

JEE March 2021 16th to 18th Mar

Application No	
Candidate Name	
Roll No.	
Test Date	16/03/2021
Test Time	3:00 PM - 6:00 PM
Subject	B TECH

Section : Physics Section A

Q.1 Calculate the value of mean free path (λ) for oxygen molecules at temperature 27°C and pressure 1.01×10^5 Pa. Assume the molecular diameter 0.3 nm and the gas is ideal. ($k = 1.38 \times 10^{-23} \text{ JK}^{-1}$)

- Options
1. 102 nm
 2. 58 nm
 3. 86 nm
 4. 32 nm

Question Type : MCQ
 Question ID : 8643512257
 Option 1 ID : 8643516778
 Option 2 ID : 8643516776
 Option 3 ID : 8643516777
 Option 4 ID : 8643516775
 Status : Answered
 Chosen Option : 3

Q.2 The refractive index of a converging lens is 1.4. What will be the focal length of this lens if it is placed in a medium of same refractive index ? Assume the radii of curvature of the faces of lens are R_1 and R_2 respectively.

- Options
1. Zero
 2. $\frac{R_1 R_2}{R_1 - R_2}$
 3. 1
 4. Infinite

Question Type : MCQ
 Question ID : 8643512253
 Option 1 ID : 8643516759
 Option 2 ID : 8643516762
 Option 3 ID : 8643516760
 Option 4 ID : 8643516761
 Status : Answered
 Chosen Option : 1

Q.3 Two identical antennas mounted on identical towers are separated from each other by a distance of 45 km. What should nearly be the minimum height of receiving antenna to receive the signals in line of sight ?

(Assume radius of earth is 6400 km)

- Options
1. 79.1 m
 2. 39.55 m
 3. 158.2 m
 4. 19.77 m

Question Type : MCQ

Question ID : 8643512251

Option 1 ID : 8643516751

Option 2 ID : 8643516752

Option 3 ID : 8643516753

Option 4 ID : 8643516754

Status : Answered

Chosen Option : 1

Q.4 Red light differs from blue light as they have :

- Options
1. Different frequencies and different wavelengths
 2. Different frequencies and same wavelengths
 3. Same frequencies and different wavelengths
 4. Same frequencies and same wavelengths

Question Type : MCQ

Question ID : 8643512254

Option 1 ID : 8643516764

Option 2 ID : 8643516766

Option 3 ID : 8643516765

Option 4 ID : 8643516763

Status : Answered

Chosen Option : 3

Q.5 In order to determine the Young's Modulus of a wire of radius 0.2 cm (measured using a scale of least count=0.001 cm) and length 1m (measured using a scale of least count=1 mm), a weight of mass 1 kg (measured using a scale of least count=1 g) was hanged to get the elongation of 0.5 cm (measured using a scale of least count 0.001 cm). What will be the fractional error in the value of Young's Modulus determined by this experiment ?

- Options**
1. 1.4 %
 2. 0.14%
 3. 9%
 4. 0.9%

Question Type : **MCQ**

Question ID : **8643512267**

Option 1 ID : **8643516815**

Option 2 ID : **8643516817**

Option 3 ID : **8643516818**

Option 4 ID : **8643516816**

Status : **Answered**

Chosen Option : **2**

Q.6 A resistor develops 500 J of thermal energy in 20 s when a current of 1.5A is passed through it. If the current is increased from 1.5 A to 3 A, what will be the energy developed in 20 s.

- Options**
1. 1000 J
 2. 500 J
 3. 1500 J
 4. 2000 J



shiksha

Question Type : **MCQ**

Question ID : **8643512268**

Option 1 ID : **8643516820**

Option 2 ID : **8643516819**

Option 3 ID : **8643516821**

Option 4 ID : **8643516822**

Status : **Answered**

Chosen Option : **1**

Q.7 The de-Broglie wavelength associated with an electron and a proton were calculated by accelerating them through same potential of 100 V. What should nearly be the ratio of their wavelengths ? ($m_p = 1.00727u$ $m_e = 0.00055u$)

