

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

Application No	
Candidate Name	
Roll No	
Test Date	30/01/2023
Test Time	9:00 AM - 12:00 PM
Subject	B TECH

Section : Physics Section A

Q.1 Electric field in a certain region is given by $\vec{E} = \left(\frac{A}{x^2} \hat{i} + \frac{B}{y^3} \hat{j} \right)$. The SI unit of A and B are :

- Options**
1. $\text{Nm}^3\text{C}^{-1}; \text{Nm}^2\text{C}^{-1}$
 2. $\text{Nm}^2\text{C}; \text{Nm}^3\text{C}$
 3. $\text{Nm}^3\text{C}; \text{Nm}^2\text{C}$
 4. $\text{Nm}^2\text{C}^{-1}; \text{Nm}^3\text{C}^{-1}$

Question Type : MCQ

Question ID : 7155051996

Option 1 ID : 7155056062

Option 2 ID : 7155056063

Option 3 ID : 7155056064

Option 4 ID : 7155056061

Status : Marked For Review

Chosen Option : 1

Q.2 A sinusoidal carrier voltage is amplitude modulated. The resultant amplitude modulated wave has maximum and minimum amplitude of 120 V and 80 V respectively. The amplitude of each sideband is :

- Options**
1. 15 V
 2. 20 V
 3. 10 V
 4. 5 V

Question Type : MCQ

Question ID : 7155052015

Option 1 ID : 7155056139

Option 2 ID : 7155056140

Option 3 ID : 7155056138

Option 4 ID : 7155056137

Status : Marked For Review

Chosen Option : 3

Q.3 If the gravitational field in the space is given as $\left(-\frac{K}{r^2}\right)$. Taking the reference point to be at $r = 2$ cm with gravitational potential $V = 10$ J/kg. Find the gravitational potential at $r = 3$ cm in SI unit (Given, that $K = 6$ Jcm/kg)

- Options**
1. 12
 2. 9
 3. 10
 4. 11

Question Type : **MCQ**

Question ID : **7155052001**

Option 1 ID : **7155056081**

Option 2 ID : **7155056084**

Option 3 ID : **7155056083**

Option 4 ID : **7155056082**

Status : **Answered**

Chosen Option : **3**

Q.4 A person has been using spectacles of power -1.0 dioptre for distant vision and a separate reading glass of power 2.0 dioptres. What is the least distance of distinct vision for this person :

- Options**
1. 30 cm
 2. 50 cm
 3. 10 cm
 4. 40 cm

Question Type : **MCQ**

Question ID : **7155052011**

Option 1 ID : **7155056121**

Option 2 ID : **7155056123**

Option 3 ID : **7155056124**

Option 4 ID : **7155056122**

Status : **Marked For Review**

Chosen Option : **3**

Q.5 Two isolated metallic solid spheres of radii R and $2R$ are charged such that both have same charge density σ . The spheres are then connected by a thin conducting wire. If the new charge density of the bigger sphere is σ' . The ratio $\frac{\sigma'}{\sigma}$ is :

- Options**
1. $\frac{9}{4}$
 2. $\frac{5}{6}$
 3. $\frac{5}{3}$
 4. $\frac{4}{3}$

Question Type : **MCQ**

Question ID : **7155052005**

Option 1 ID : **7155056097**

Option 2 ID : **7155056099**

Option 3 ID : **7155056098**

Option 4 ID : **7155056100**

Status : **Marked For Review**

Chosen Option : **3**

Q.6 The height of liquid column raised in a capillary tube of certain radius when dipped in liquid A vertically is, 5 cm. If the tube is dipped in a similar manner in another liquid B of surface tension and density double the values of liquid A, the height of liquid column raised in liquid B would be _____m.

- Options
1. 0.5
 2. 0.05
 3. 0.10
 4. 0.20

Question Type : MCQ

Question ID : 7155052012

Option 1 ID : 7155056125

Option 2 ID : 7155056126

Option 3 ID : 7155056127

Option 4 ID : 7155056128

Status : Marked For Review

Chosen Option : 1

Q.7 A small object at rest, absorbs a light pulse of power 20 mW and duration 300 ns. Assuming speed of light as 3×10^8 m/s, the momentum of the object becomes equal to :

- Options
1. 2×10^{-17} kg m/s
 2. 1×10^{-17} kg m/s
 3. 0.5×10^{-17} kg m/s
 4. 3×10^{-17} kg m/s

Question Type : MCQ

Question ID : 7155052010

Option 1 ID : 7155056118

Option 2 ID : 7155056117

Option 3 ID : 7155056120

Option 4 ID : 7155056119

Status : Answered

Chosen Option : 1

Q.8 The pressure (P) and temperature (T) relationship of an ideal gas obeys the equation $PT^2 = \text{constant}$. The volume expansion coefficient of the gas will be :

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

Question Type : MCQ

Question ID : 7155052004

Option 1 ID : 7155056094

Option 2 ID : 7155056093

Option 3 ID : 7155056096

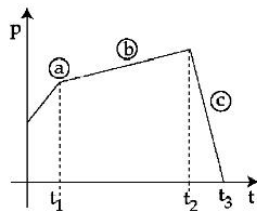
Option 4 ID : 7155056095

Status : Answered

Chosen Option : 1

Q.9 The figure represents the momentum time (p-t) curve for a particle moving along an axis under the influence of the force. Identify the regions on the graph where the magnitude of the force is maximum and minimum respectively ?

If $(t_3 - t_2) < t_1$



- Options 1. b and c
2. c and b
3. a and b
4. c and a

Question Type : MCQ

Question ID : 7155051999

Option 1 ID : 7155056074

Option 2 ID : 7155056073

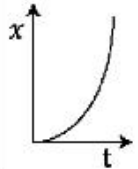
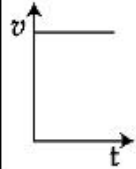
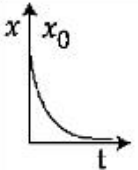
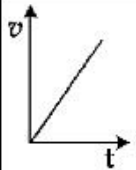
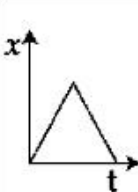
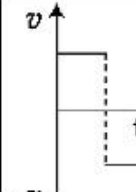
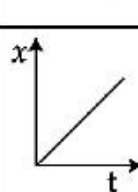
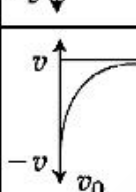
Option 3 ID : 7155056076

Option 4 ID : 7155056075

Status : Answered

Chosen Option : 4

Q.10 Match Column-I with Column-II :

Column-I (x-t graphs)		Column-II (v-t graphs)	
A.		I.	
B.		II.	
C.		III.	
D.		IV.	

