is best represented by (R=Earth's radius) :

1. , 

2. 

3. 

4. 

Correct. 4

Q5. In a Young's double slit experiment, slits are separated by 0.5 mm, and the screen is placed 150 cm away. A beam of light consisting of two wavelengths, 650 nm and 520 nm, is used to obtain interference fringes on the screen. The least distance from the common central maximum to the point where the bright fringes due to both the wavelengths coincide is :

1. 1.56 mm
2. 7.8 mm
3. 9.75 mm
4. 15.6 mm

Correct. 2

Q6. A particle A of mass m and initial velocity v collides with a particle B of mass m/2 which is at rest. The collision is head on, and elastic. The ratio of the de-Broglie wavelengths λ_A to λ_B after the collision is :

1. $\lambda_A/\lambda_B = 1/3$
2. $\lambda_A/\lambda_B = 2$
3. $\lambda_A/\lambda_B = 2/3$
4. $\lambda_A/\lambda_B = 1/2$

Correct. 2

Q7. The position co-ordinates of a particle moving in a 3-D coordinate system is given by

$X = a\cos\omega t$

$Y = a\sin\omega t$

and $z=a\omega t$

The speed of the particle is :

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1. 2aw
2. √3aω
3. √2aω
4. aω

Correct. 3

Q8. One of the two identical conducting wires of length L is bent in the form of a circular loop and the other one into a circular coil of N identical turns. If the same current is passed in both, the ratio of the magnetic field at the central of the loop (B_L) to that at the centre of the coil $(\mathrm{B_C})$ i.e. $\frac{B_L}{B_C}$ will be:
1. $\frac{1}{\mathrm{N}^2}$
2. N^2
3. N
4. $\frac{1}{N}$

Correct. 1

Q9. Two Carnot engines A and B are operated in series. The first one, A, receives heat at T,(=600 K) and rejects to a reservoir at temperature T_2. The second engine B receives heat rejected by the first engine and, in turn, rejects to a heat reservoir at T3(=400 K). Calculate the temperature $\mathrm{T_3}(=400\mathrm{K})$ if the work outputs of the two engines are equal :
1. 500 K
2. 300 K
3. 400 K
4. 600 K

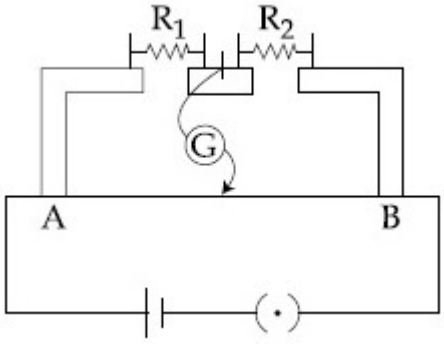
Correct. 1

Q10. An electric field of 1000 V/m is applied to an electric dipole at angle of 45°. The value of electric dipole moment is 10^{-29} C.m. What is the potential energy of the electric dipole?
1. $-20 \times 10^{-18}\mathrm{J}$
2. $-10 \times 10^{-29}\mathrm{I}$
3. $-7 \times 10^{-27}\mathrm{J}$
4. $-9 \times 10^{-20}\mathrm{J}$

Correct. 3

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Q11. In the experimental set up of metre bridge shown in the figure, the null point is obtained at a distance of 40 cm from A. If a 10 resistor is connected in series with R, the null point shifts by 10 cm. The resistance that should be connected in parallel with (R_1 +10) Ω such that the null point shifts back to its initial position is :



1. 30 Ω
2. 40 Ω
3. 20 Ω
4. 602

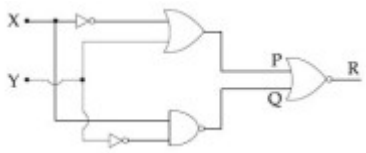
Correct. 4

Q12. A plano convex lens of refractive index μ_1 and focal length $f_1$is kept in contact with another plano concave lens of refractive index klip and focal length f2. If the radius of curvature of their spherical faces is R each and $f_1 = 2f_2$, then μ_1 and μ_2 are related as

1. $2\mu_2 - \mu_1 = 1$
2. $3\mu_2 - 2\mu_1 = 1$
3. $\mu_1 + \mu_2 = 3$
4. $2\mu_1 - \mu_2 = 1$

Correct. 4

Q13. To get output '1' at R, for the given logic gate circuit the input values must be :