- Options
1. 1860 : 1
 2. 41.4 : 1
 3. 43 : 1
 4. $(1860)^2 : 1$

Question Type : **MCQ**

Question ID : **8643512252**

Option 1 ID : **8643516756**

Option 2 ID : **8643516757**

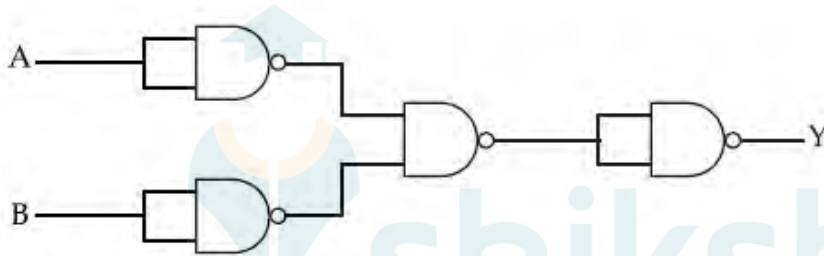
Option 3 ID : **8643516755**

Option 4 ID : **8643516758**

Status : **Answered**

Chosen Option : **2**

Q.8 The following logic gate is equivalent to :



- Options
1. NAND Gate
 2. AND Gate
 3. NOR Gate
 4. OR Gate

Question Type : **MCQ**

Question ID : **8643512270**

Option 1 ID : **8643516828**

Option 2 ID : **8643516827**

Option 3 ID : **8643516830**

Option 4 ID : **8643516829**

Status : **Answered**

Chosen Option : **1**

Q.9 A charge Q is moving $d\vec{l}$ distance in the magnetic field \vec{B} . Find the value of work done by \vec{B} .

- Options
1. Infinite
 2. 1
 3. Zero
 4. -1

Question Type : MCQ

Question ID : 8643512259

Option 1 ID : 8643516785

Option 2 ID : 8643516783

Option 3 ID : 8643516784

Option 4 ID : 8643516786

Status : Answered

Chosen Option : 2

Q.10 Find out the surface charge density at the intersection of point $x=3$ m plane and x -axis, in the region of uniform line charge of 8 nC/m lying along the z -axis in free space.

- Options
1. 47.88 C/m
 2. 0.424 nC m⁻²
 3. 0.07 nC m⁻²
 4. 4.0 nC m⁻²

Question Type : MCQ

Question ID : 8643512269

Option 1 ID : 8643516823

Option 2 ID : 8643516825

Option 3 ID : 8643516824

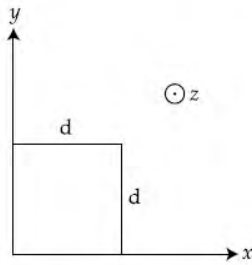
Option 4 ID : 8643516826

Status : Answered

Chosen Option : 3

Q.11 The magnetic field in a region is given by $\vec{B} = B_0 \left(\frac{x}{a}\right) \hat{k}$. A square loop of side d is placed with its edges along the x and y axes. The loop is moved with a constant velocity $\vec{v} = v_0 \hat{i}$.

The emf induced in the loop is :



Options

1. $\frac{B_0 v_0 d^2}{2a}$
2. $\frac{B_0 v_0^2 d}{2a}$
3. $\frac{B_0 v_0 d}{2a}$
4. $\frac{B_0 v_0 d^2}{a}$

Question Type : MCQ

Question ID : 8643512255

Option 1 ID : 8643516770

Option 2 ID : 8643516769

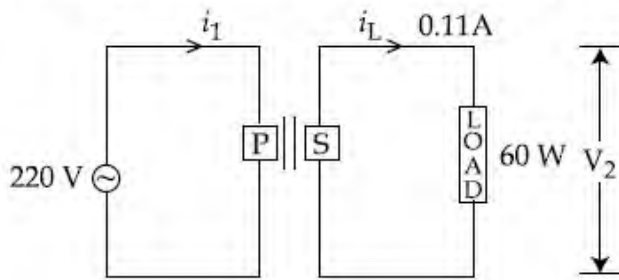
Option 3 ID : 8643516767

Option 4 ID : 8643516768

Status : Answered

Chosen Option : 2

Q.12 For the given circuit, comment on the type of transformer used.



- Options
1. Auxilliary transformer
 2. Step down transformer
 3. Auto transformer
 4. Step - up transformer

Question Type : MCQ

Question ID : 8643512261

Option 1 ID : 8643516794

Option 2 ID : 8643516792

Option 3 ID : 8643516793

Option 4 ID : 8643516791

Status : Answered

Chosen Option : 2

Q.13 **Statement I :** A cyclist is moving on an unbanked road with a speed of 7 kmh^{-1} and takes a sharp circular turn along a path of radius of 2m without reducing the speed. The static friction coefficient is 0.2. The cyclist will not slip and pass the curve. ($g = 9.8\text{ m/s}^2$)

Statement II : If the road is banked at an angle of 45° , cyclist can cross the curve of 2m radius with the speed of 18.5 kmh^{-1} without slipping.