Choose the correct answer from the options given below:

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

Question Type : MCQ

Question ID : 7155051997

Option 1 ID : 7155056068

Option 2 ID : 7155056067

Option 3 ID : 7155056065

Option 4 ID : 7155056066

Status : Marked For Review

Chosen Option : 2

Q.11 The charge flowing in a conductor changes with time as $Q(t) = \alpha t - \beta t^2 + \gamma t^3$. Where α , β and γ are constants. Minimum value of current is :

Options

1. $\alpha - \frac{\gamma^2}{3\beta}$
2. $\alpha - \frac{3\beta^2}{\gamma}$
3. $\beta - \frac{\alpha^2}{3\gamma}$
4. $\alpha - \frac{\beta^2}{3\gamma}$

Question Type : MCQ

Question ID : 7155052006

Option 1 ID : 7155056103

Option 2 ID : 7155056104

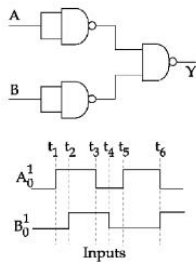
Option 3 ID : 7155056102

Option 4 ID : 7155056101

Status : Not Answered

Chosen Option : --

Q.12 The output waveform of the given logical circuit for the following inputs A and B as shown below, is :



Options

- 1.
- 2.
- 3.
- 4.

Question Type : MCQ

Question ID : 7155052014

Option 1 ID : 7155056136

Option 2 ID : 7155056135

Option 3 ID : 7155056133

Option 4 ID : 7155056134

Status : Marked For Review

Chosen Option : 3

Q.13 Heat is given to an ideal gas in an isothermal process.

- A. Internal energy of the gas will decrease.
- B. Internal energy of the gas will increase.
- C. Internal energy of the gas will not change.
- D. The gas will do positive work.
- E. The gas will do negative work.

Choose the **correct** answer from the options given below :

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

Question Type : MCQ

Question ID : 7155052003

Option 1 ID : 7155056092

Option 2 ID : 7155056089

Option 3 ID : 7155056091

Option 4 ID : 7155056090

Status : Marked For Review

Chosen Option : 3

Q.14 Speed of an electron in Bohr's 7th orbit for Hydrogen atom is 3.6×10^6 m/s. The corresponding speed of the electron in 3rd orbit, in m/s is :

- Options
- 1. (7.5×10^6)
 - 2. (3.6×10^6)
 - 3. (1.8×10^6)
 - 4. (8.4×10^6)

Question Type : MCQ

Question ID : 7155052013

Option 1 ID : 7155056131

Option 2 ID : 7155056129

Option 3 ID : 7155056130

Option 4 ID : 7155056132

Status : Marked For Review

Chosen Option : 3

Q.15 Choose the correct relationship between Poisson ratio (σ), bulk modulus (K) and modulus of rigidity (η) of a given solid object :

- Options
1. $\sigma = \frac{3K - 2\eta}{6K + 2\eta}$
 2. $\sigma = \frac{6K - 2\eta}{3K - 2\eta}$
 3. $\sigma = \frac{3K + 2\eta}{6K + 2\eta}$
 4. $\sigma = \frac{6K + 2\eta}{3K - 2\eta}$

Question Type : MCQ

Question ID : 7155052002

Option 1 ID : 7155056087

Option 2 ID : 7155056088

Option 3 ID : 7155056085

Option 4 ID : 7155056086

Status : Marked For Review

Chosen Option : 2

Q.16 A ball of mass 200 g rests on a vertical post of height 20 m. A bullet of mass 10 g, travelling in horizontal direction, hits the centre of the ball. After collision both travels independently. The ball hits the ground at a distance 30 m and the bullet at a distance of 120 m from the foot of the post. The value of initial velocity of the bullet will be (if $g = 10 \text{ m/s}^2$) :

- Options
1. 60 m/s
 2. 360 m/s
 3. 400 m/s
 4. 120 m/s

Question Type : MCQ

Question ID : 7155051998

Option 1 ID : 7155056069

Option 2 ID : 7155056071

Option 3 ID : 7155056072

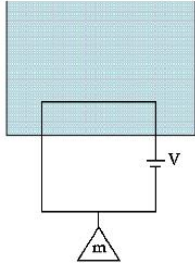
Option 4 ID : 7155056070

Status : Marked For Review

Chosen Option : 2

- Q.17** A massless square loop, of wire of resistance $10\ \Omega$, supporting a mass of 1 g , hangs vertically with one of its sides in a uniform magnetic field of 10^3 G , directed outwards in the shaded region. A dc voltage V is applied to the loop. For what value of V , the magnetic force will exactly balance the weight of the supporting mass of 1 g ?

(If sides of the loop = 10 cm , $g = 10\text{ ms}^{-2}$)



Options

1. $\frac{1}{10}\text{ V}$
2. 100 V
3. 10 V
4. 1 V

Question Type : MCQ

Question ID : 7155052007

Option 1 ID : 7155056107

Option 2 ID : 7155056108

Option 3 ID : 7155056106

Option 4 ID : 7155056105

Status : Answered

Chosen Option : 4

- Q.18** The magnetic moments associated with two closely wound circular coils A and B of radius $r_A = 10\text{ cm}$ and $r_B = 20\text{ cm}$ respectively are equal if : (Where N_A , I_A and N_B , I_B are number of turn and current of A and B respectively)

- Options
1. $4N_A I_A = N_B I_B$
 2. $2N_A I_A = N_B I_B$
 3. $N_A = 2N_B$
 4. $N_A I_A = 4N_B I_B$

Question Type : MCQ

Question ID : 7155052008

Option 1 ID : 7155056112

Option 2 ID : 7155056110

Option 3 ID : 7155056109

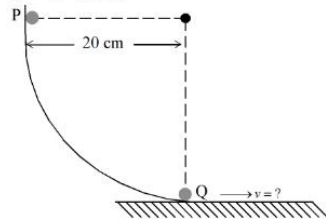
Option 4 ID : 7155056111

Status : Marked For Review

Chosen Option : 4

- Q.19** As per the given figure, a small ball P slides down the quadrant of a circle and hits the other ball Q of equal mass which is initially at rest. Neglecting the effect of friction and assume the collision to be elastic, the velocity of ball Q after collision will be :

($g = 10 \text{ m/s}^2$)



- Options**
1. 4 m/s
 2. 0.25 m/s
 3. 2 m/s
 4. 0

Question Type : MCQ

Question ID : 7155052000

Option 1 ID : 7155056078

Option 2 ID : 7155056077

Option 3 ID : 7155056080

Option 4 ID : 7155056079

Status : Marked For Review

Chosen Option : 4

- Q.20** In a series LR circuit with $X_L = R$, power factor is P_1 . If a capacitor of capacitance C with $X_C = X_L$ is added to the circuit the power factor becomes P_2 . The ratio of P_1 to P_2 will be :

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

Question Type : MCQ

Question ID : 7155052009

Option 1 ID : 7155056113

Option 2 ID : 7155056116

Option 3 ID : 7155056115

Option 4 ID : 7155056114

Status : Marked For Review

Chosen Option : 3

Section : Physics Section B

- Q.21** The general displacement of a simple harmonic oscillator is $x = A \sin \omega t$. Let T be its time period. The slope of its potential energy (U) - time (t) curve will be maximum when $t = \frac{T}{\beta}$. The value of β is _____.