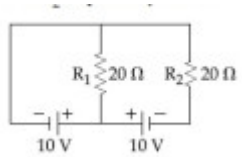


1. X=1, Y=1
2. X=1, Y=0
3. X=0, Y=1
4. X=0, Y=0

Correct. 2

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Q14. In the given circuit the cells have zero internal resistance. The currents (in Amperes) passing through resistance R_1 and R_2 respectively, are :



1. 0,1
2. 1, 2
3. 0.5, 0
4. 2,2

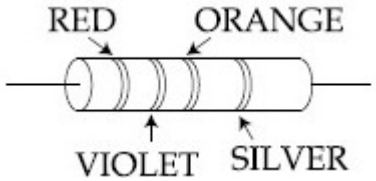
Correct. 3

Q15. A mixture of 2 moles of helium gas (atomic mass=4u), and 1 mole of argon gas (atomic mass= 40u) is kept at 300 K in a container. The ratio of their rms speeds [$\frac{V_{\mathrm{rms}}(\text{ helium })}{V_{\mathrm{rms}}(\text{ argon })}$], is close to:

1. 2.24
2. 0.32
3. 0.45
4. 3.16

Correct. 4

Q16. A resistance is shown in the figure. Its value and tolerance are given respectively by :



1. 27 kΩ, 20%
2. 270 Ω, 10%
3. 270 Ω,5%
4. 27 kΩ, 10%

Correct. 4

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Q17. For a uniformly charged ring of radius R, the electric field on its axis has the largest magnitude at a distance h from its centre. Then value of h is :

1. $\frac{R}{\sqrt{5}}$
2. $\frac{R}{\sqrt{2}}$
3. R
4. R $\mathrm{R}\sqrt{2}$

Correct. 2

Q18. Mobility of electrons in a semiconductor is defined as the ratio of their drift velocity to the applied electric field. If, for an n-type semiconductor, the density of electrons is 10^{19} m^{-3} and their mobility is 1.6 m^2 / (V.s) then the resistivity of the semiconductor (since it is an n-type semiconductor contribution of holes is ignored) is close to:

1. 0.2 Ωm
2. 4 Ωm
3. 2 Ωm
4. 0.4 Ωm

Correct. 4

Q19. A parallel plate capacitor is made of two square plates of side 'a', separated by a distance d (d<

1. $\frac{1}{2}\frac{\mathrm{K}\epsilon_0\mathrm{a}^2}{\mathrm{d}}$
2. $\frac{\mathrm{K}\epsilon_0\mathrm{a}^2}{\mathrm{d}(\mathrm{K}-1)}\ln \mathrm{K}$
3. $\frac{\mathrm{K}\epsilon_0\mathrm{a}^2}{2\mathrm{d}(\mathrm{K}+1)}$
4. $\frac{\mathrm{K}\epsilon_0\mathrm{a}^2}{\mathrm{d}}\ln \mathrm{K}$

Correct. 2

Q20. A travelling harmonic wave is represented by the equation $y(x,t) = 10^{-3}\sin(50t + 2x)$,where x and y are in meter and t is in seconds. Which of the following is a correct statement about the wave?

1. The wave is propagating along the positive x-axis with speed 25 ms^{-1}.
2. The wave is propagating along the positive x-axis with speed 100 ms^{-1}..
3. The wave is propagating along the negative x-axis with speed 25 ms^{-1}..
4. The wave is propagating along the negative x-axis with speed 100 ms^{-1}.

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Correct. 3

Q21. A particle A of mass 'm' and charge 'q' is accelerated by a potential difference of 50 V. Another particle B of mass '4 m' and charge 'q' is accelerated by a potential difference of 2500 V. The ratio of de-Broglie Wavelengths $\frac{\lambda_A}{\lambda_B}$ is close to ___ ?

Correct. 14.14

Q22. A magnetic needle of magnetic moment 6.7 × 10 −2 Am m^2 and moment of inertia 7.5×10−6 kg m^2 is performing simple harmonic oscillations in a magnetic field of 0.01 T. Time taken for 10 complete oscillations is __ (s):

Correct. 6.65

Q23. The least count of the main scale of a screw gauge is 1 mm. The minimum number of divisions on its circular scale required to measure 5μm diameter of a wire is _____.