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 false
 2. Statement I is incorrect and statement II is correct
 3. Statement I is correct and statement II is incorrect
 4. Both statement I and statement II are true

Question Type : MCQ

Question ID : 8643512265

Option 1 ID : 8643516808

Option 2 ID : 8643516810

Option 3 ID : 8643516809

Option 4 ID : 8643516807

Status : Answered

Chosen Option : 2

Q.14 The half-life of Au^{198} is 2.7 days. The activity of 1.50 mg of Au^{198} if its atomic weight is 198 g mol^{-1} is, ($N_A = 6 \times 10^{23} / \text{mol}$).

- Options
1. 357 Ci
 2. 252 Ci
 3. 240 Ci
 4. 535 Ci

Question Type : MCQ

Question ID : 8643512262

Option 1 ID : 8643516796

Option 2 ID : 8643516797

Option 3 ID : 8643516795

Option 4 ID : 8643516798

Status : Answered

Chosen Option : 2

Q.15 Calculate the time interval between 33% decay and 67% decay if half-life of a substance is 20 minutes.

- Options
1. 40 minutes
 2. 20 minutes
 3. 13 minutes
 4. 60 minutes



Question Type : MCQ

Question ID : 8643512260

Option 1 ID : 8643516788

Option 2 ID : 8643516787

Option 3 ID : 8643516790

Option 4 ID : 8643516789

Status : Answered

Chosen Option : 3

Q.16 Amplitude of a mass-spring system, which is executing simple harmonic motion decreases with time. If mass = 500g, Decay constant = 20 g/s then how much time is required for the amplitude of the system to drop to half of its initial value ?

($\ln 2 = 0.693$)

- Options
1. 17.32 s
 2. 15.01 s
 3. 34.65 s
 4. 0.034 s

Question Type : MCQ

Question ID : 8643512256

Option 1 ID : 8643516774

Option 2 ID : 8643516772

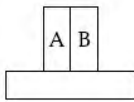
Option 3 ID : 8643516771

Option 4 ID : 8643516773

Status : Answered

Chosen Option : 1

Q.17 A bimetallic strip consists of metals A and B. It is mounted rigidly as shown. The metal A has higher coefficient of expansion compared to that of metal B. When the bimetallic strip is placed in a cold bath, it will :



- Options
1. Neither bend nor shrink
 2. Bend towards the right
 3. Not bend but shrink
 4. Bend towards the left

Question Type : MCQ

Question ID : 8643512263

Option 1 ID : 8643516802

Option 2 ID : 8643516799

Option 3 ID : 8643516801

Option 4 ID : 8643516800

Status : Answered

Chosen Option : 3

Q.18 A mosquito is moving with a velocity $\vec{v} = 0.5t^2\hat{i} + 3t\hat{j} + 9\hat{k}$ m/s and accelerating in uniform conditions. What will be the direction of mosquito after 2 s ?

Options

1. $\tan^{-1}\left(\frac{5}{2}\right)$ from x -axis
2. $\tan^{-1}\left(\frac{2}{3}\right)$ from y -axis
3. $\tan^{-1}\left(\frac{5}{2}\right)$ from y -axis
4. $\tan^{-1}\left(\frac{2}{3}\right)$ from x -axis

Question Type : **MCQ**

Question ID : **8643512266**

Option 1 ID : **8643516811**

Option 2 ID : **8643516814**

Option 3 ID : **8643516812**

Option 4 ID : **8643516813**

Status : **Answered**

Chosen Option : **2**

Q.19 What will be the nature of flow of water from a circular tap, when its flow rate increased from 0.18 L/min to 0.48 L/min ? The radius of the tap and viscosity of water are 0.5 cm and 10^{-3} Pa s, respectively.
(Density of water : 10^3 kg/m³)

