

JEE 2023 Session-1 24th Jan to 1st Feb 2023

Application No	
Candidate Name	
Roll No	
Test Date	29/01/2023
Test Time	3:00 PM - 6:00 PM
Subject	B TECH

Section : Physics Section A

Q.1 At 300 K, the rms speed of oxygen molecules is $\sqrt{\frac{\alpha+5}{\alpha}}$ times to that of its average speed in the gas. Then, the value of α will be

(used $\pi = \frac{22}{7}$)

- Options
- 1 24
 - 2 27
 - 3 32
 - 4 28

Question Type : MCQ
 Question ID : 386694279
 Option 1 ID : 386694846
 Option 2 ID : 386694845
 Option 3 ID : 386694843
 Option 4 ID : 386694844
 Status : Answered
 Chosen Option : 2

Q.2 The time taken by an object to slide down 45° rough inclined plane is n times as it takes to slide down a perfectly smooth 45° incline plane. The coefficient of kinetic friction between the object and the incline plane is:

- Options
- 1 $1 - \frac{1}{n^2}$
 - 2 $1 + \frac{1}{n^2}$
 - 3 $\sqrt{1 - \frac{1}{n^2}}$
 - 4 $\sqrt{\frac{1}{1-n^2}}$

Question Type : MCQ
 Question ID : 386694273
 Option 1 ID : 386694820
 Option 2 ID : 386694819
 Option 3 ID : 386694821
 Option 4 ID : 386694822
 Status : Answered
 Chosen Option : 3

Q.3 The ratio of de-Broglie wavelength of an α particle and a proton accelerated from rest by the same potential is $\frac{1}{\sqrt{m}}$, the value of m is-

- Options
- 1 8
 - 2 4
 - 3 2
 - 4 16

Question Type : MCQ
 Question ID : 386694287
 Option 1 ID : 386694876
 Option 2 ID : 386694877
 Option 3 ID : 386694875
 Option 4 ID : 386694878
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.4 A point charge 2×10^{-2} C is moved from P to S in a uniform electric field of 30 NC^{-1} directed along positive x-axis. If coordinates of P and S are $(1, 2, 0)$ m and $(0, 0, 0)$ m respectively, the work done by electric field will be

- Options
- 1 -600 mJ
 - 2 -1200 mJ
 - 3 1200mJ
 - 4 600 mJ

Question Type : MCQ
 Question ID : 386694280
 Option 1 ID : 386694847
 Option 2 ID : 386694849
 Option 3 ID : 386694850
 Option 4 ID : 386694848
 Status : Answered
 Chosen Option : 3

Q.5 A square loop of area 25 cm^2 has a resistance of 10Ω . The loop is placed in uniform magnetic field of magnitude 40.0 T . The plane of loop is perpendicular to the magnetic field. The work done in pulling the loop out of the magnetic field slowly and uniformly in 1.0 sec , will be

- Options
- 1 $1.0 \times 10^{-3} \text{ J}$
 - 2 $5 \times 10^{-3} \text{ J}$
 - 3 $2.5 \times 10^{-3} \text{ J}$
 - 4 $1.0 \times 10^{-4} \text{ J}$

Question Type : MCQ
 Question ID : 386694202
 Option 1 ID : 386694858
 Option 2 ID : 386694855
 Option 3 ID : 386694856
 Option 4 ID : 386694857
 Status : Answered
 Chosen Option : 3

Q.6 A fully loaded boeing aircraft has a mass of $5.4 \times 10^5 \text{ kg}$. Its total wing area is 500 m^2 . It is in level flight with a speed of 1080 km/h . If the density of air ρ is 1.2 kg m^{-3} , the fractional increase in the speed of the air on the upper surface of the wing relative to the lower surface in percentage will be. ($g = 10 \text{ m/s}^2$)

- Options
- 1 16
 - 2 6
 - 3 8
 - 4 10

Question Type : MCQ
 Question ID : 386694277
 Option 1 ID : 386694838
 Option 2 ID : 386694837
 Option 3 ID : 386694835
 Option 4 ID : 386694836
 Status : Answered
 Chosen Option : 2

Q.7 Heat energy of 184 kJ is given to ice of mass 600 g at -12°C . Specific heat of ice is $2222.3 \text{ J kg}^{-1}\text{C}^{-1}$ and latent heat of ice is 336 kJ/kg^{-1}

- A. Final temperature of system will be 0°C .
 B. Final temperature of the system will be greater than 0°C .
 C. The final system will have a mixture of ice and water in the ratio of 5:1.
 D. The final system will have a mixture of ice and water in the ratio of 1:5.
 E. The final system will have water only.

Question Type : MCQ
 Question ID : 386694278
 Option 1 ID : 386694842
 Option 2 ID : 386694839
 Option 3 ID : 386694840
 Option 4 ID : 386694841
 Status : Answered
 Chosen Option : 3

Choose the correct answer from the options given below :

- Options
- 1 A and E Only
 - 2 A and C Only
 - 3 B and D Only
 - 4 A and D Only

Q.8 Substance A has atomic mass number 16 and half life of 1 day. Another substance B has atomic mass number 32 and half life of $\frac{1}{2}$ day. If both A and B simultaneously start undergo radio activity at the same time with initial mass 320 g each, how many total atoms of A and B combined would be left after 2 days.

- Options
- 1 1.69×10^{24}
 - 2 6.76×10^{23}
 - 3 3.38×10^{24}
 - 4 6.76×10^{24}

Question Type : MCQ
 Question ID : 366694288
 Option 1 ID : 366694881
 Option 2 ID : 366694879
 Option 3 ID : 366694880
 Option 4 ID : 366694882
 Status : Answered
 Chosen Option : 3

Q.9 Given below are two statements :

Statement I: Electromagnetic waves are not deflected by electric and magnetic field.

Statement II: The amplitude of electric field and the magnetic field in

electromagnetic waves are related to each other as $E_0 = \sqrt{\frac{\mu_0}{\epsilon_0}} B_0$.