Correct. 200

Q24. Water flows into a large tank with flat bottom at the rate of $10^{-4}\mathrm{m}^3\mathrm{s}^{-1}$ Water is also leaking out of a hole of area $1\mathrm{cm}^2$ at its bottom. If the height of the water in the tank remains steady, then this height is ___ (cm).

Correct. 5.1

Q25. A long cylindrical vessel is half filled with a liquid. When the vessel is rotated about its own vertical axis, the liquid rises up near the wall. If the radius of vessel is 5 cm and its rotational speed is 2 rotations per second, then the difference in the heights between the centre and the sides, in cm, will be _____.

Correct. 2.0

Chemistry

Q1. In which of the following pairs of molecules/ions, both the species are not likely to exist?

1. H_2^-, He_2^{2-}
2. H_2^{2+}, He_2
3. H_2^-, He_2^{2+}
4. H_2^+, He_2^{2-}

Correct. 2

Q2. How long (approximate) should water be electrolysed by passing through 100 amperes current so that the oxygen released can completely burn 27.66 g of diborane ? (Atomic weight of B=10.8 u)

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1. 6.4 hours
2. 0.8 hours
3. 3.2 hours
4. 1.6 hours

Correct. 3

Q3. Total number of lone pair of electrons in I_3^- ion is:
1. 3
2. 6
3. 9
4. 12

Correct. 3

Q4. The group having isoelectronic species is :
1. O^{2-}, F^-, Na, Mg^{2+}
2. O^-, F^-, Na^+, Mg^{2+}
3. O^{2-}, F^-, Na^+, Mg^{2+}
4. O^-, F^-, Na, Mg^+

Correct. 3

Q5. If the standard electrode potential for a cell is 2 V at 300 K, the equilibrium constant (K) for the reaction $\mathrm{Zn(s) + Cu^{2+}(aq) \rightleftharpoons Zn^{2+}(aq) + Cu(s)}$ at 300 K is approximately
$\left(\mathrm{R = 8JK^{-1}mol^{-1}, F = 96000Cmol^{-1}}\right)$
1. e^{-80}
2. e^{160}
3. e^{-160}
4. e^{320}

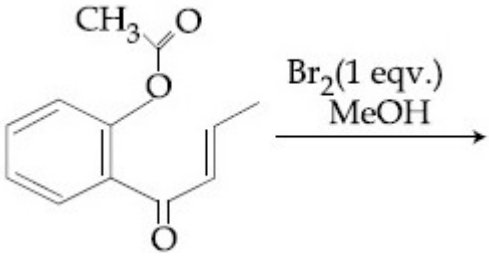
Correct. 2

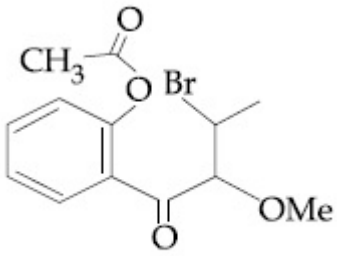
Q6. When the first electron gain enthalpy $\left(\Delta_{\mathrm{eg}}\mathrm{H}\right)$ of oxygen is - 141 kJ/mol, its second electron gain enthalpy is :
1. negative, but less negative than the first
2. a positive value
3. a more negative value than the first
4. almost the same as that of the first

Correct. 2

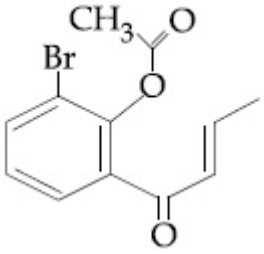
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Q7. The major product obtained in the following conversion is :

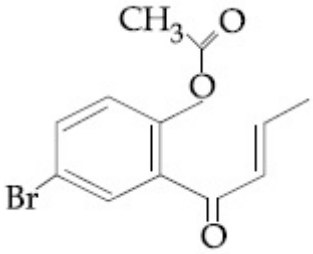




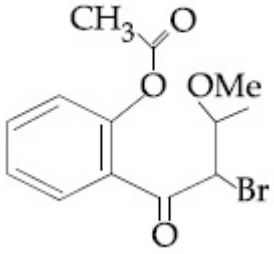
1.



2.



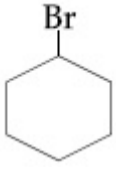
3.



4.