Options

1. Remains turbulent flow
2. Steady flow to unsteady flow
3. Unsteady to steady flow
4. Remains steady flow

Question Type : **MCQ**

Question ID : **8643512258**

Option 1 ID : **8643516782**

Option 2 ID : **8643516779**

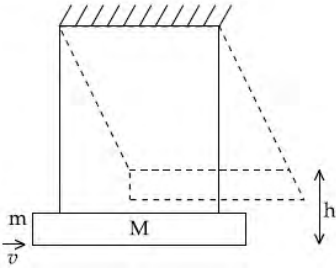
Option 3 ID : **8643516780**

Option 4 ID : **8643516781**

Status : **Answered**

Chosen Option : **3**

- Q.20** A large block of wood of mass $M = 5.99$ kg is hanging from two long massless cords. A bullet of mass $m = 10$ g is fired into the block and gets embedded in it. The (block + bullet) then swing upwards, their centre of mass rising a vertical distance $h = 9.8$ cm before the (block + bullet) pendulum comes momentarily to rest at the end of its arc. The speed of the bullet just before collision is :
(take $g = 9.8 \text{ ms}^{-2}$)



- Options**
1. 841.4 m/s
 2. 821.4 m/s
 3. 831.4 m/s
 4. 811.4 m/s

Question Type : MCQ

Question ID : 8643512264

Option 1 ID : 8643516806

Option 2 ID : 8643516804

Option 3 ID : 8643516805

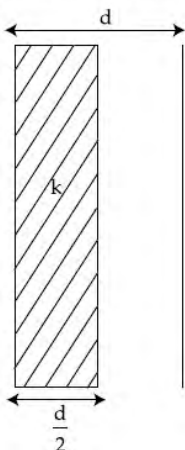
Option 4 ID : 8643516803

Status : Answered

Chosen Option : 4

Section : Physics Section B

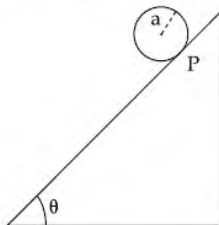
- Q.1** In a parallel plate capacitor set up, the plate area of capacitor is 2 m^2 and the plates are separated by 1 m . If the space between the plates are filled with a dielectric material of thickness 0.5 m and area 2 m^2 (see fig) the capacitance of the set-up will be _____ ϵ_0 . (Dielectric constant of the material = 3.2) (Round off to the Nearest Integer)



Given --
Answer :

Question Type : SA
Question ID : 8643512277
Status : Not Answered

- Q.2** A solid disc of radius ' a ' and mass ' m ' rolls down without slipping on an inclined plane making an angle θ with the horizontal. The acceleration of the disc will be $\frac{2}{b} g \sin\theta$ where b is _____. (Round off to the Nearest Integer)
(g = acceleration due to gravity
 θ = angle as shown in figure)



Given --
Answer :

Question Type : SA
Question ID : 8643512275
Status : Not Answered

- Q.3** For an ideal heat engine, the temperature of the source is 127°C . In order to have 60% efficiency the temperature of the sink should be _____ $^\circ\text{C}$. (Round off to the Nearest Integer)

Given **63.5**
Answer :

Question Type : SA
Question ID : 8643512276
Status : Answered

Q.4 The energy dissipated by a resistor is 10 mJ in 1 s when an electric current of 2 mA flows through it. The resistance is _____ Ω . (Round off to the Nearest Integer)

Given 0.2
Answer :

Question Type : SA
Question ID : 8643512278
Status : Marked For Review

Q.5 A closed organ pipe of length L and an open organ pipe contain gases of densities ρ_1 and ρ_2 respectively. The compressibility of gases are equal in both the pipes. Both the pipes are vibrating in their first overtone with same frequency. The length of the open pipe is $\frac{x}{3} L \sqrt{\frac{\rho_1}{\rho_2}}$ where x is _____. (Round off to the Nearest Integer)

Given--
Answer :

Question Type : SA
Question ID : 8643512280
Status : Not Answered

Q.6 A force $\vec{F} = 4\hat{i} + 3\hat{j} + 4\hat{k}$ is applied on an intersection point of $x = 2$ plane and x -axis. The magnitude of torque of this force about a point (2, 3, 4) is _____. (Round off to the Nearest Integer)

Given--
Answer :

Question Type : SA
Question ID : 8643512274
Status : Not Answered

Q.7 A body of mass 2 kg moves under a force of $(2\hat{i} + 3\hat{j} + 5\hat{k})$ N. It starts from rest and was at the origin initially. After 4 s, its new coordinates are (8, b, 20). The value of b is _____. (Round off to the Nearest Integer)

Given 12
Answer :

Question Type : SA
Question ID : 8643512273
Status : Answered

- Q.8** A deviation of 2° is produced in the yellow ray when prism of crown and flint glass are achromatically combined. Taking dispersive powers of crown and flint glass as 0.02 and 0.03 respectively and refractive index for yellow light for these glasses are 1.5 and 1.6 respectively. The refracting angles for crown glass prism will be _____ $^\circ$ (in degree). (Round off to the Nearest Integer)