Given--
Answer :

Question Type : SA

Question ID : 7155052019

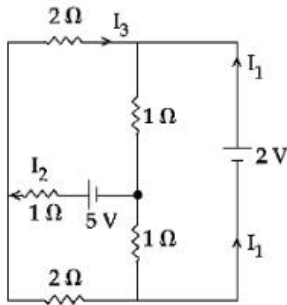
Status : Not Answered

- Q.22** A capacitor of capacitance $900 \mu\text{F}$ is charged by a 100 V battery. The capacitor is disconnected from the battery and connected to another uncharged identical capacitor such that one plate of uncharged capacitor connected to positive plate and another plate of uncharged capacitor connected to negative plate of the charged capacitor. The loss of energy in this process is measured as $x \times 10^{-2} \text{ J}$. The value of x is _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052020
Status : Not Answered

- Q.23** In the following circuit, the magnitude of current I_1 , is _____ A.



Given --
Answer :

Question Type : SA
Question ID : 7155052021
Status : Not Answered

- Q.24** A point source of light is placed at the centre of curvature of a hemispherical surface. The source emits a power of 24 W . The radius of curvature of hemisphere is 10 cm and the inner surface is completely reflecting. The force on the hemisphere due to the light falling on it is _____ $\times 10^{-8} \text{ N}$.

Given --
Answer :

Question Type : SA
Question ID : 7155052018
Status : Not Answered

- Q.25** In a screw gauge, there are 100 divisions on the circular scale and the main scale moves by 0.5 mm on a complete rotation of the circular scale. The zero of circular scale lies 6 divisions below the line of graduation when two studs are brought in contact with each other. When a wire is placed between the studs, 4 linear scale divisions are clearly visible while 46th division of the circular scale coincide with the reference line. The diameter of the wire is _____ $\times 10^{-2} \text{ mm}$.

Given --
Answer :

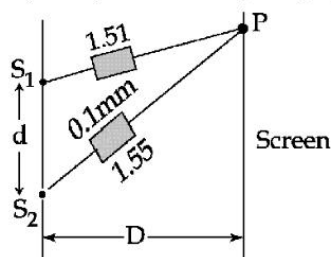
Question Type : SA
Question ID : 7155052025
Status : Not Answered

- Q.26** A thin uniform rod of length 2m , cross sectional area ' A ' and density ' d ' is rotated about an axis passing through the centre and perpendicular to its length with angular velocity ω . If value of ω in terms of its rotational kinetic energy E is $\sqrt{\frac{\alpha E}{Ad}}$ then value of α is _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052017
Status : Not Answered

- Q.27** In Young's double slit experiment, two slits S_1 and S_2 are 'd' distance apart and the separation from slits to screen is D (as shown in figure). Now if two transparent slabs of equal thickness 0.1 mm but refractive index 1.51 and 1.55 are introduced in the path of beam ($\lambda = 4000\text{\AA}$) from S_1 and S_2 respectively. The central bright fringe spot will shift by _____ number of fringes.



Given --
Answer :

Question Type : SA
Question ID : 7155052023
Status : Not Answered

- Q.28** A horse rider covers half the distance with 5 m/s speed. The remaining part of the distance was travelled with speed 10 m/s for half the time and with speed 15 m/s for other half of the time. The mean speed of the rider averaged over the whole time of motion is $\frac{x}{7}$ m/s. The value of x is _____.

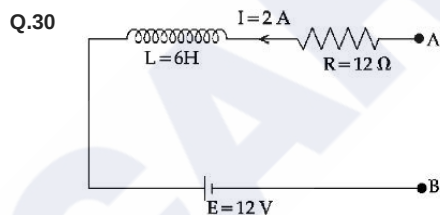
Given --
Answer :

Question Type : SA
Question ID : 7155052016
Status : Not Answered

- Q.29** In an experiment for estimating the value of focal length of converging mirror, image of an object placed at 40 cm from the pole of the mirror is formed at distance 120 cm from the pole of the mirror. These distances are measured with a modified scale in which there are 20 small divisions in 1 cm. The value of error in measurement of focal length of the mirror is $\frac{1}{K}$ cm. The value of K is _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052024
Status : Not Answered



As per the given figure, if $\frac{dI}{dt} = -1 \text{ A/s}$ then the value of V_{AB} at this instant will be _____ V.

Given --
Answer :

Question Type : SA
Question ID : 7155052022
Status : Not Answered

Q.31 Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : In expensive scientific instruments, silica gel is kept in watch-glasses or in semipermeable membrane bags.

Reason (R) : Silica gel adsorbs moisture from air via adsorption, thus protects the instrument from water corrosion (rusting) and / or prevents malfunctioning.

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

Options

1. Both (A) and (R) are true and (R) is the correct explanation of (A)
2. (A) is false but (R) is true
3. (A) is true but (R) is false
4. Both (A) and (R) are true but (R) is **not** the correct explanation of (A)

Question Type : **MCQ**

Question ID : **7155052027**

Option 1 ID : **7155056155**

Option 2 ID : **7155056158**

Option 3 ID : **7155056157**

Option 4 ID : **7155056156**

Status : **Marked For Review**

Chosen Option : **4**

Q.32 The alkaline earth metal sulphate(s) which are readily soluble in water is/are :

- A. BeSO_4
- B. MgSO_4
- C. CaSO_4
- D. SrSO_4
- E. BaSO_4

Choose the **correct** answer from the options given below :

Options

1. **B only**
2. **B and C**
3. **A and B**
4. **A only**

Question Type : **MCQ**

Question ID : **7155052031**

Option 1 ID : **7155056172**

Option 2 ID : **7155056174**

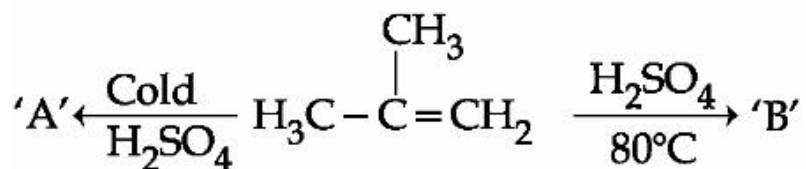
Option 3 ID : **7155056173**

Option 4 ID : **7155056171**

Status : **Marked For Review**

Chosen Option : **2**

Q.33 The major products 'A' and 'B', respectively, are



Options

1. $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{OSO}_3\text{H}}{|}{\text{C}}}-\text{CH}_3$ & $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{CH}}}-\text{CH}_2\text{CH}_2-\overset{\text{CH}_3}{\underset{|}{\text{HC}}}-\text{CH}_3$
2. $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{OSO}_3\text{H}}{|}{\text{C}}}-\text{CH}_3$ & $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{C}}}=\text{CH}-\overset{\text{CH}_3}{\underset{\text{CH}_3}{|}{\text{C}}}-\text{CH}_3$
3. $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{CH}}}-\text{CH}_2\text{CH}_2-\overset{\text{CH}_3}{\underset{|}{\text{CH}}}-\text{CH}_3$ & $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{OSO}_3\text{H}}{|}{\text{C}}}-\text{CH}_3$
4. $\text{CH}_3-\overset{\text{CH}_3}{\underset{|}{\text{C}}}=\text{CH}-\overset{\text{CH}_3}{\underset{\text{CH}_3}{|}{\text{C}}}-\text{CH}_3$ & $\text{CH}_3-\overset{\text{CH}_3}{\underset{\text{OSO}_3\text{H}}{|}{\text{C}}}-\text{CH}_3$