In the light of the above statements, choose the correct answer from the options given below :

- Options
- 1 Both Statement I and Statement II are true
 - 2 Statement I is false but statement II is true
 - 3 Statement I is true but statement II is false
 - 4 Both Statement I and Statement II are false

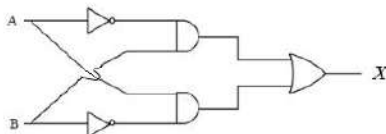
Question Type : MCQ
 Question ID : 366694285
 Option 1 ID : 366694867
 Option 2 ID : 366694870
 Option 3 ID : 366694869
 Option 4 ID : 366694868
 Status : Answered
 Chosen Option : 1

Q.10 The electric current in a circular coil of four turns produces a magnetic induction 32 T at its centre. The coil is unwound and is rewound into a circular coil of single turn, the magnetic induction at the centre of the coil by the same current will be :

- Options
- 1 4 T
 - 2 2 T
 - 3 8 T
 - 4 16 T

Question Type : MCQ
 Question ID : 366694283
 Option 1 ID : 366694862
 Option 2 ID : 366694860
 Option 3 ID : 366694859
 Option 4 ID : 366694861
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.11 For the given logic gates combination, the correct truth table will be



- Options
- 1

A	B	X
0	0	1
0	1	0
1	0	0
1	1	0
 - 2

A	B	X
0	0	0
0	1	1
1	0	1
1	1	0
 - 3

A	B	X
0	0	1
0	1	0
1	0	1
1	1	0
 - 4

A	B	X
0	0	0
0	1	1
1	0	1
1	1	1

Question Type : MCQ
 Question ID : 366694289
 Option 1 ID : 366694886
 Option 2 ID : 366694884
 Option 3 ID : 366694883
 Option 4 ID : 366694885
 Status : Answered
 Chosen Option : 4

Q.12 The modulation index for an A.M. wave having maximum and minimum peak-to-peak voltages of 14 mV and 6 mV respectively is-

- Options
- 1 0.6
 - 2 0.4
 - 3 0.2
 - 4 1.4

Question Type : MCQ
 Question ID : 366694290
 Option 1 ID : 366694887
 Option 2 ID : 366694890
 Option 3 ID : 366694889
 Option 4 ID : 366694888
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.13 The time period of a satellite of earth is 24 hours.If the separation between the earth and the satellite is decreased to one fourth of the previous value, then its new time period will become.

- Options
- 1 4 hours
 - 2 6 hours
 - 3 3 hours
 - 4 2 hours

Question Type : MCQ
 Question ID : 366694276
 Option 1 ID : 366694831
 Option 2 ID : 366694832
 Option 3 ID : 366694834

- 4 0 hours
- 3 12 hours
- 4 3 hours

Question ID : 366694833
 Status : Answered
 Chosen Option : 3

Q.14 With the help of potentiometer ,we can determine the value of emf of a given cell .
 The sensitivity of the potentiometer is

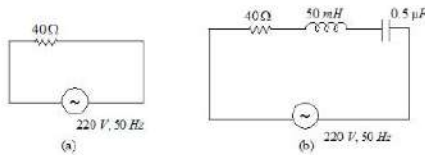
- (A) directly proportional to the length of the potentiometer wire
- (B) directly proportional to the potential gradient of the wire
- (C) inversely proportional to the potential gradient of the wire
- (D) inversely proportional to the length of the potentiometer wire

Choose the correct option for the above statements:

- Options
- 1 A and C only
 - 2 B and D only
 - 3 C only
 - 4 A only

Question Type : MCQ
 Question ID : 366694281
 Option 1 ID : 366694854
 Option 2 ID : 366694853
 Option 3 ID : 366694852
 Option 4 ID : 366694851
 Status : Answered
 Chosen Option : 1

Q.15 For the given figures, choose the correct options:



- Options
- 1 At resonance, current in (b) is less than that in (a)
 - 2 The rms current in circuit (b) can be larger than that in (a)
 - 3 The rms current in figure(a) is always equal to that in figure (b)
 - 4 The rms current in circuit (b) can never be larger than that in (a)

Question Type : MCQ
 Question ID : 366694284
 Option 1 ID : 366694865
 Option 2 ID : 366694863
 Option 3 ID : 366694866
 Option 4 ID : 366694864
 Status : Marked For Review
 Chosen Option : 3

Q.16 The equation of a circle is given by $x^2 + y^2 = a^2$, where a is the radius. If the equation is modified to change the origin other than $(0, 0)$, then find out the correct dimensions of A and B in a new equation : $(x - A)^2 + (y - \frac{1}{B})^2 = a^2$. The dimensions of t is given as $[T^{-1}]$.

- Options
- 1 $A = [L^{-1}T^{-1}]$, $B = [LT]$
 - 2 $A = [L^{-1}T]$, $B = [LT^{-1}]$
 - 3 $A = [L^{-1}T^{-1}]$, $B = [LT^{-1}]$
 - 4 $A = [LT]$, $B = [L^{-1}T^{-1}]$

Question Type : MCQ
 Question ID : 366694271
 Option 1 ID : 366694812
 Option 2 ID : 366694814
 Option 3 ID : 366694813
 Option 4 ID : 366694811
 Status : Answered
 Chosen Option : 4

Q.17 A scientist is observing a bacteria through a compound microscope. For better analysis and to improve its resolving power he should. (Select the best option)

- Options
- 1 Increase the wave length of the light
 - 2 Decrease the diameter of the objective lens
 - 3 Decrease the focal length of the eye piece.
 - 4 Increase the refractive index of the medium between the object and objective lens

Question Type : MCQ
 Question ID : 366694286
 Option 1 ID : 366694872
 Option 2 ID : 366694871
 Option 3 ID : 366694873
 Option 4 ID : 366694874
 Status : Answered
 Chosen Option : 1

Q.18 A force acts for 20 s on a body of mass 20 kg, starting from rest, after which the force ceases and then body describes 50 m in the next 10 s. The value of force will be:

- Options
- 1 5 N
 - 2 20 N
 - 3 40 N
 - 4 10 N

Question Type : MCQ
 Question ID : 366694274
 Option 1 ID : 366694823
 Option 2 ID : 366694825
 Option 3 ID : 366694826
 Option 4 ID : 366694824
 Status : Answered
 Chosen Option : 4

Q.19 Identify the correct statements from the following:

- A. Work done by a man in lifting a bucket out of a well by means of a rope tied to the bucket is negative.
- B. Work done by gravitational force in lifting a bucket out of a well by a rope tied to the bucket is negative.
- C. Work done by friction on a body sliding down an inclined plane is positive.
- D. Work done by an applied force on a body moving on a rough horizontal plane with uniform velocity is zero.
- E. Work done by the air resistance on an oscillating pendulum in negative.