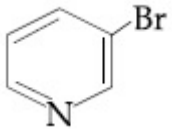
Correct. 4

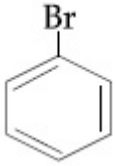
Q8. Which of the following compounds will produce a precipitate with $AgNO_3$?

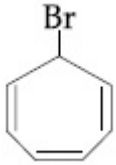


1.

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2. 

3. 

4. 

Correct. 4

Q9. The higher concentration of which gas in air can cause stiffness of flower buds ?

1. CO_2
2. CO
3. SO_2
4. NO_2

Correct. 3

Q10. The correct match between Item I and Item II is :

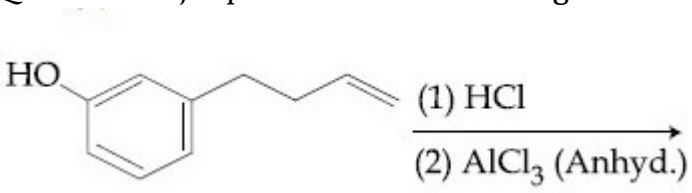
	Item I		Item II
(A)	Allosteric effect	(P)	Molecule binding to the active site of enzyme
(B)	Competitive inhibitor	(Q)	Molecule crucial for communication in the body
(C)	Receptor	(R)	Molecule binding to a site other than the active site of enzyme
(D)	Poison	(S)	Molecule binding to the enzyme covalently

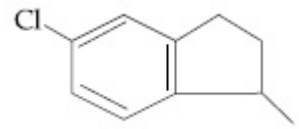
1. $(A) \rightarrow (P); (B) \rightarrow (R); (C) \rightarrow (D); (D) \rightarrow (Q)$
2. $(A) \rightarrow (R); (B) \rightarrow (P); (C) \rightarrow (Q); (D) \rightarrow (S)$
3. $(A) \rightarrow (P); (B) \rightarrow (R); (C) \rightarrow (Q); (D) \rightarrow (S)$
4. $(A) \rightarrow (R); (B) \rightarrow (P); (C) \rightarrow (S); (D) \rightarrow (Q)$

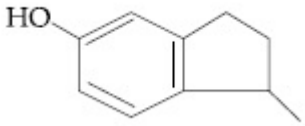
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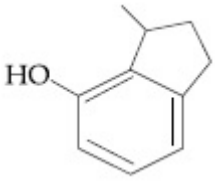
Correct. 2

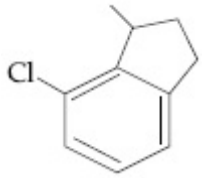
Q11. The major product of the following reaction is :



1. 

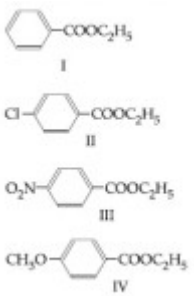
2. 

3. 

4. 

Correct. 2

Q12. The decreasing order of ease of alkaline hydrolysis for the following esters is

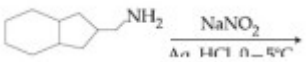


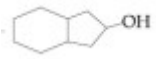
1. III > II >IV>I
2. II > III >I> IV
3. II > II >I>IV
4. IV > II > III >I

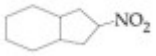
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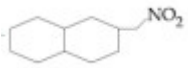
Correct. 3

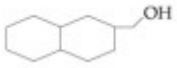
Q13. The major product formed in the reaction given below will be:



1. 

2. 

3. 

4. 

Correct. 4

Q14. 8 g of NaOH is dissolved in 18 g of H_2O. Mole fraction of NaOH in solution and molality (in mol kg^{-1}) of the solution respectively are :

1. 0.167, 22.20
2. 0.167, 11.11
3. 0.2, 22.20
4. 0.2, 11.11

Correct. 2

Q15. The correct match between Item-I and Item-II is :

	Item-I (drug)		Item-II (test)
A	Chloroxylenol	P	Carbylamine test
B	Norethindrone	Q	Sodium hydrogen-carbonate test
C	Sulphapyridine	R	Ferric chloride test
D	Penicillin	S	Bayer's test

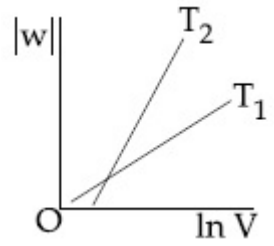
1. A→Q; B→P; C→S; D→R
2. A→R; B→S; C→P; D→Q
3. A→R; B→P; C→S; D→Q