Question Type : MCQ

Question ID : 7155052037

Option 1 ID : 7155056195

Option 2 ID : 7155056197

Option 3 ID : 7155056196

Option 4 ID : 7155056198

Status : Marked For Review

Chosen Option : 3

Q.34 To inhibit the growth of tumours, identify the compounds used from the following :

- A. EDTA
- B. Coordination Compounds of Pt
- C. D - Penicillamine
- D. Cis - Platin

Choose the correct answer from the option given below:

Options 1. B and D Only

2. A and B Only

3. A and C Only

4. C and D Only

Question Type : MCQ

Question ID : 7155052033

Option 1 ID : 7155056181

Option 2 ID : 7155056179

Option 3 ID : 7155056180

Option 4 ID : 7155056182

Status : Marked For Review

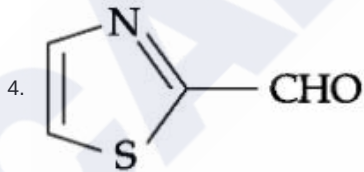
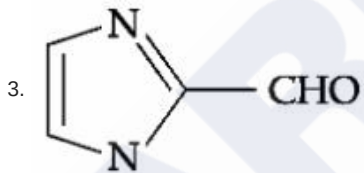
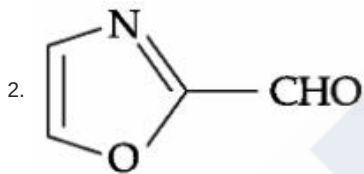
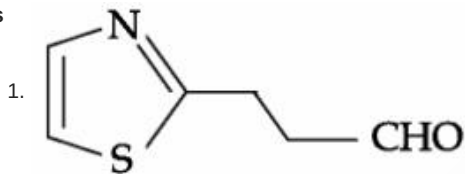
Chosen Option : 2

Q.35 Which of the following compounds would give the following set of qualitative analysis ?

(i) Fehling's Test : Positive

(ii) Na fusion extract upon treatment with sodium nitroprusside gives a blood red colour but not prussian blue.

Options



Question Type : MCQ

Question ID : 7155052036

Option 1 ID : 7155056192

Option 2 ID : 7155056193

Option 3 ID : 7155056191

Option 4 ID : 7155056194

Status : Marked For Review

Chosen Option : 4

Q.36 Lithium aluminium hydride can be prepared from the reaction of

- Options
1. LiCl , Al and H_2
 2. LiH and $\text{Al}(\text{OH})_3$
 3. LiH and Al_2Cl_6
 4. LiCl and Al_2H_6

Question Type : **MCQ**

Question ID : **7155052030**

Option 1 ID : **7155056169**

Option 2 ID : **7155056170**

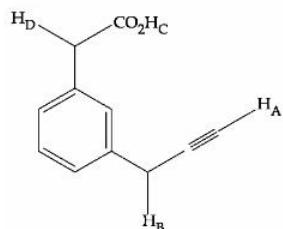
Option 3 ID : **7155056168**

Option 4 ID : **7155056167**

Status : **Marked For Review**

Chosen Option : **1**

Q.37 What is the correct order of acidity of the protons marked A–D in the given compounds ?



- Options
1. $\text{H}_\text{C} > \text{H}_\text{A} > \text{H}_\text{D} > \text{H}_\text{B}$
 2. $\text{H}_\text{C} > \text{H}_\text{D} > \text{H}_\text{B} > \text{H}_\text{A}$
 3. $\text{H}_\text{D} > \text{H}_\text{C} > \text{H}_\text{B} > \text{H}_\text{A}$
 4. $\text{H}_\text{C} > \text{H}_\text{D} > \text{H}_\text{A} > \text{H}_\text{B}$

Question Type : **MCQ**

Question ID : **7155052038**

Option 1 ID : **7155056199**

Option 2 ID : **7155056201**

Option 3 ID : **7155056202**

Option 4 ID : **7155056200**

Status : **Marked For Review**

Chosen Option : **4**

Q.38 Caprolactam when heated at high temperature in presence of water, gives

- Options
1. Nylon 6, 6
 2. Dacron
 3. Nylon 6
 4. Teflon

Question Type : **MCQ**

Question ID : **7155052041**

Option 1 ID : **7155056211**

Option 2 ID : **7155056213**

Option 3 ID : **7155056212**

Option 4 ID : **7155056214**

Status : **Marked For Review**

Chosen Option : **1**

Q.39 Match List I with List II

LIST I (Atomic number)		LIST II (Block of periodic table)	
A.	37	I.	p-block
B.	78	II.	d-block
C.	52	III.	f-block
D.	65	IV.	s-block

Choose the **correct** answer from the options given below:

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

Question Type : MCQ

Question ID : 7155052028

Option 1 ID : 7155056159

Option 2 ID : 7155056160

Option 3 ID : 7155056161

Option 4 ID : 7155056162

Status : Marked For Review

Chosen Option : 2

Q.40 In the extraction of copper, its sulphide ore is heated in a reverberatory furnace after mixing with silica to:

- Options
1. decrease the temperature needed for roasting of Cu_2S
 2. remove FeO as FeSiO_3
 3. separate CuO as CuSiO_3
 4. remove calcium as CaSiO_3

Question Type : MCQ

Question ID : 7155052029

Option 1 ID : 7155056166

Option 2 ID : 7155056164

Option 3 ID : 7155056165

Option 4 ID : 7155056163

Status : Not Answered

Chosen Option : --

Q.41 Which of the following is correct order of ligand field strength ?

- Options
1. $\text{S}^{2-} < \text{NH}_3 < \text{en} < \text{CO} < \text{C}_2\text{O}_4^{2-}$
 2. $\text{CO} < \text{en} < \text{NH}_3 < \text{C}_2\text{O}_4^{2-} < \text{S}^{2-}$
 3. $\text{S}^{2-} < \text{C}_2\text{O}_4^{2-} < \text{NH}_3 < \text{en} < \text{CO}$
 4. $\text{NH}_3 < \text{en} < \text{CO} < \text{S}^{2-} < \text{C}_2\text{O}_4^{2-}$

Question Type : MCQ

Question ID : 7155052035

Option 1 ID : 7155056188

Option 2 ID : 7155056189

Option 3 ID : 7155056187

Option 4 ID : 7155056190

Status : Not Answered

Chosen Option : --

Q.42 For OF_2 molecule consider the following :

- A. Number of lone pairs on oxygen is 2.
- B. FOF angle is less than 104.5° .
- C. Oxidation state of O is -2 .
- D. Molecule is bent 'V' shaped.
- E. Molecular geometry is linear.

correct options are:

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

Question Type : MCQ

Question ID : 7155052026

Option 1 ID : 7155056153

Option 2 ID : 7155056152

Option 3 ID : 7155056154

Option 4 ID : 7155056151

Status : Marked For Review

Chosen Option : 3

Q.43 Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Ketoses give Seliwanoff's test faster than Aldoses.