Choose the correct answer from the options given below:

- Options
- 1 A and C Only
 - 2 B, D and E only
 - 3 B and E only
 - 4 B and D only

Question Type : MCQ
 Question ID : 366694275
 Option 1 ID : 366694827
 Option 2 ID : 366694830
 Option 3 ID : 366694829
 Option 4 ID : 366694828
 Status : Answered
 Chosen Option : 3

Q.20 An object moves at a constant speed along a circular path in a horizontal plane with center at the origin. When the object is at $x = +2$ m, its velocity is $-4\hat{j}$ m/s . The object's velocity (v) and acceleration (a) at $x = -2$ m will be

Question Type : MCQ
 Question ID : 366694272
 Option 1 ID : 366694816

Option 2 ID : 366694817
 Option 3 ID : 366694818
 Option 4 ID : 366694815
 Status : Answered
 Chosen Option : 3

- Options
- $v = -4\hat{j} \text{ m/s}, a = 8\hat{i} \text{ m/s}^2$
 - $v = 4\hat{i} \text{ m/s}, a = 8\hat{j} \text{ m/s}^2$
 - $v = -4\hat{i} \text{ m/s}, a = -8\hat{j} \text{ m/s}^2$
 - $v = 4\hat{j} \text{ m/s}, a = 8\hat{i} \text{ m/s}^2$

Section : Physics Section B

Q.21 In an experiment of measuring the refractive index of a glass slab using travelling microscope in physics lab, a student measures real thickness of the glass slab as 5.25 mm and apparent thickness of the glass slab as 5.00 mm. Travelling microscope has 20 divisions in one cm on main scale and 50 divisions on vernier scale is equal to 49 divisions on main scale. The estimated uncertainty in the measurement of refractive index of the slab is $\frac{x}{10} \times 10^{-3}$, where x is _____

Question Type : SA
 Question ID : 366694292
 Status : Answered

Given Answer : 72

Q.22 A car is moving on a circular path of radius 600 m such that the magnitudes of the tangential acceleration and centripetal acceleration are equal. The time taken by the car to complete first quarter of revolution, if it is moving with an initial speed of 54 km/hr is $t(1 - e^{-k/2})$ s. The value of t is _____.

Question Type : SA
 Question ID : 366694300
 Status : Not Attempted and Marked For Review

Given Answer : --

Q.23 Unpolarised light is incident on the boundary between two dielectric media, whose dielectric constants are 2.8 (medium -1) and 6.8 (medium -2), respectively. To satisfy the condition, so that the reflected and refracted rays are perpendicular to each other, the angle of incidence should be $\tan^{-1}\left(1 + \frac{10}{\theta}\right)^{\frac{1}{2}}$ the value of θ is _____.

(Given for dielectric media, $\mu_r = 1$)

Question Type : SA
 Question ID : 366694293
 Status : Not Attempted and Marked For Review

Given Answer : --

Q.24 A null point is found at 200 cm in potentiometer when cell in secondary circuit is shunted by 5Ω . When a resistance of 15Ω is used for shunting, null point moves to 300 cm. The internal resistance of the cell is _____ Ω .

Question Type : SA
 Question ID : 366694295
 Status : Not Attempted and Marked For Review

Given Answer : --

Q.25 An inductor of inductance $2\mu\text{H}$ is connected in series with a resistance, a variable capacitor and an AC source of frequency 7 kHz. The value of capacitance for which maximum current is drawn into the circuit is $\frac{1}{x}\text{F}$, where the value of x is _____.

(Take $\pi = \frac{22}{7}$)

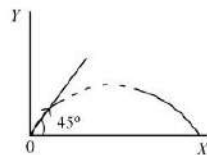
Question Type : SA
 Question ID : 366694294
 Status : Not Attempted and Marked For Review

Given Answer : --

Q.26 A particle of mass 100 g is projected at time $t = 0$ with a speed 20 ms^{-1} at an angle 45° to the horizontal as given in the figure. The magnitude of the angular momentum of the particle about the starting point at time $t = 2\text{s}$ is found to be $\sqrt{K} \text{ kg m}^2/\text{s}$. The value of K is _____.

(Take $g = 10 \text{ ms}^{-2}$)

Question Type : SA
 Question ID : 366694299
 Status : Not Attempted and Marked For Review



Given Answer : --

Q.27 A particle of mass 250 g executes a simple harmonic motion under a periodic force $F = (-25x) \text{ N}$. The particle attains a maximum speed of 4 m/s during its oscillation. The amplitude of the motion is _____ cm.

Question Type : SA
 Question ID : 366694297
 Status : Answered

Given Answer : 40

Q.28 For a charged spherical ball, electrostatic potential inside the ball varies with r as $V = 2ar^2 + b$. Here, a and b are constant and r is the distance from the center. The volume charge density inside the ball is $-\lambda\epsilon_0$. The value of λ is _____.

ϵ = permittivity of the medium

Question Type : SA
 Question ID : 366694296
 Status : Not Attempted and Marked For Review

Given Answer : --

Q.29 When two resistances R_1 and R_2 connected in series and introduced into the left gap of a meter bridge and a resistance of 10Ω is introduced into the right gap, a null point is found at 60 cm from left side. When R_1 and R_2 are connected in parallel and introduced into the left gap, a resistance of 3Ω is introduced into the right-gap to get null point at 40 cm from left end. The product of $R_1 R_2$ is _____ Ω^2

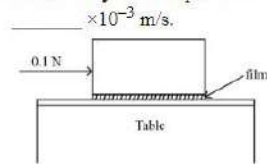
Question Type : SA
 Question ID : 366694291
 Status : Not Attempted and Marked For Review

Given Answer : --

Q.30 A metal block of base area 0.20 m^2 is placed on a table, as shown in figure. A liquid film of thickness 0.25 mm is inserted between the block and the table. The

Question Type : SA
 Question ID : 366694298
 Status : Not Attempted and Marked For Review

block is pushed by a horizontal force of 0.1 N and moves with a constant speed. If the viscosity of the liquid is 5.0×10^{-3} Pl, the speed of block is



Given Answer : --

Section : Chemistry Section A

Q.31 An indicator 'X' is used for studying the effect of variation in concentration of iodide on the rate of reaction of iodide ion with H_2O_2 at room temp. The indicator 'X' forms blue colored complex with compound 'A' present in the solution. The indicator 'X' and compound 'A' respectively are

- Options
- 1 Starch and iodine
 - 2 Starch and H_2O_2
 - 3 Methyl orange and iodine
 - 4 Methyl orange and H_2O_2

Question Type : MCQ
 Question ID : 366694320
 Option 1 ID : 366694980
 Option 2 ID : 366694978
 Option 3 ID : 366694977
 Option 4 ID : 366694979
 Status : Answered
 Chosen Option : 2

Q.32 Match List I and List II

List I	List II
A. Osmosis	I. Solvent molecules pass through semi permeable membrane towards solvent side.
B. Reverse osmosis	II. Movement of charged colloidal particles under the influence of applied electric potential towards oppositely charged electrodes.
C. Electro osmosis	III. Solvent molecules pass through semi permeable membrane towards solution side.
D. Electrophoresis	IV. Dispersion medium moves in an electric field.