Given--
Answer :

Question Type : SA
Question ID : 8643512279
Status : Not Answered

- Q.9** A swimmer can swim with velocity of 12 km/h in still water. Water flowing in a river has velocity 6 km/h. The direction with respect to the direction of flow of river water he should swim in order to reach the point on the other bank just opposite to his starting point is _____ $^\circ$. (Round off to the Nearest Integer)
(Find the angle in degrees)

Given 45
Answer :

Question Type : SA
Question ID : 8643512272
Status : Answered

- Q.10** If one wants to remove all the mass of the earth to infinity in order to break it up completely.

The amount of energy that needs to be supplied will be $\frac{x}{5} \frac{GM^2}{R}$ where x is _____

(Round off to the Nearest Integer)

(M is the mass of earth, R is the radius of earth, G is the gravitational constant)

Given--
Answer :

Question Type : SA
Question ID : 8643512271
Status : Not Answered

Section : Chemistry Section A

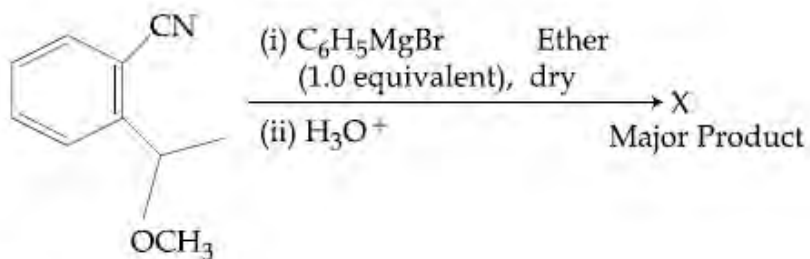
Q.1 **Statement I :** Sodium hydride can be used as an oxidising agent.
Statement II : The lone pair of electrons on nitrogen in pyridine makes it basic.
Choose the **CORRECT** answer from the options given below :

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

Question Type : **MCQ**
Question ID : **8643512292**
Option 1 ID : **8643516886**
Option 2 ID : **8643516887**
Option 3 ID : **8643516888**
Option 4 ID : **8643516885**
Status : **Answered**
Chosen Option : **2**

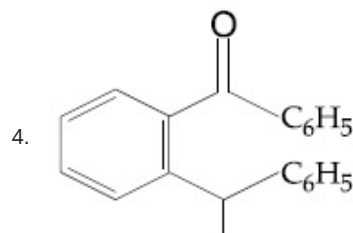
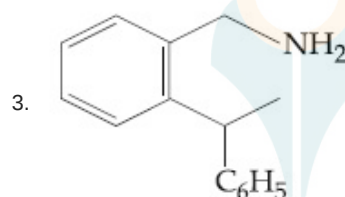
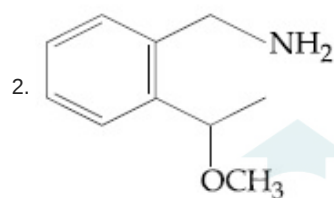
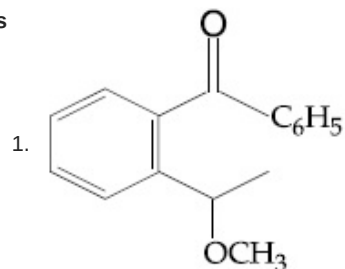


Q.2



The structure of X is :

Options



Question Type : MCQ

Question ID : 8643512296

Option 1 ID : 8643516901

Option 2 ID : 8643516902

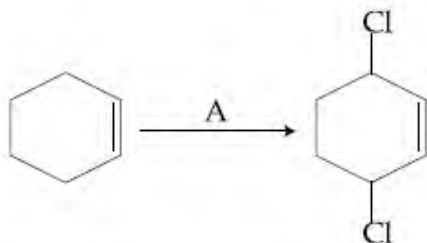
Option 3 ID : 8643516903

Option 4 ID : 8643516904

Status : Answered

Chosen Option : 3

Q.3



Identify the reagent(s) 'A' and condition(s) for the reaction

Options

1. A = HCl, ZnCl₂
2. A = HCl ; Anhydrous AlCl₃
3. A = Cl₂ ; dark, Anhydrous AlCl₃
4. A = Cl₂ ; UV light

Question Type : MCQ

Question ID : 8643512294

Option 1 ID : 8643516894

Option 2 ID : 8643516896

Option 3 ID : 8643516893

Option 4 ID : 8643516895

Status : Answered

Chosen Option : 4

Q.4 Identify the elements X and Y using the ionisation energy values given below :