Reason (R) : Ketoses undergo β -elimination followed by formation of furfural.

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

Options

- 1. Both (A) and (R) are true and (R) is the correct explanation of (A)
- 2. (A) is true but (R) is false
- 3. (A) is false but (R) is true
- 4. Both (A) and (R) are true but (R) is **not** the correct explanation of (A)

Question Type : MCQ

Question ID : 7155052042

Option 1 ID : 7155056215

Option 2 ID : 7155056217

Option 3 ID : 7155056218

Option 4 ID : 7155056216

Status : Marked For Review

Chosen Option : 3

Q.44 In the wet tests for identification of various cations by precipitation, which transition element cation doesn't belong to group IV in qualitative inorganic analysis ?

- Options
1. Fe^{3+}
 2. Zn^{2+}
 3. Ni^{2+}
 4. Co^{2+}

Question Type : MCQ

Question ID : 7155052034

Option 1 ID : 7155056183

Option 2 ID : 7155056186

Option 3 ID : 7155056185

Option 4 ID : 7155056184

Status : Marked For Review

Chosen Option : 3

Q.45 Amongst the following compounds, which one is an antacid ?

- Options
1. Meprobamate
 2. Brompheniramine
 3. Ranitidine
 4. Terfenadine

Question Type : MCQ

Question ID : 7155052043

Option 1 ID : 7155056222

Option 2 ID : 7155056219

Option 3 ID : 7155056221

Option 4 ID : 7155056220

Status : Marked For Review

Chosen Option : 3

Q.46 Match List I with List II

LIST I		LIST II
A.	$\text{C}_6\text{H}_5\text{Cl} + \text{CH}_3\text{Cl} \xrightarrow{\text{Na}} \text{C}_6\text{H}_5\text{CH}_3$	I. Fittig reaction
B.	$\text{C}_6\text{H}_5\text{Cl} + 2\text{Na} \rightarrow \text{C}_6\text{H}_5\text{C}_6\text{H}_5$	II. Wurtz Fittig reaction
C.	$\text{C}_6\text{H}_5\text{N}_2^+\text{Cl}^- \xrightarrow{\text{Cu}_2\text{Cl}_2} \text{C}_6\text{H}_5\text{Cl} + \text{N}_2$	III. Finkelstein reaction
D.	$\text{C}_2\text{H}_5\text{Cl} + \text{NaI} \rightarrow \text{C}_2\text{H}_5\text{I} + \text{NaCl}$	IV. Sandmeyer reaction

Choose the **correct** answer from the options given below:

Options 1. A - IV, B - II, C - III, D - I

2. A - II, B - I, C - IV, D - III

3. A - II, B - I, C - III, D - IV

4. A - III, B - II, C - IV, D - I

Question Type : MCQ

Question ID : 7155052039

Option 1 ID : 7155056206

Option 2 ID : 7155056203

Option 3 ID : 7155056205

Option 4 ID : 7155056204

Status : Marked For Review

Chosen Option : 2

Q.47 Formation of photochemical smog involves the following reaction in which A, B and C are respectively.

- i. $\text{NO}_2 \xrightarrow{h\nu} \text{A} + \text{B}$
- ii. $\text{B} + \text{O}_2 \rightarrow \text{C}$
- iii. $\text{A} + \text{C} \rightarrow \text{NO}_2 + \text{O}_2$

Choose the correct answer from the options given below:

- Options**
1. N, O₂ & O₃
 2. O, NO & NO₂
 3. NO, O & O₃
 4. O, N₂O & NO

Question Type : MCQ

Question ID : 7155052045

Option 1 ID : 7155056228

Option 2 ID : 7155056229

Option 3 ID : 7155056227

Option 4 ID : 7155056230

Status : Marked For Review

Chosen Option : 3

Q.48 Match List I with List II

LIST I (molecules/ions)		LIST II (No. of lone pairs of e ⁻ on central atom)	
A.	IF ₇	I.	Three
B.	ICl ₄ ⁻	II.	One
C.	XeF ₆	III.	Two
D.	XeF ₂	IV.	Zero

Choose the **correct** answer from the options given below:

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

Question Type : MCQ

Question ID : 7155052032

Option 1 ID : 7155056178

Option 2 ID : 7155056175

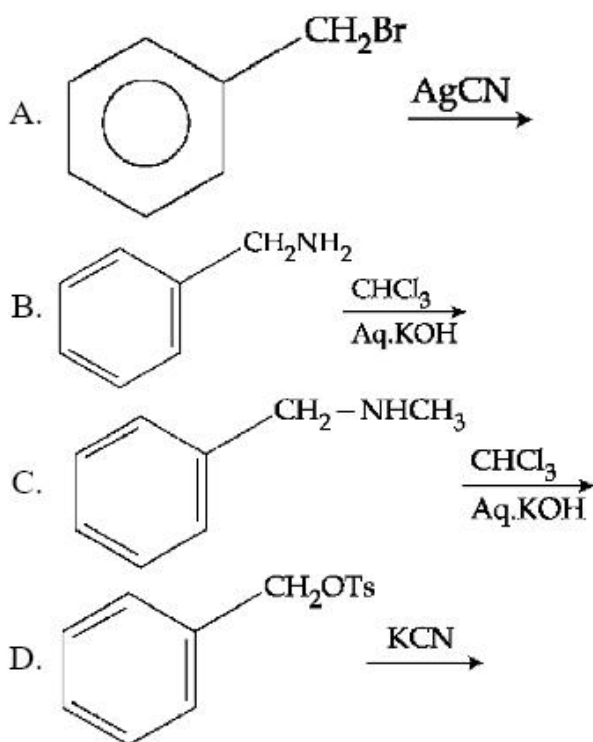
Option 3 ID : 7155056177

Option 4 ID : 7155056176

Status : Marked For Review

Chosen Option : 3

Q.49 Benzyl isocyanide can be obtained by :



Choose the **correct** answer from the options given below :

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

Question Type : MCQ

Question ID : 7155052040

Option 1 ID : 7155056209

Option 2 ID : 7155056207

Option 3 ID : 7155056208

Option 4 ID : 7155056210

Status : Marked For Review

Chosen Option : 2

Q.50 During the qualitative analysis of SO_3^{2-} using dilute H_2SO_4 , SO_2 gas is evolved which turns $\text{K}_2\text{Cr}_2\text{O}_7$ solution (acidified with dilute H_2SO_4) :