Choose the correct answer from the options given below :

- Options
- 1 A-III, B-I, C-II, D-IV
 - 2 A-I, B-III, C-II, D-IV
 - 3 A-I, B-III, C-IV, D-II
 - 4 A-III, B-I, C-IV, D-II

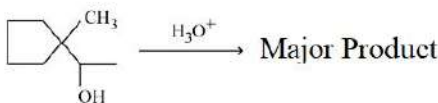
Question Type : MCQ
 Question ID : 366694304
 Option 1 ID : 366694913
 Option 2 ID : 366694915
 Option 3 ID : 366694916
 Option 4 ID : 366694914
 Status : Answered
 Chosen Option : 4

Q.33 The concentration of dissolved Oxygen in water for growth of fish should be more than X ppm and Biochemical Oxygen Demand in clean water should be less than Y ppm. X and Y in ppm are, respectively.

- Options
- 1 X Y
6 5
 - 2 X Y
4 15
 - 3 X Y
4 8
 - 4 X Y
6 12

Question Type : MCQ
 Question ID : 366694311
 Option 1 ID : 366694941
 Option 2 ID : 366694944
 Option 3 ID : 366694942
 Option 4 ID : 366694943
 Status : Answered
 Chosen Option : 2

Q.34 Find out the major product for the following reaction.



- Options
- 1
 - 2
 - 3
 - 4

Question Type : MCQ
 Question ID : 366694312
 Option 1 ID : 366694947
 Option 2 ID : 366694945
 Option 3 ID : 366694946
 Option 4 ID : 366694948
 Status : Answered
 Chosen Option : 3

Q.35 The major component of which of the following ore is sulphide based mineral?

- Options
- 1 Malachite
 - 2 Calamine
 - 3 Sphalerite
 - 4 Siderite

Question Type : MCQ
 Question ID : 366694306
 Option 1 ID : 366694921
 Option 2 ID : 366694922
 Option 3 ID : 366694924
 Option 4 ID : 366694923
 Status : Not Attempted and Marked for Review
 Chosen Option : --

Q.36 Given below are two statements :

Statement I : The decrease in first ionization enthalpy from B to Al is much larger than that from Al to Ga.

Statement II : The d orbitals in Ga are completely filled.

Question Type : MCQ
 Question ID : 366694305
 Option 1 ID : 366694920
 Option 2 ID : 366694918
 Option 3 ID : 366694917
 Option 4 ID : 366694919
 Status : Answered
 Chosen Option : 4

In the light of the above statements, choose the most appropriate answer from the options given below

- Options
- 1 Statement I is incorrect but statement II is correct
 - 2 Both the statements I and II are incorrect
 - 3 Both the statements I and II are correct
 - 4 Statement I is correct but statement II is incorrect

Q.37 A solution of Cr_2O_3 in amyl alcohol has a _____ colour.

- Options
- 1 Yellow
 - 2 Green
 - 3 Blue
 - 4 Orange-Red

Question Type : MCQ
 Question ID : 366694308
 Option 1 ID : 366694932
 Option 2 ID : 366694930
 Option 3 ID : 366694929
 Option 4 ID : 366694931
 Status : Answered
 Chosen Option : 4

Q.38 Which of the following relations are correct ?

- (A) $\Delta U = q + p\Delta V$
 (B) $\Delta G = \Delta H - T\Delta S$
 (C) $\Delta S = \frac{q_{rev}}{T}$
 (D) $\Delta H = \Delta U - \Delta nRT$

Choose the most appropriate answer from the options given below :

- Options
- 1 B and D Only
 - 2 C and D Only
 - 3 B and C Only
 - 4 A and B Only

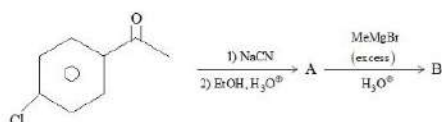
Question Type : MCQ
 Question ID : 366694302
 Option 1 ID : 366694907
 Option 2 ID : 366694908
 Option 3 ID : 366694906
 Option 4 ID : 366694905
 Status : Answered
 Chosen Option : 4

Q.39 Correct order of spin only magnetic moment of the following complex ions is:
 (Given At.no. Fe: 26, Co:27)

- Options
- 1 $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-} > [\text{CoF}_6]^{3-} > [\text{FeF}_6]^{3-}$
 - 2 $[\text{FeF}_6]^{3-} > [\text{Co}(\text{C}_2\text{O}_4)_3]^{3-} > [\text{CoF}_6]^{3-}$
 - 3 $[\text{FeF}_6]^{3-} > [\text{CoF}_6]^{3-} > [\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$
 - 4 $[\text{CoF}_6]^{3-} > [\text{FeF}_6]^{3-} > [\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$

Question Type : MCQ
 Question ID : 366694309
 Option 1 ID : 366694935
 Option 2 ID : 366694934
 Option 3 ID : 366694933
 Option 4 ID : 366694936
 Status : Answered
 Chosen Option : 3

Q.40 Find out the major products from the following reaction sequence.



- Options
- 1 A = , B =
 - 2 A = , B =
 - 3 A = , B =
 - 4 A = , B =

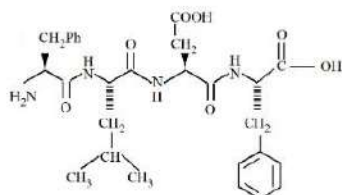
Question Type : MCQ
 Question ID : 366694315
 Option 1 ID : 366694957
 Option 2 ID : 366694960
 Option 3 ID : 366694958
 Option 4 ID : 366694958
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.41 When a hydrocarbon A undergoes combustion in the presence of air, it requires 9.5 equivalents of oxygen and produces 3 equivalents of water. What is the molecular formula of A ?