	Ionization energy (kJ/mol)	
	1 st	2 nd
X	495	4563
Y	731	1450

Options

1. X = Mg ; Y = Na
2. X = Mg ; Y = F
3. X = Na ; Y = Mg
4. X = F ; Y = Mg

Question Type : MCQ

Question ID : 8643512286

Option 1 ID : 8643516862

Option 2 ID : 8643516864

Option 3 ID : 8643516861

Option 4 ID : 8643516863

Status : Answered

Chosen Option : 4

Q.5 Which of the following reduction reaction **CANNOT** be carried out with coke ?

- Options
1. $\text{ZnO} \rightarrow \text{Zn}$
 2. $\text{Al}_2\text{O}_3 \rightarrow \text{Al}$
 3. $\text{Cu}_2\text{O} \rightarrow \text{Cu}$
 4. $\text{Fe}_2\text{O}_3 \rightarrow \text{Fe}$

Question Type : **MCQ**

Question ID : **8643512284**

Option 1 ID : **8643516854**

Option 2 ID : **8643516856**

Option 3 ID : **8643516855**

Option 4 ID : **8643516853**

Status : **Answered**

Chosen Option : **1**

Q.6 The exact volumes of 1 M NaOH solution required to neutralise 50 mL of 1 M H_3PO_3 solution and 100 mL of 2 M H_3PO_2 solution, respectively, are :

- Options
1. 100 mL and 100 mL
 2. 100 mL and 200 mL
 3. 100 mL and 50 mL
 4. 50 mL and 50 mL

Question Type : **MCQ**

Question ID : **8643512287**

Option 1 ID : **8643516868**

Option 2 ID : **8643516867**

Option 3 ID : **8643516866**

Option 4 ID : **8643516865**

Status : **Answered**

Chosen Option : **1**

Q.7 Match List-I with List-II :

List-I	List-II
Test/Reagents/Observation(s)	Species detected
(a) Lassaigne's Test	(i) Carbon
(b) Cu(II) oxide	(ii) Sulphur
(c) Silver nitrate	(iii) N, S, P, and halogen
(d) The sodium fusion extract gives black precipitate with acetic acid and lead acetate	(iv) Halogen Specifically

The correct match is :

- Options
1. (a)-(iii), (b)-(i), (c)-(iv), (d)-(ii)
 2. (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)
 3. (a)-(iii), (b)-(i), (c)-(ii), (d)-(iv)
 4. (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)

Question Type : MCQ

Question ID : 8643512291

Option 1 ID : 8643516882

Option 2 ID : 8643516884

Option 3 ID : 8643516883

Option 4 ID : 8643516881

Status : Answered

Chosen Option : 2

Q.8 The INCORRECT statements below regarding colloidal solutions is :

Options

1. A colloidal solution shows Brownian motion of colloidal particles.
2. A colloidal solution shows colligative properties.
3. The flocculating power of Al^{3+} is more than that of Na^+ .
4. An ordinary filter paper can stop the flow of colloidal particles.

Question Type : MCQ

Question ID : 8643512282

Option 1 ID : 8643516846

Option 2 ID : 8643516845

Option 3 ID : 8643516847

Option 4 ID : 8643516848

Status : Answered

Chosen Option : 3

Q.9 The correct statements about H_2O_2 are :

- (A) used in the treatment of effluents.
- (B) used as both oxidising and reducing agents.
- (C) the two hydroxyl groups lie in the same plane.
- (D) miscible with water.

Choose the correct answer from the options given below :

- Options
1. (B), (C) and (D) only
 2. (A), (B) and (D) only
 3. (A), (B), (C) and (D)
 4. (A), (C) and (D) only

Question Type : MCQ

Question ID : 8643512285

Option 1 ID : 8643516858

Option 2 ID : 8643516857

Option 3 ID : 8643516860

Option 4 ID : 8643516859

Status : Answered

Chosen Option : 1

Q.10 The green house gas/es is (are) :

- (A) Carbon dioxide
- (B) Oxygen
- (C) Water vapour
- (D) Methane

Choose the most appropriate answer from the options given below :

- Options
1. (A), (C) and (D) only
 2. (A) and (C) only
 3. (A) only
 4. (A) and (B) only

Question Type : MCQ

Question ID : 8643512290

Option 1 ID : 8643516879

Option 2 ID : 8643516878

Option 3 ID : 8643516877

Option 4 ID : 8643516880

Status : Answered

Chosen Option : 1

Q.11 Which of the following polymer is used in the manufacture of wood laminates ?