- Options 1. blue
 2. green
 3. black
 4. red

Question Type : MCQ

Question ID : 7155052044

Option 1 ID : 7155056224

Option 2 ID : 7155056225

Option 3 ID : 7155056223

Option 4 ID : 7155056226

Status : Marked For Review

Chosen Option : 1

Q.51 If compound A reacts with B following first order kinetics with rate constant $2.011 \times 10^{-3} \text{ s}^{-1}$. The time taken by A (in seconds) to reduce from 7 g to 2 g will be _____. (Nearest Integer)
[$\log 5 = 0.698$, $\log 7 = 0.845$, $\log 2 = 0.301$]

Given --
Answer :

Question Type : SA
Question ID : 7155052053
Status : Not Answered

Q.52 A solution containing 2 g of a non-volatile solute in 20 g of water boils at 373.52 K. The molecular mass of the solute is _____ g mol⁻¹. (Nearest integer)
Given, water boils at 373 K, K_b for water = 0.52 K kg mol⁻¹

Given --
Answer :

Question Type : SA
Question ID : 7155052050
Status : Not Answered

Q.53 A trisubstituted compound 'A', C₁₀H₁₂O₂ gives neutral FeCl₃ test positive. Treatment of compound 'A' with NaOH and CH₃Br gives C₁₁H₁₄O₂, with hydroiodic acid gives methyl iodide and with hot conc. NaOH gives a compound B, C₁₀H₁₂O₂. Compound 'A' also decolorises alkaline KMnO₄. The number of π bond/s present in the compound 'A' is _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052055
Status : Not Answered

Q.54 Some amount of dichloromethane (CH₂Cl₂) is added to 671.141 mL of chloroform (CHCl₃) to prepare 2.6×10^{-3} M solution of CH₂Cl₂ (DCM). The concentration of DCM is _____ ppm (by mass).
Given :
atomic mass : C = 12
H = 1
Cl = 35.5
density of CHCl₃ = 1.49 g cm⁻³

Given --
Answer :

Question Type : SA
Question ID : 7155052046
Status : Not Answered

Q.55 The energy of one mole of photons of radiation of frequency $2 \times 10^{12} \text{ Hz}$ in J mol⁻¹ is _____. (Nearest integer)
[Given : $h = 6.626 \times 10^{-34} \text{ Js}$
 $N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$]

Given --
Answer :

Question Type : SA
Question ID : 7155052048
Status : Not Answered

Q.56 A 300 mL bottle of soft drink has 0.2 M CO_2 dissolved in it. Assuming CO_2 behaves as an ideal gas, the volume of the dissolved CO_2 at STP is _____ mL. (Nearest integer)

Given : At STP, molar volume of an ideal gas is 22.7 L mol^{-1}

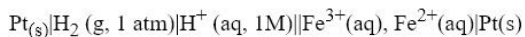
Given --
Answer :

Question Type : SA

Question ID : 7155052047

Status : Not Answered

Q.57 Consider the cell



When the potential of the cell is 0.712 V at 298 K, the ratio $[\text{Fe}^{2+}] / [\text{Fe}^{3+}]$ is _____.
(Nearest integer)

Given : $\text{Fe}^{3+} + \text{e}^- \rightleftharpoons \text{Fe}^{2+}$, $E^\circ_{\text{Fe}^{3+}, \text{Fe}^{2+}}|\text{Pt} = 0.771$

$$\frac{2.303 RT}{F} = 0.06 \text{ V}$$

Given --
Answer :

Question Type : SA

Question ID : 7155052052

Status : Not Answered

Q.58 600 mL of 0.01M HCl is mixed with 400 mL of 0.01 M H_2SO_4 . The pH of the mixture is

_____ $\times 10^{-2}$. (Nearest integer)

[Given $\log 2 = 0.30$

$\log 3 = 0.48$

$\log 5 = 0.69$

$\log 7 = 0.84$

$\log 11 = 1.04$]

Given --
Answer :

Question Type : SA

Question ID : 7155052051

Status : Not Answered

Q.59 When 2 litre of ideal gas expands isothermally into vacuum to a total volume of 6 litre, the change in internal energy is _____ J. (Nearest integer)

Given --
Answer :

Question Type : SA

Question ID : 7155052049

Status : Not Answered

Q.60 The number of electrons involved in the reduction of permanganate to manganese dioxide in acidic medium is _____.

Given --
Answer :

Question Type : SA

Question ID : 7155052054

Status : Not Answered

Section : Mathematics Section A

Q.61 If $\vec{a}, \vec{b}, \vec{c}$ are three non-zero vectors and \hat{n} is a unit vector perpendicular to \vec{c} such that $\vec{a} = \alpha \vec{b} - \hat{n}$ ($\alpha \neq 0$) and $\vec{b} \cdot \vec{c} = 12$, then $|\vec{c} \times (\vec{a} \times \vec{b})|$ is equal to :

- Options 1. 15
2. 6
3. 9
4. 12

Question Type : MCQ

Question ID : 7155052072

Option 1 ID : 7155056308

Option 2 ID : 7155056305

Option 3 ID : 7155056306

Option 4 ID : 7155056307

Status : Marked For Review

Chosen Option : 3

Q.62 The coefficient of x^{301} in $(1+x)^{500} + x(1+x)^{499} + x^2(1+x)^{498} + \dots + x^{500}$ is :

- Options 1. $^{500}C_{300}$
2. $^{501}C_{200}$
3. $^{500}C_{301}$
4. $^{501}C_{302}$

Question Type : MCQ

Question ID : 7155052059

Option 1 ID : 7155056256

Option 2 ID : 7155056253

Option 3 ID : 7155056255

Option 4 ID : 7155056254

Status : Marked For Review

Chosen Option : 4

Q.63 A straight line cuts off the intercepts $OA = a$ and $OB = b$ on the positive directions of x -axis and y -axis respectively. If the perpendicular from origin O to this line makes an angle of $\frac{\pi}{6}$ with positive direction of y -axis and the area of $\triangle OAB$ is $\frac{98}{3}\sqrt{3}$, then $a^2 - b^2$ is equal to :

- Options 1. $\frac{392}{3}$
2. 98
3. 196
4. $\frac{196}{3}$

Question Type : MCQ

Question ID : 7155052067

Option 1 ID : 7155056287

Option 2 ID : 7155056286

Option 3 ID : 7155056288

Option 4 ID : 7155056285

Status : Marked For Review

Chosen Option : 3

Q.64 The line l_1 passes through the point (2, 6, 2) and is perpendicular to the plane $2x + y - 2z = 10$.