- Options
- 1 C_9H_5
 - 2 C_8H_6
 - 3 C_6H_6
 - 4 C_3H_2

Question Type : MCQ
 Question ID : 366694313
 Option 1 ID : 366694951
 Option 2 ID : 366694949
 Option 3 ID : 366694950
 Option 4 ID : 366694952
 Status : Answered
 Chosen Option : 1

Q.42 Following tetrapeptide can be represented as



Question Type : MCQ
 Question ID : 366694318
 Option 1 ID : 366694972
 Option 2 ID : 366694970
 Option 3 ID : 366694971
 Option 4 ID : 366694969
 Status : Not Attempted and Marked For Review
 Chosen Option : --



(F, L, D, Y, I, Q, P are one letter codes for amino acids)

- Options
- 1 YQLF
 - 2 FIQY
 - 3 PLDY
 - 4 FLDY

G.43 Reaction of propanamide with $\text{Br}_2/\text{KOH}(\text{aq})$ produces :

- Options
- 1 Ethylnitrile
 - 2 Propylamine
 - 3 Propanenitrile
 - 4 Ethylamine

Question Type : MCQ
Question ID : 366694316
Option 1 ID : 366694964
Option 2 ID : 366694961
Option 3 ID : 366694963
Option 4 ID : 366694962
Status : Answered
Chosen Option : 4

G.44 Match List I with List II

List I	List II
A. van't Hoff factor, i	I. Cryoscopic constant
B. k_f	II. Isotonic solutions
C. Solutions with same osmotic pressure	III. $\frac{\text{Normal molar mass}}{\text{Abnormal molar mass}}$
D. Azeotropes	IV. Solutions with same composition of vapour above it

Question Type : MCQ
Question ID : 366694303
Option 1 ID : 366694910
Option 2 ID : 366694912
Option 3 ID : 366694909
Option 4 ID : 366694911
Status : Answered
Chosen Option : 4

Choose the correct answer from the options given below :

- Options
- 1 A-III, B-I, C-IV, D-II
 - 2 A-III, B-II, C-I, D-IV
 - 3 A-III, B-I, C-II, D-IV
 - 4 A-I, B-III, C-II, D-IV

G.45 A doctor prescribed the drug Equanil to a patient. The patient was likely to have symptoms of which disease?

- Options
- 1 Stomach ulcers
 - 2 Hyperacidity
 - 3 Anxiety and stress
 - 4 Depression and hypertension

Question Type : MCQ
Question ID : 366694319
Option 1 ID : 366694976
Option 2 ID : 366694974
Option 3 ID : 366694975
Option 4 ID : 366694973
Status : Answered
Chosen Option : 4

G.46 The one giving maximum number of isomeric alkenes on dehydrohalogenation reaction is (excluding rearrangement)

- Options
- 1 2-Bromopropane
 - 2 1-Bromo-2-methylbutane
 - 3 2-Bromopentane
 - 4 2-Bromo-3,3-dimethylpentane

Question Type : MCQ
Question ID : 366694314
Option 1 ID : 366694953
Option 2 ID : 366694954
Option 3 ID : 366694955
Option 4 ID : 366694956
Status : Not Attempted and Marked For Review
Chosen Option : ..

G.47 Match List I with List II

List I	List II
A. Elastomeric polymer	I. Urea formaldehyde resin
B. Fibre Polymer	II. Polystyrene
C. Thermosetting Polymer	III. Polyester
D. Thermoplastic Polymer	IV. Neoprene

Choose the correct answer from the options given below :

- Options
- 1 A-IV, B-I, C-III, D-II
 - 2 A-II, B-I, C-IV, D-III
 - 3 A-II, B-III, C-I, D-IV
 - 4 A-IV, B-III, C-I, D-II

Question Type : MCQ
Question ID : 366694317
Option 1 ID : 366694967
Option 2 ID : 366694968
Option 3 ID : 366694966
Option 4 ID : 366694965
Status : Answered
Chosen Option : 1

G.48 Given below are two statements:

Statement I : Nickel is being used as the catalyst for producing syn gas and edible fats.

Statement II : Silicon forms both electron rich and electron deficient hydrides.

In the light of the above statements, choose the most appropriate answer from the options given below :

- Options
- 1 Statement I is correct but statement II is incorrect
 - 2 Statement I is incorrect but statement II is correct
 - 3 Both the statements I and II are correct
 - 4 Both the statements I and II are incorrect

Question Type : MCQ
Question ID : 366694307
Option 1 ID : 366694927
Option 2 ID : 366694928
Option 3 ID : 366694925
Option 4 ID : 366694926
Status : Answered
Chosen Option : 2

G.49 The set of correct statements is :

- (i) Manganese exhibits +7 oxidation state in its oxide.
(ii) Ruthenium and Osmium exhibit +8 oxidation in their oxides.

Question Type : MCQ
Question ID : 366694310
Option 1 ID : 366694940
Option 2 ID : 366694937
Option 3 ID : 366694939

Option 4 ID : 386694938
Status : Answered
Chosen Option : 3

(iii) Sc shows +4 oxidation state which is oxidizing in nature.

(iv) Cr shows oxidising nature in +6 oxidation state.

- Options
- (ii), (iii) and (iv)
 - (i) and (iii)
 - (ii) and (iii)
 - (i), (ii) and (iv)

Q.50 According to MO theory the bond orders for O_2^{2-} , CO and NO^+ respectively, are

- Options
- 1, 3 and 2
 - 2, 3 and 3
 - 1, 3 and 3
 - 1, 2 and 3

Question Type : MCQ
Question ID : 386694301
Option 1 ID : 386694902
Option 2 ID : 386694904
Option 3 ID : 386694903
Option 4 ID : 386694901
Status : Answered
Chosen Option : 1

Section : Chemistry Section B

Q.51 The volume of HCl, containing 73 g L^{-1} , required to completely neutralise NaOH obtained by reacting 0.69 g of metallic sodium with water, is _____ mL. (Nearest Integer)
(Given : molar Masses of Na, Cl, O, H, are 23, 35.5, 16 and 1 g mol^{-1} respectively)

Given Answer : 2

Question Type : SA
Question ID : 386694325
Status : Answered

Q.52 When 0.01 mol of an organic compound containing 60% carbon was burnt completely, 4.4 g of CO_2 was produced. The molar mass of compound is _____ g mol^{-1} (Nearest integer).

Given Answer : --

Question Type : SA
Question ID : 386694330
Status : Not Attempted and Marked For Review

Q.53 For conversion of compound A \rightarrow B, the rate constant of the reaction was found to be $4.6 \times 10^{-5} \text{ L mol}^{-1} \text{ s}^{-1}$. The order of the reaction is _____.

Given Answer : --

Question Type : SA
Question ID : 386694329
Status : Not Attempted and Marked For Review

Q.54 On heating, $LiNO_3$ gives how many compounds among the following? _____
 Li_2O , N_2 , O_2 , $LiNO_2$, NO_2

Given Answer : 2

Question Type : SA
Question ID : 386694323
Status : Answered

Q.55 A metal M forms hexagonal close-packed structure. The total number of voids in 0.02 mol of it is _____ $\times 10^{21}$ (Nearest integer).
(Given $N_A = 6.02 \times 10^{23}$)

Given Answer : --

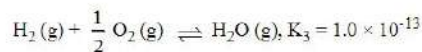
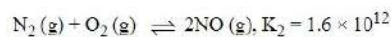
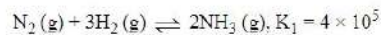
Question Type : SA
Question ID : 386694326
Status : Not Attempted and Marked For Review

Q.56 Total number of acidic oxides among N_2O_3 , NO_2 , N_2O , Cl_2O_7 , SO_2 , CO, CaO, Na_2O and NO is _____.