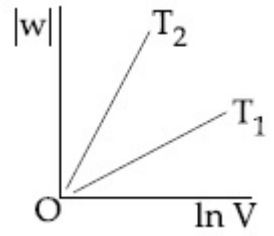
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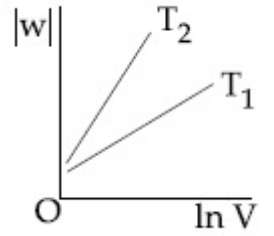
4. A→Q; B→S; C→P; D→R

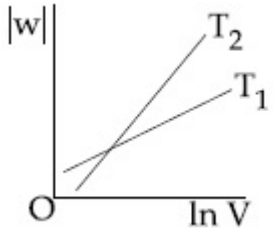
Correct. 2

Q16. Consider the reversible isothermal expansion of an ideal gas in a closed system at two different temperatures T_1 and T_2 ($T_1 < T_2$). The correct graphical depiction of the dependence of work done (w) on the final volume (V) is :

1. 

2. 

3. 

4. 

Correct. 1

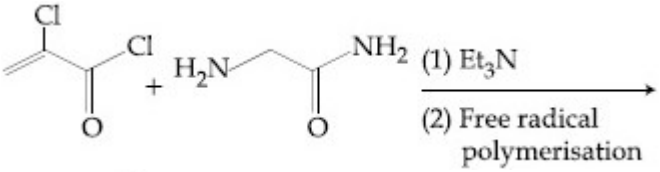
Q17. Two complexes $[Cr(H_2O)_6]Cl_3$(A) and $[Cr(NH_3)_6]Cl_3$ (B) are violet and yellow coloured, respectively. The incorrect statement regarding them is :

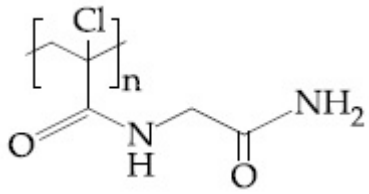
1. Δ_o value for (A) is less than that of (B).
2. Δ_o values of (A) and (B) are calculated from the energies of violet and yellow light, respectively.
3. both absorb energies corresponding to their complementary colors.
4. both are paramagnetic with three unpaired electrons.

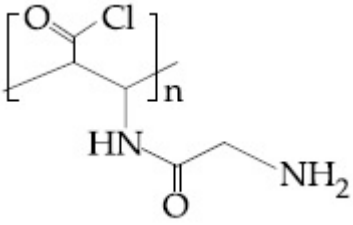
Correct. 2

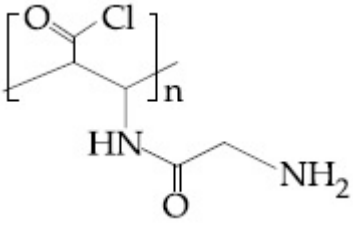
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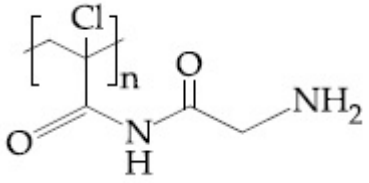
Q18. Major product of the following reaction is:



1. 

2. 

3. 

4. 

Correct. 4

Q19. Which amongst the following is the strongest acid ?

1. CHI_3
2. $CHBr_3$
3. $CH(CN)_3$
4. $CHCl_3$

Correct. 3

Q20. Two solids dissociate as follows

$\mathrm{A(s) \rightleftharpoons B(g) + C}(g); \mathrm{K_{p_1}} = x\mathrm{atm}^2$,

$\mathrm{D(s) \rightleftharpoons C}(g) + \mathrm{E}(g); \mathrm{K_{p_2}} = y\mathrm{atm}^2$

The total pressure when both the solids dissociate simultaneously is :

1. $\sqrt{x+y}$ atm
2. $x^2 + y^2$ atm

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3. $2(\sqrt{x+y})$ atm
4. (x + y) atm

Correct. 3

Q21. At 518^0 C, the rate of decomposition of a sample of gaseous acetaldehyde, initially at a pressure of 363 Torr, was 1.00 Torr s^{-1} when 5% had reacted and 0.5 Torr s^{-1} when 33% had reacted. The order of the reaction is _____?

Correct. 2

Q22. Iodine reacts with concentrated HNO_3 to yield Y along with other products. The oxidation state of iodine in Y, is _____?