Then the shortest distance between the line l_1 and the line $\frac{x+1}{2} = \frac{y+4}{-3} = \frac{z}{2}$ is :

- Options
1. $\frac{13}{3}$
 2. 7
 3. $\frac{19}{3}$
 4. 9

Question Type : MCQ

Question ID : 7155052070

Option 1 ID : 7155056297

Option 2 ID : 7155056298

Option 3 ID : 7155056300

Option 4 ID : 7155056299

Status : Marked For Review

Chosen Option : 3

Q.65 Among the statements :

(S1) $((p \vee q) \Rightarrow r) \Leftrightarrow (p \Rightarrow r)$

(S2) $((p \vee q) \Rightarrow r) \Leftrightarrow ((p \Rightarrow r) \vee (q \Rightarrow r))$

- Options
1. both (S1) and (S2) are tautologies
 2. only (S2) is a tautology
 3. neither (S1) nor (S2) is a tautology
 4. only (S1) is a tautology

Question Type : MCQ

Question ID : 7155052075

Option 1 ID : 7155056319

Option 2 ID : 7155056318

Option 3 ID : 7155056320

Option 4 ID : 7155056317

Status : Marked For Review

Chosen Option : 1

Q.66 If $\tan 15^\circ + \frac{1}{\tan 75^\circ} + \frac{1}{\tan 105^\circ} + \tan 195^\circ = 2a$, then the value of $\left(a + \frac{1}{a}\right)$ is :

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

Question Type : MCQ

Question ID : 7155052074

Option 1 ID : 7155056313

Option 2 ID : 7155056315

Option 3 ID : 7155056314

Option 4 ID : 7155056316

Status : Marked For Review

Chosen Option : 2

Q.67 Let $y = x + 2$, $4y = 3x + 6$ and $3y = 4x + 1$ be three tangent lines to the circle $(x - h)^2 + (y - k)^2 = r^2$. Then $h + k$ is equal to :

- Options
1. 5
 2. $5\sqrt{2}$
 3. $5(1 + \sqrt{2})$
 4. 6

Question Type : MCQ

Question ID : 7155052069

Option 1 ID : 7155056295

Option 2 ID : 7155056293

Option 3 ID : 7155056294

Option 4 ID : 7155056296

Status : Marked For Review

Chosen Option : 1

Q.68 Let $A = \begin{pmatrix} m & n \\ p & q \end{pmatrix}$, $d = |A| \neq 0$ and $|A - d(\text{Adj } A)| = 0$. Then

- Options
1. $1 + d^2 = (m + q)^2$
 2. $(1 + d)^2 = (m + q)^2$
 3. $(1 + d)^2 = m^2 + q^2$
 4. $1 + d^2 = m^2 + q^2$

Question Type : MCQ

Question ID : 7155052058

Option 1 ID : 7155056250

Option 2 ID : 7155056252

Option 3 ID : 7155056249

Option 4 ID : 7155056251

Status : Marked For Review

Chosen Option : 1

Q.69 If $a_n = \frac{-2}{4n^2 - 16n + 15}$, then $a_1 + a_2 + \dots + a_{25}$ is equal to:

- Options
1. $\frac{52}{147}$
 2. $\frac{50}{141}$
 3. $\frac{49}{138}$
 4. $\frac{51}{144}$

Question Type : MCQ

Question ID : 7155052061

Option 1 ID : 7155056264

Option 2 ID : 7155056262

Option 3 ID : 7155056261

Option 4 ID : 7155056263

Status : Marked For Review

Chosen Option : 2

Q.70 If the solution of the equation $\log_{\cos x} \cot x + 4 \log_{\sin x} \tan x = 1$, $x \in \left(0, \frac{\pi}{2}\right)$, is $\sin^{-1} \left(\frac{\alpha + \sqrt{\beta}}{2}\right)$, where α , β are integers, then $\alpha + \beta$ is equal to :

- Options 1. 5
2. 3
3. 6
4. 4

Question Type : MCQ

Question ID : 7155052060

Option 1 ID : 7155056258

Option 2 ID : 7155056259

Option 3 ID : 7155056260

Option 4 ID : 7155056257

Status : Marked For Review

Chosen Option : 1

Q.71 If $[t]$ denotes the greatest integer $\leq t$, then the value of $\frac{3(e-1)}{e} \int_1^2 x^2 e^{[x]+[x^3]} dx$ is :

- Options 1. $e^8 - e$
2. $e^9 - e$
3. $e^7 - 1$
4. $e^8 - 1$

Question Type : MCQ

Question ID : 7155052064

Option 1 ID : 7155056274

Option 2 ID : 7155056276

Option 3 ID : 7155056273

Option 4 ID : 7155056275

Status : Answered

Chosen Option : 3

Q.72 The number of points on the curve $y = 54x^5 - 135x^4 - 70x^3 + 180x^2 + 210x$ at which the normal lines are parallel to $x + 90y + 2 = 0$ is :

- Options 1. 3
2. 0
3. 4
4. 2

Question Type : MCQ

Question ID : 7155052063

Option 1 ID : 7155056270

Option 2 ID : 7155056272

Option 3 ID : 7155056269

Option 4 ID : 7155056271

Status : Marked For Review

Chosen Option : 4

Q.73 Let the system of linear equations

$$x + y + kz = 2$$

$$2x + 3y - z = 1$$

$$3x + 4y + 2z = k$$

have infinitely many solutions. Then the system

$$(k + 1)x + (2k - 1)y = 7$$

$$(2k + 1)x + (k + 5)y = 10$$

has :

- Options**
1. unique solution satisfying $x + y = 1$
 2. infinitely many solutions
 3. no solution
 4. unique solution satisfying $x - y = 1$

Question Type : **MCQ**

Question ID : **7155052057**

Option 1 ID : **7155056247**

Option 2 ID : **7155056245**

Option 3 ID : **7155056246**

Option 4 ID : **7155056248**

Status : **Answered**

Chosen Option : **3**

Q.74 If an unbiased die, marked with $-2, -1, 0, 1, 2, 3$ on its faces, is thrown five times, then the probability that the product of the outcomes is positive, is :

- Options**
1. $\frac{521}{2592}$
 2. $\frac{881}{2592}$
 3. $\frac{440}{2592}$
 4. $\frac{27}{288}$

Question Type : **MCQ**

Question ID : **7155052073**

Option 1 ID : **7155056310**

Option 2 ID : **7155056309**

Option 3 ID : **7155056312**

Option 4 ID : **7155056311**

Status : **Marked For Review**

Chosen Option : **1**

Q.75 Let a unit vector \widehat{OP} make angles α, β, γ with the positive directions of the co-ordinate axes OX, OY, OZ respectively, where $\beta \in \left(0, \frac{\pi}{2}\right)$. If \widehat{OP} is perpendicular to the plane through points $(1, 2, 3), (2, 3, 4)$ and $(1, 5, 7)$, then which one of the following is true ?