Given Answer : 3

Question Type : SA
Question ID : 386694324
Status : Answered

Q.57 At 298 K



Based on above equilibria, the equilibrium constant of the reaction, $2NH_3(g) + \frac{5}{2} O_2(g) \rightleftharpoons 2NO(g) + 3H_2O(g)$ is _____ $\times 10^{-33}$ (Nearest integer).

Given Answer : --

Question Type : SA
Question ID : 386694327
Status : Not Attempted and Marked For Review

Q.58 The denticity of the ligand present in the Fehling's reagent is _____.

Given Answer : --

Question Type : SA
Question ID : 386694322
Status : Not Attempted and Marked For Review

Q.59 The equilibrium constant for the reaction

$Zn(s) + Sn^{2+}(aq) \rightleftharpoons Zn^{2+}(aq) + Sn(s)$ is 1×10^{20} at 298 K. The magnitude of standard electrode potential of Sn/Sn^{2+} if $E_{Zn^{2+}/Zn}^0 = -0.76 \text{ V}$ is _____ $\times 10^{-2} \text{ V}$. (Nearest integer).

$$\text{Given : } \frac{2.303RT}{F} = 0.059 \text{ V}$$

Given Answer : --

Question Type : SA
Question ID : 386694328
Status : Not Attempted and Marked For Review

Q.60 Assume that the radius of the first Bohr orbit of hydrogen atom is 0.6 Å. The radius of the third Bohr orbit of He^+ is _____ picometer. (Nearest Integer)

Given Answer : 2

Question Type : SA
Question ID : 386694321
Status : Answered

Section : Mathematics Section A

Q.81 Let $S = \{w_1, w_2, \dots\}$ be the sample space associated to a random experiment. Let $P(w_n) = \frac{P(w_{n-1})}{2}$, $n \geq 2$. Let $A = \{2k + 3l : k, l \in \mathbb{N}\}$ and $B = \{w_n : n \in A\}$. Then $P(B)$ is equal to

- Options
1. $\frac{1}{32}$
 2. $\frac{3}{64}$
 3. $\frac{3}{32}$
 4. $\frac{1}{16}$

Question Type : MCQ
 Question ID : 366694347
 Option 1 ID : 3666941057
 Option 2 ID : 3666941058
 Option 3 ID : 3666941056
 Option 4 ID : 3666941055
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.82 The statement $B \Rightarrow ((\sim A) \vee B)$ is equivalent to :

- Options
1. $B \Rightarrow (A \Rightarrow B)$
 2. $B \Rightarrow ((\sim A) \Rightarrow B)$
 3. $A \Rightarrow (A \Leftrightarrow B)$
 4. $A \Rightarrow ((\sim A) \Rightarrow B)$

Question Type : MCQ
 Question ID : 366694350
 Option 1 ID : 3666941070
 Option 2 ID : 3666941069
 Option 3 ID : 3666941088
 Option 4 ID : 3666941067
 Status : Answered
 Chosen Option : 4

Q.83 The number of 3 digit numbers, that are divisible by either 3 or 4 but not divisible by 48, is

- Options
1. 472
 2. 432
 3. 507
 4. 400

Question Type : MCQ
 Question ID : 366694341
 Option 1 ID : 3666941032
 Option 2 ID : 3666941034
 Option 3 ID : 3666941031
 Option 4 ID : 3666941033
 Status : Answered
 Chosen Option : 1

Q.84 Consider a function $f : \mathbb{N} \rightarrow \mathbb{R}$, satisfying

$$f(1) + 2f(2) + 3f(3) + \dots + xf(x) = x(x+1)f(x); x \geq 2 \text{ with } f(1) = 1.$$

Then $\frac{1}{f(2022)} + \frac{1}{f(2028)}$ is equal to

- Options
1. 8100
 2. 8200
 3. 8000
 4. 8400

Question Type : MCQ
 Question ID : 366694333
 Option 1 ID : 3666941001
 Option 2 ID : 3666941000
 Option 3 ID : 3666941002
 Option 4 ID : 366694999
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.85 Let K be the sum of the coefficients of the odd powers of x in the expansion of $(1+x)^{99}$. Let a be the middle term in the expansion of $\left(2 + \frac{1}{\sqrt{2}}\right)^{200}$. If $\frac{{}^{200}C_{99} K}{a} = \frac{2^l m}{n}$, where m and n are odd numbers, then the ordered pair (l, n) is equal to

- Options
1. (51, 99)
 2. (50, 101)
 3. (50, 51)
 4. (51, 101)

Question Type : MCQ
 Question ID : 366694334
 Option 1 ID : 3666941004
 Option 2 ID : 3666941003
 Option 3 ID : 3666941006
 Option 4 ID : 3666941005
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.86 The shortest distance between the lines $\frac{x-1}{2} = \frac{y+8}{-7} = \frac{z-4}{5}$ and

$$\frac{x-1}{2} = \frac{y-2}{1} = \frac{z-6}{-3}$$
 is

- Options
1. $3\sqrt{3}$
 2. $2\sqrt{3}$
 3. $5\sqrt{3}$
 4. $4\sqrt{3}$

Question Type : MCQ
 Question ID : 366694343
 Option 1 ID : 3666941041
 Option 2 ID : 3666941042
 Option 3 ID : 3666941039
 Option 4 ID : 3666941040
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.87 The value of the integral $\int_1^2 \left(\frac{t^4+1}{t^6+1} \right) dt$ is

- Options
1. $\tan^{-1} 2 - \frac{1}{3} \tan^{-1} 8 + \frac{\pi}{3}$
 2. $\tan^{-1} 2 + \frac{1}{3} \tan^{-1} 8 - \frac{\pi}{3}$
 3. $\tan^{-1} \frac{1}{2} + \frac{1}{3} \tan^{-1} 8 - \frac{\pi}{3}$
 4. $\tan^{-1} \frac{1}{2} - \frac{1}{3} \tan^{-1} 8 + \frac{\pi}{3}$

Question Type : MCQ
 Question ID : 366694337
 Option 1 ID : 3666941018
 Option 2 ID : 3666941017
 Option 3 ID : 3666941015
 Option 4 ID : 3666941016
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.88 Let f and g be twice differentiable functions on \mathbb{R} such that

$$f''(x) = g''(x) + 6x$$

$$f'(1) = 4g'(1) - 3 = 9$$

$$f(2) = 3g(2) = 12.$$

Then which of the following is NOT true?