Correct. 5

Q23. Decomposition of X exhibits a rate constant of 0.05 μg/year. How many years are required for the decomposition of 5 μg of X into 2.5 μg is _____?

Correct. 50

Q24. The molarity of a solution obtained by mixing 750 mL of 0.5 (M) HCl with 250 mL of 2(M)HCl will be ___ (M).

Correct. 0.875

Q25. Molecules of benzoic acid (C_6H_5COOH) dimerise in benzene. 'w' g of the acid dissolved in 30 g of benzene shows a depression in freezing point equal to 2 K. If the percentage association of the acid to form dimer in the solution is 80, then w is : (Given that $K_t = 5 Kkg, mol^{-1}$,Molar mass of benzoic acid $122 gmol^{-1}$ _____ (g).

Correct. 2.4

Maths

Q1. If x, y, z are in A.P. and $\tan^{-1}x$, $\tan^{-1}y$ and $\tan^{-1}z$ are also in A.P., then
1. 2x = 3y = 6z
2. 6x = 3y = 2z
3. 6x = 4y = 3z
4. x = y = z

Correct. 4

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The value of $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{\sin^2 x}{1+2^x}\,dx$ is :

Q2.

1. π/8
2. π/2
3. 4π
4. π/4

Correct. 4

Q3. Let y=y(x) be the solution of the differential sinx dy/dx+y cosx=4x,x∈(0,π). If y(π/2)=0, then y(π/6) is equal to:

1. $4/9\sqrt{3}\,\pi^2$
2. $-8/9\sqrt{3}\,\pi^2$
3. $-8/9\,\pi^2$
4. $-4/9\,\pi^2$

Correct. 3

Q4. If the tangent at (1, 7) to the curve $x^2=y-6$ touches the circle $x^2+y^2+16x+12y+c=0$ then the value of c is :

1. 195
2. 185
3. 85
4. 95

Correct. 4

Q5. A man X has 7 friends, 4 of them are ladies and 3 are men. His wife Y also has 7 friends, 3 of them are ladies and 4 are men. Assume X and Y have no common friends. Then the total number of ways in which X and Y together can throw a party inviting 3 ladies and 3 men, so that 3 friends of each of X and Y are in this party, is :

1. 468
2. 469
3. 484
4. 485

Correct. 4

Q6. The value of $({}^{21}C_1 - {}^{10}C_1) + ({}^{21}C_2 - {}^{10}C_2) + ({}^{21}C_3 - {}^{10}C_3) + ({}^{21}C_4 - {}^{10}C_4) + \ldots\ldots\ldots + ({}^{21}C_{10} - {}^{10}C_{10})$ is :

1. $2^{21} - 2^{10}$
2. $2^{20} - 2^9$
3. $2^{20} - 2^{10}$
4. $2^{21} - 2^{11}$

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Correct. 3

Q7. Let k be an integer such that the triangle with vertices (k, −3k), (5, k) and (−k, 2) has area 28 sq. units. Then the orthocentre of this triangle is at the point :
1. (1,3/4)
2. (1,-3/4)
3. (2,1/2)
4. (2,-1/2)

Correct. 3

Q8. The radius of a circle, having minimum area, which touches the curve $y=4-x^2$ and the lines, $y=|x|$ is :
1. $2(\sqrt{2}-1)$
2. $4(\sqrt{2}-1)$
3. $4(\sqrt{2}+1)$
4. $2(\sqrt{2}+1)$

Correct. 2

Q9. The sum of the distinct real values of μ, for which the vectors, $\mu\hat{i}+\hat{j}+\hat{k}$, $\hat{i}+\mu\hat{j}+\hat{k}$, $\hat{i}+\hat{j}+\mu\hat{k}$ are co-planar, is :
1. 2
2. 0
3. -1
4. 1

Correct. 3

Q10. If the straight line, 2x − 3y + 17 =0 is perpendicular to the line passing through the points (7, 17) and (15, β), then β equals :
1. 5
2. 35/3
3. -35/3
4. - 5

Correct. 1

Q11. If λ be the ratio of the roots of the quadratic equation in x, $3m^2x^2+m(m-4)x+2=0$, then the least value of m for which $\lambda+\frac{1}{\lambda}=1$, is:
1. $-2+\sqrt{2}$
2. $4-3\sqrt{2}$
3. $4-2\sqrt{3}$