- Options
1. *cis*-poly isoprene
 2. Urea formaldehyde resin
 3. Phenol and formaldehyde resin
 4. Melamine formaldehyde resin

Question Type : MCQ

Question ID : 8643512299

Option 1 ID : 8643516915

Option 2 ID : 8643516914

Option 3 ID : 8643516916

Option 4 ID : 8643516913

Status : Answered

Chosen Option : 3

Q.12 Ammonolysis of Alkyl halides followed by the treatment with NaOH solution can be used to prepare primary, secondary and tertiary amines. The purpose of NaOH in the reaction is :

- Options
1. to remove acidic impurities
 2. to activate NH_3 used in the reaction
 3. to increase the reactivity of alkyl halide
 4. to remove basic impurities

Question Type : MCQ

Question ID : 8643512298

Option 1 ID : 8643516912

Option 2 ID : 8643516910

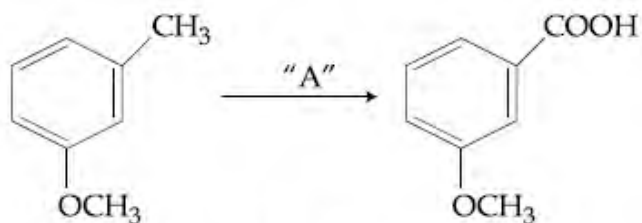
Option 3 ID : 8643516911

Option 4 ID : 8643516909

Status : Answered

Chosen Option : 2

Q.13



In the above reaction, the reagent "A" is :

- Options
1. Alkaline KMnO_4 , H^+
 2. NaBH_4 , H_3O^+
 3. HCl , Zn-Hg
 4. LiAlH_4

Question Type : MCQ

Question ID : 8643512295

Option 1 ID : 8643516898

Option 2 ID : 8643516900

Option 3 ID : 8643516899

Option 4 ID : 8643516897

Status : Answered

Chosen Option : 2

Q.14 The characteristics of elements X, Y and Z with atomic numbers, respectively, 33, 53 and 83 are :

- Options
1. X is a metalloid, Y is a non-metal and Z is a metal.
 2. X, Y and Z are metals.
 3. X and Y are metalloids and Z is a metal.
 4. X and Z are non-metals and Y is a metalloid.

Question Type : MCQ

Question ID : 8643512283

Option 1 ID : 8643516851

Option 2 ID : 8643516849

Option 3 ID : 8643516852

Option 4 ID : 8643516850

Status : Answered

Chosen Option : 1

Q.15 Which of the following is least basic ?

Options

1. $(\text{CH}_3\text{CO})\ddot{\text{N}}\text{HC}_2\text{H}_5$
2. $(\text{C}_2\text{H}_5)_2\ddot{\text{N}}\text{H}$
3. $(\text{C}_2\text{H}_5)_3\ddot{\text{N}}$
4. $(\text{CH}_3\text{CO})_2\ddot{\text{N}}\text{H}$

Question Type : MCQ

Question ID : 8643512297

Option 1 ID : 8643516907

Option 2 ID : 8643516906

Option 3 ID : 8643516908

Option 4 ID : 8643516905

Status : Answered

Chosen Option : 3

Q.16 Fex_2 and Fey_3 are known when x and y are :

Options

1. $x = \text{F, Cl, Br, I}$ and $y = \text{F, Cl, Br}$
2. $x = \text{F, Cl, Br, I}$ and $y = \text{F, Cl, Br, I}$
3. $x = \text{Cl, Br, I}$ and $y = \text{F, Cl, Br, I}$
4. $x = \text{F, Cl, Br}$ and $y = \text{F, Cl, Br, I}$

Question Type : MCQ

Question ID : 8643512289

Option 1 ID : 8643516874

Option 2 ID : 8643516873

Option 3 ID : 8643516876

Option 4 ID : 8643516875

Status : Answered

Chosen Option : 4

Q.17 The **INCORRECT** statement regarding the structure of C_{60} is :

Options

1. The six-membered rings are fused to both six and five-membered rings.
2. The five-membered rings are fused only to six-membered rings.
3. Each carbon atom forms three sigma bonds.
4. It contains 12 six-membered rings and 24 five-membered rings.