Question Type : MCQ
 Question ID : 366694336
 Option 1 ID : 3666941013
 Option 2 ID : 3666941014
 Option 3 ID : 3666941012
 Option 4 ID : 3666941011
 Status : Answered
 Chosen Option : 2

- Options
- 1 If $-1 < x < 2$, then $|f(x) - g(x)| < 8$
 - 2 $|f'(x) - g'(x)| < 6 \Rightarrow -1 < x < 1$
 - 3 $g(-2) - f(-2) = 20$
 - 4 There exists $x_0 \in (1, 3/2)$ such that $f'(x_0) = g'(x_0)$

Q.69 Let R be a relation defined on \mathbb{N} as $a R b$ if $2a + 3b$ is a multiple of 5, $a, b \in \mathbb{N}$.

Then R is

- Options
- 1 transitive but not symmetric
 - 2 an equivalence relation
 - 3 not reflexive
 - 4 symmetric but not transitive

Question Type : MCQ
 Question ID : 366694331
 Option 1 ID : 366694903
 Option 2 ID : 366694994
 Option 3 ID : 366694991
 Option 4 ID : 366694992
 Status : Answered
 Chosen Option : 2

Q.70 If the tangent at a point P on the parabola $y^2 = 3x$ is parallel to the line $x + 2y = 1$ and the tangents at the points Q and R on the ellipse $\frac{x^2}{4} + \frac{y^2}{1} = 1$ are perpendicular to the line $x - y = 2$, then the area of the triangle PQR is :

- Options
- 1 $\frac{3}{2}\sqrt{5}$
 - 2 $5\sqrt{3}$
 - 3 $3\sqrt{5}$
 - 4 $\frac{9}{\sqrt{5}}$

Question Type : MCQ
 Question ID : 366694342
 Option 1 ID : 3666941035
 Option 2 ID : 3666941038
 Option 3 ID : 3666941036
 Option 4 ID : 3666941037
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.71 If $\vec{a} = \hat{i} + 2\hat{k}$, $\vec{b} = \hat{i} + \hat{j} + \hat{k}$, $\vec{c} = 7\hat{i} - 3\hat{j} + 4\hat{k}$, $\vec{r} \times \vec{b} + \vec{b} \times \vec{c} = \vec{0}$ and $\vec{r} \cdot \vec{a} = 0$. Then $\vec{r} \cdot \vec{c}$ is equal to

- Options
- 1 30
 - 2 32
 - 3 36
 - 4 34

Question Type : MCQ
 Question ID : 366694348
 Option 1 ID : 3666941062
 Option 2 ID : 3666941061
 Option 3 ID : 3666941059
 Option 4 ID : 3666941060
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.72 If the lines $\frac{x-1}{1} = \frac{y-2}{2} = \frac{z+3}{1}$ and $\frac{x-a}{2} = \frac{y+2}{3} = \frac{z-3}{1}$ intersect at the point P, then the distance of the point P from the plane $z = a$ is :

- Options
- 1 10
 - 2 22
 - 3 28
 - 4 16

Question Type : MCQ
 Question ID : 366694344
 Option 1 ID : 3666941043
 Option 2 ID : 3666941045
 Option 3 ID : 3666941046
 Option 4 ID : 3666941044
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.73 The value of the integral $\int_{\frac{1}{2}}^2 \frac{\tan^{-1}x}{x} dx$ is equal to

- Options
- 1 $\frac{\pi}{4} \log_e 2$
 - 2 $\pi \log_e 2$
 - 3 $\frac{\pi}{2} \log_e 2$
 - 4 $\frac{1}{2} \log_e 2$

Question Type : MCQ
 Question ID : 366694338
 Option 1 ID : 3666941019
 Option 2 ID : 3666941022
 Option 3 ID : 3666941020
 Option 4 ID : 3666941021
 Status : Answered
 Chosen Option : 3

Q.74 The plane $2x - y + z = 4$ intersects the line segment joining the points A ($a, -2, 4$) and B ($2, b, -3$) at the point C in the ratio 2:1 and the distance of the point C from the origin is $\sqrt{5}$. If $ab < 0$ and P is the point $(a - b, b, 2b - a)$ then CP^2 is equal to

- Options
- 1 $\frac{16}{3}$
 - 2 $\frac{17}{3}$
 - 3 $\frac{73}{3}$
 - 4 $\frac{97}{3}$

Question Type : MCQ
 Question ID : 366694345
 Option 1 ID : 3666941047
 Option 2 ID : 3666941048
 Option 3 ID : 3666941049
 Option 4 ID : 3666941050
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.75 The area of the region $A = \{(x, y) : |\cos x - \sin x| \leq y \leq \sin x, 0 \leq x \leq \frac{\pi}{2}\}$ is

- Options
- 1 $\sqrt{5} - 2\sqrt{2} + 1$
 - 2 $1 - \frac{3}{\sqrt{2}} + \frac{4}{\sqrt{5}}$
 - 3 $\frac{3}{\sqrt{5}} - \frac{3}{\sqrt{2}} + 1$
 - 4 $\sqrt{5} + 2\sqrt{2} - 4.5$

Question Type : MCQ
 Question ID : 366694330
 Option 1 ID : 3666941025
 Option 2 ID : 3666941026
 Option 3 ID : 3666941023
 Option 4 ID : 3666941024
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.76 The letters of the word OUGHT are written in all possible ways and these words are arranged as in a dictionary, in a series. Then the serial number of the word TOUGH is

- Options
- 1 79
 - 2 86
 - 3 84
 - 4 89

Question Type : MCQ
 Question ID : 366694335
 Option 1 ID : 3666941008
 Option 2 ID : 3666941010
 Option 3 ID : 3666941009
 Option 4 ID : 3666941007
 Status : Answered
 Chosen Option : 3

Q.77 Let $\vec{a} = 4\hat{i} + 3\hat{j}$ and $\vec{b} = 3\hat{i} - 4\hat{j} + 5\hat{k}$. If \vec{c} is a vector such that $\vec{c} \cdot (\vec{a} \times \vec{b}) + 25 = 0$, $\vec{c} \cdot (\hat{i} + \hat{j} + \hat{k}) = 4$, and projection of \vec{c} on \vec{a} is 1, then the projection of \vec{c} on \vec{b} equals

- Options
1. $\frac{5}{\sqrt{2}}$
 2. $\frac{1}{5}$
 3. $\frac{1}{\sqrt{2}}$
 4. $\frac{3}{\sqrt{2}}$