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4. $2-\sqrt{3}$

Correct. 2

Q12. Lety=y(x) be the solution of the differential equation, $x\frac{dy}{dx}+y=x\log_e x$, (x > 1). If $2y(2)=\log_e 4-1$, then y(e) is equal to :

1. $\frac{e^2}{4}$
2. $-\frac{e^2}{2}$
3. $-\frac{e}{2}$
4. $\frac{e}{4}$

Correct. 4

Q13. If the vertices of hyperbola be at (-2,0) and (2,0) and one of its foci be at (-3,0), then which one of the following points does not lie on this hyperbola ?

1. $(2\sqrt{6},5)$
2. $(-6,2\sqrt{10})$
3. $(6,5\sqrt{2})$
4. $(4,\sqrt{15})$

Correct. 3

Q14. Let $\vec{a}=\hat{i}-\hat{j},\vec{b}=\hat{i}+\hat{j}+\hat{k}$and $\vec{c}$ be a vector that $\vec{a}\times\vec{c}+\vec{b}=\vec{0}$ and $\vec{a}\cdot\vec{c}$ = 4, then $|\vec{c}|^2$ is equal to:

1. 8
2. 19/2
3. 9
4. 17/2

Correct. 2

Q15. $\lim_{x\to1^-}\frac{\sqrt{\pi}-\sqrt{2\sin^{-1}x}}{\sqrt{1-x}}$

1. $\sqrt{\pi}$
2. $\frac{1}{\sqrt{2\pi}}$

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3. $\sqrt{\frac{\pi}{2}}$
4. $\sqrt{\frac{2}{\pi}}$

Correct. 4

Q16. If a circle C passing through the point (4,0) touches the circle $x^2 + y^2 + 4x - 6y = 12$ externally at the point (1, -1), then the radius of C is:
1. $\sqrt{57}$
2. 5
3. $2\sqrt{5}$
4. 4

Correct. 1

Q17. Consider the quadratic equation $(c-5)x^2 - 2cx + (c-4) = 0, c = 5$. Let S be the set of all integral values of c for which one root of the equation lies in the interval (0, 2) and its other root lies in the interval (2,3). Then the number of elements in Sis:
1. 18
2. 12
3. 11
4. 10

Correct. 3

Q18. The solution of the differential equation, $\frac{\mathrm{d}y}{\mathrm{d}x} = (x-y)^2, \text{ when } y(1) = 1$,:
1. $-\log_e\left|\frac{1+x-y}{1-x+y}\right| = x + y - 2$
2. $-\log_e\left|\frac{1-x+y}{1+x-y}\right| = 2(x-1)$
3. $\log_e\left|\frac{2-y}{2-x}\right| = 2(y-1)$
4. $\log_e\left|\frac{2-x}{2-y}\right| = x - yv$

Correct. 2

Q19. A hyperbola has its centre at the origin, passes through the point (4, 2) and has transverse axis of length 4 along the x-axis. Then the eccentricity of the hyperbola is :
1. √3

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2. 2
3. 2/√3
4. 3/2

Correct. 3

Q20. If the system of linear equations
x-4y+7z=g
3y - 5z=h
-2x+54-92=k is consistent, then :
1. g+2h+k=0
2. g+h+k=0
3. 2g +h+k=0
4. g+h+2k=0

Correct. 3

Q21. If

$$P=\begin{bmatrix}1 & \alpha & 3\\ 1 & 3 & 3\\ 2 & 4 & 4\end{bmatrix}$$

is the adjoint of a 3 × 3 matrix A and |A| = 4, then a is equal to _____ ?

Correct. 11

Q22. Let A and B be two sets containing 2 elements and 4 elements respectively. The number of subsets of A × B having 3 or more elements is ___?

Correct. 219

Q23. If the sum of the deviations of 50 observations from 30 is 50, then the mean of these observations is ___?

Correct. 31

Q24. In a class of 140 students numbered 1 to 140, all even numbered students opted Mathematics course, those whose number is divisible by 3 opted Physics course and those whose number is divisible by 5 opted Chemistry course. Then the number of students who did not opt for any of the

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three courses is ____ ?

Correct. 38

Q25. The coefficient of t^4 in the expansion of $\left(\frac{1-t^6}{1-t}\right)^3$ is _____?

Correct. 15

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