Options

1. $\alpha \in \left(0, \frac{\pi}{2}\right)$ and $\gamma \in \left(\frac{\pi}{2}, \pi\right)$
2. $\alpha \in \left(\frac{\pi}{2}, \pi\right)$ and $\gamma \in \left(\frac{\pi}{2}, \pi\right)$
3. $\alpha \in \left(0, \frac{\pi}{2}\right)$ and $\gamma \in \left(0, \frac{\pi}{2}\right)$
4. $\alpha \in \left(\frac{\pi}{2}, \pi\right)$ and $\gamma \in \left(0, \frac{\pi}{2}\right)$

Question Type : MCQ

Question ID : 7155052071

Option 1 ID : 7155056302

Option 2 ID : 7155056304

Option 3 ID : 7155056301

Option 4 ID : 7155056303

Status : Marked For Review

Chosen Option : 3

Q.76 The minimum number of elements that must be added to the relation set $\{a, b, c\}$ so that it becomes symmetric and transitive is :

Options 1. 7

2. 3

3. 5

4. 4

Question Type : MCQ

Question ID : 7155052056

Option 1 ID : 7155056242

Option 2 ID : 7155056241

Option 3 ID : 7155056243

Option 4 ID : 7155056244

Status : Marked For Review

Chosen Option : 3

Q.77 If the coefficient of x^{15} in the expansion of $\left(ax^3 + \frac{1}{bx^{1/3}}\right)^{15}$ is equal to the coefficient of x^{-15} in

the expansion of $\left(ax^{1/3} - \frac{1}{bx^3}\right)^{15}$, where a and b are positive real numbers, then for each such

ordered pair (a, b) :

Options 1. $ab = 1$

2. $a = b$

3. $a = 3b$

4. $ab = 3$

Question Type : MCQ

Question ID : 7155052066

Option 1 ID : 7155056282

Option 2 ID : 7155056281

Option 3 ID : 7155056284

Option 4 ID : 7155056283

Status : Answered

Chosen Option : 3

Q.78 If $P(h, k)$ be a point on the parabola $x = 4y^2$, which is nearest to the point $Q(0, 33)$, then the distance of P from the directrix of the parabola $y^2 = 4(x + y)$ is equal to :

- Options 1. 6
2. 2
3. 4
4. 8

Question Type : **MCQ**

Question ID : **7155052068**

Option 1 ID : **7155056290**

Option 2 ID : **7155056292**

Option 3 ID : **7155056291**

Option 4 ID : **7155056289**

Status : **Answered**

Chosen Option : **3**

Q.79 Suppose $f : \mathbb{R} \rightarrow (0, \infty)$ be a differentiable function such that $5f(x+y) = f(x) \cdot f(y)$, $\forall x, y \in \mathbb{R}$. If $f(3) = 320$, then $\sum_{n=0}^5 f(n)$ is equal to :

- Options 1. 6875
2. 6525
3. 6825
4. 6575

Question Type : **MCQ**

Question ID : **7155052062**

Option 1 ID : **7155056265**

Option 2 ID : **7155056267**

Option 3 ID : **7155056266**

Option 4 ID : **7155056268**

Status : **Answered**

Chosen Option : **3**

Q.80 Let the solution curve $y = y(x)$ of the differential equation

$$\frac{dy}{dx} - \frac{3x^5 \tan^{-1}(x^3)}{(1+x^6)^{3/2}} y = 2x \exp\left\{\frac{x^3 - \tan^{-1}x^3}{\sqrt{1+x^6}}\right\} \text{ pass through the origin. Then } y(1) \text{ is equal to :}$$

- Options 1. $\exp\left(\frac{4-\pi}{4\sqrt{2}}\right)$
2. $\exp\left(\frac{4+\pi}{4\sqrt{2}}\right)$
3. $\exp\left(\frac{1-\pi}{4\sqrt{2}}\right)$
4. $\exp\left(\frac{\pi-4}{4\sqrt{2}}\right)$

Question Type : **MCQ**

Question ID : **7155052065**

Option 1 ID : **7155056277**

Option 2 ID : **7155056278**

Option 3 ID : **7155056280**

Option 4 ID : **7155056279**

Status : **Answered**

Chosen Option : **1**

Section : **Mathematics Section B**

Q.81 If the equation of the plane passing through the point (1, 1, 2) and perpendicular to the line $x - 3y + 2z - 1 = 0 = 4x - y + z$ is $Ax + By + Cz = 1$, then $140(C - B + A)$ is equal to _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052080
Status : Not Answered

Q.82 Let $z = 1 + i$ and $z_1 = \frac{1 + i\bar{z}}{\bar{z}(1 - z) + \frac{1}{z}}$. Then $\frac{12}{\pi} \arg(z_1)$ is equal to _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052077
Status : Not Answered

Q.83 Let α be the area of the larger region bounded by the curve $y^2 = 8x$ and the lines $y = x$ and $x = 2$, which lies in the first quadrant. Then the value of 3α is equal to _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052085
Status : Not Answered

Q.84 $\lim_{x \rightarrow 0} \frac{48}{x^4} \int_0^x \frac{t^3}{t^6 + 1} dt$ is equal to _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052081
Status : Not Answered

Q.85 The mean and variance of 7 observations are 8 and 16 respectively. If one observation 14 is omitted and a and b are respectively mean and variance of remaining 6 observation, then $a + 3b - 5$ is equal to _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052084
Status : Not Answered

Q.86 Number of 4-digit numbers (the repetition of digits is allowed) which are made using the digits 1, 2, 3 and 5, and are divisible by 15, is equal to _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052082
Status : Not Answered

Q.87 If $\lambda_1 < \lambda_2$ are two values of λ such that the angle between the planes $P_1 : \vec{r} \cdot (3\hat{i} - 5\hat{j} + \hat{k}) = 7$ and $P_2 : \vec{r} \cdot (\lambda\hat{i} + \hat{j} - 3\hat{k}) = 9$ is $\sin^{-1}\left(\frac{2\sqrt{6}}{5}\right)$, then the square of the length of perpendicular from the point $(38\lambda_1, 10\lambda_2, 2)$ to the plane P_1 is _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052083
Status : Not Answered

Q.88 Let $\sum_{n=0}^{\infty} \frac{n^3 ((2n)!) + (2n-1)(n!)}{(n!) ((2n)!)} = ae + \frac{b}{e} + c$, where $a, b, c \in \mathbb{Z}$ and $e = \sum_{n=0}^{\infty} \frac{1}{n!}$. Then $a^2 - b + c$ is equal to _____.

Given 1
Answer :

Question Type : SA
Question ID : 7155052076
Status : Answered

Q.89 Let $f^1(x) = \frac{3x+2}{2x+3}, x \in \mathbb{R} - \left\{-\frac{3}{2}\right\}$

For $n \geq 2$, define $f^n(x) = f^1 \circ f^{n-1}(x)$.

If $f^5(x) = \frac{ax+b}{bx+a}$, $\gcd(a, b) = 1$, then $a + b$ is equal to _____.

Given 5
Answer :

Question Type : SA
Question ID : 7155052079
Status : Answered

Q.90 Let $S = \{1, 2, 3, 4, 5, 6\}$. Then the number of one-one functions $f: S \rightarrow P(S)$, where $P(S)$ denote the power set of S , such that $f(n) \subset f(m)$ where $n < m$ is _____.

Given --
Answer :

Question Type : SA
Question ID : 7155052078
Status : Not Answered