Question Type : MCQ
 Question ID : 366694346
 Option 1 ID : 3666941051
 Option 2 ID : 3666941053
 Option 3 ID : 3666941052
 Option 4 ID : 3666941054
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.78 The set of all values of λ for which the equation $\cos^2 2x - 2 \sin^4 x - 2 \cos^2 x = \lambda$ has a real solution x , is

- Options
1. $[-1, -\frac{1}{2}]$
 2. $[-\frac{3}{2}, -1]$
 3. $[-2, -\frac{3}{2}]$
 4. $[-2, -1]$

Question Type : MCQ
 Question ID : 366694349
 Option 1 ID : 3666941063
 Option 2 ID : 3666941065
 Option 3 ID : 3666941066
 Option 4 ID : 3666941064
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.79 The set of all values of $t \in \mathbb{R}$, for which the matrix $\begin{bmatrix} e^t & e^{-t}(\sin t - 2\cos t) & e^{-t}(-2\sin t - \cos t) \\ e^t & e^{-t}(2\sin t + \cos t) & e^{-t}(\sin t - 2\cos t) \\ e^t & e^{-t}\cos t & e^{-t}\sin t \end{bmatrix}$ is invertible, is

- Options
1. $\{(2k+1)\frac{\pi}{2}, k \in \mathbb{Z}\}$
 2. \mathbb{R}
 3. $\{k\pi + \frac{\pi}{4}, k \in \mathbb{Z}\}$
 4. $\{k\pi, k \in \mathbb{Z}\}$

Question Type : MCQ
 Question ID : 366694332
 Option 1 ID : 366694995
 Option 2 ID : 366694997
 Option 3 ID : 366694996
 Option 4 ID : 366694998
 Status : Not Attempted and Marked For Review
 Chosen Option : --

Q.80 Let $y = y(x)$ be the solution of the differential equation $x \log_e x \frac{dy}{dx} + y = x^2 \log_e x, (x > 1)$. If $y(2) = 2$, then $y(e)$ is equal to

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

Question Type : MCQ
 Question ID : 366694340
 Option 1 ID : 3666941030
 Option 2 ID : 3666941029
 Option 3 ID : 3666941028
 Option 4 ID : 3666941027
 Status : Answered
 Chosen Option : 2

Section : Mathematics Section B

Q.81 The total number of 4-digit numbers whose greatest common divisor with 54 is 2, is _____.

Given Answer : --

Question Type : SA
 Question ID : 366694354
 Status : Not Attempted and Marked For Review

Q.82 If the equation of the normal to the curve $y = \frac{x-a}{(x+b)(x-2)}$ at the point $(1, -3)$ is $x - 4y = 13$, then the value of $a + b$ is equal to _____.

Given Answer : -1

Question Type : SA
 Question ID : 366694357
 Status : Answered

Q.83 Let $X = \{11, 12, 13, \dots, 40, 41\}$ and $Y = \{61, 62, 63, \dots, 90, 91\}$ be the two sets of observations. If \bar{x} and \bar{y} are their respective means and σ^2 is the variance of all the observations in $X \cup Y$, then $|\bar{x} + \bar{y} - \sigma^2|$ is equal to _____.

Given Answer : --

Question Type : SA
 Question ID : 366694360
 Status : Not Attempted and Marked For Review

Q.84 A triangle is formed by the tangents at the point $(2, 2)$ on the curves $y^2 = 2x$ and $x^2 + y^2 = 4x$, and the line $x + y + 2 = 0$. If r is the radius of its circumcircle, then r^2 is equal to _____.

Given Answer : --

Question Type : SA
 Question ID : 366694359
 Status : Not Attempted and Marked For Review

Q.85 Let $\alpha_1, \alpha_2, \dots, \alpha_7$ be the roots of the equation $x^7 + 3x^5 - 13x^3 - 15x = 0$ and $|\alpha_1| \geq |\alpha_2| \geq \dots \geq |\alpha_7|$. Then $\alpha_1 \alpha_2 - \alpha_3 \alpha_4 + \alpha_5 \alpha_6$ is equal to _____.

Given Answer : --

Question Type : SA
 Question ID : 366694351
 Status : Not Attempted and Marked For Review

Q.86 Let A be a symmetric matrix such that $|A| = 2$ and $\begin{bmatrix} 2 & 1 \\ 3 & 3 \\ 3 & 2 \end{bmatrix} A = \begin{bmatrix} 1 & 2 \\ a & b \end{bmatrix}$.

If the sum of the diagonal elements of A is s , then $\frac{bs}{a^2}$ is equal to _____.

Given Answer : --

Question Type : SA
 Question ID : 366694353
 Status : Not Attempted and Marked For Review

Let $a_1 = b_1 = 1$ and $a_n = a_{n-1} + (n-1)$, $b_n = b_{n-1} + a_{n-1}$, $\forall n \geq 2$. If $S = \sum_{n=1}^8 \frac{a_n}{2^n}$

and $T = \sum_{n=1}^8 \frac{n}{2^{n-1}}$, then $2^7(2S - T)$ is equal to _____.

Given Answer : --

Q.88 A circle with centre $(2, 3)$ and radius 4 intersects the line $x + y = 3$ at the points P and Q . If the tangents at P and Q intersect at the point $S(\alpha, \beta)$, then $4\alpha - 7\beta$ is equal to _____.

Given Answer : --

Q.89 Let $\{a_k\}$ and $\{b_k\}$, $k \in \mathbb{N}$, be two G.P.s with common ratios r_1 and r_2 respectively such that $a_1 = b_1 = 4$ and $r_1 < r_2$. Let $c_k = a_k + b_k$, $k \in \mathbb{N}$. If $c_2 = 5$ and $c_3 = \frac{13}{4}$ then $\sum_{k=1}^{\infty} c_k - (12a_6 + 8b_4)$ is equal to _____.

Given Answer : --

Q.90 Let $\alpha = 8 - 14i$, $A = \left\{ z \in \mathbb{C} : \frac{\alpha z - \bar{\alpha} \bar{z}}{z^2 - (\bar{z})^2 - 112i} = 1 \right\}$ and $B = \{ z \in \mathbb{C} : |z + 3i| = 4 \}$.

Then $\sum_{z \in A \cap B} (\operatorname{Re} z - \operatorname{Im} z)$ is equal to _____.

Given Answer : --

Question Type : SA

Question ID : 366694356

Status : Not Attempted and Marked For Review

Question Type : SA

Question ID : 366694358

Status : Not Attempted and Marked For Review

Question Type : SA

Question ID : 366694355

Status : Not Attempted and Marked For Review

Question Type : SA

Question ID : 366694352

Status : Not Attempted and Marked For Review