Question Type : MCQ

Question ID : 8643512281

Option 1 ID : 8643516842

Option 2 ID : 8643516843

Option 3 ID : 8643516844

Option 4 ID : 8643516841

Status : Answered

Chosen Option : 1

Q.18 Arrange the following metal complex/compounds in the increasing order of spin only magnetic moment. Presume all the three, high spin system.

(Atomic numbers Ce = 58, Gd = 64 and Eu = 63.)

(a) $(NH_4)_2[Ce(NO_3)_6]$ (b) $Gd(NO_3)_3$ and (c) $Eu(NO_3)_3$

Answer is :

Options

1. (c) < (a) < (b)
2. (b) < (a) < (c)
3. (a) < (c) < (b)
4. (a) < (b) < (c)

Question Type : MCQ

Question ID : 8643512288

Option 1 ID : 8643516872

Option 2 ID : 8643516871

Option 3 ID : 8643516870

Option 4 ID : 8643516869

Status : Answered

Chosen Option : 3

Q.19 The secondary structure of protein is stabilised by :

- Options
1. van der Waals forces
 2. Peptide bond
 3. Hydrogen bonding
 4. glycosidic bond

Question Type : MCQ

Question ID : 8643512300

Option 1 ID : 8643516917

Option 2 ID : 8643516918

Option 3 ID : 8643516919

Option 4 ID : 8643516920

Status : Answered

Chosen Option : 3

Q.20 An unsaturated hydrocarbon X on ozonolysis gives A. Compound A when warmed with ammonical silver nitrate forms a bright silver mirror along the sides of the test tube. The unsaturated hydrocarbon X is :

- Options
1. $\text{HC}\equiv\text{C}-\text{CH}_2-\text{CH}_3$
 2. $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}=\text{C}-\text{CH}_2-\text{CH}_3$
 3. $\text{CH}_3-\text{C}\equiv\text{C}-\text{CH}_3$
 4. $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}=\overset{\text{CH}_3}{\text{C}}-\text{CH}_3$

Question Type : MCQ

Question ID : 8643512293

Option 1 ID : 8643516891

Option 2 ID : 8643516892

Option 3 ID : 8643516889

Option 4 ID : 8643516890

Status : Answered

Chosen Option : 2

Section : Chemistry Section B

Q.1 The number of orbitals with $n=5$, $m_l=+2$ is _____. (Round off to the Nearest Integer).

Given 4
Answer :

Question Type : SA

Question ID : 8643512303

Status : Answered

Q.2 Sulphurous acid (H_2SO_3) has $K_{a1} = 1.7 \times 10^{-2}$ and $K_{a2} = 6.4 \times 10^{-8}$. The pH of 0.588 M H_2SO_3 is _____. (Round off to the Nearest Integer).

Given--
Answer :

Question Type : SA
Question ID : 8643512306
Status : Not Answered

Q.3 At 25°C , 50 g of iron reacts with HCl to form FeCl_2 . The evolved hydrogen gas expands against a constant pressure of 1 bar. The work done by the gas during this expansion is _____ J.

(Round off to the Nearest Integer).

[Given : $R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$. Assume, hydrogen is an ideal gas]

[Atomic mass of Fe is 55.85 u]

Given 42
Answer :

Question Type : SA
Question ID : 8643512304
Status : Answered

Q.4 A and B decompose via first order kinetics with half-lives 54.0 min and 18.0 min respectively. Starting from an equimolar non reactive mixture of A and B, the time taken for the concentration of A to become 16 times that of B is _____ min. (Round off to the Nearest Integer).

Given 52
Answer :

Question Type : SA
Question ID : 8643512308
Status : Answered

Q.5 $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ absorbs light of wavelength 498 nm during a d-d transition. The octahedral splitting energy for the above complex is _____ $\times 10^{-19}$ J. (Round off to the Nearest Integer). $h = 6.626 \times 10^{-34} \text{ Js}$; $c = 3 \times 10^8 \text{ ms}^{-1}$

Given 18
Answer :

Question Type : SA
Question ID : 8643512309
Status : Answered

Q.6 A 5.0 mol dm^{-3} aqueous solution of KCl has a conductance of 0.55 mS when measured in a cell of cell constant 1.3 cm^{-1} . The molar conductivity of this solution is _____ $\text{mSm}^2 \text{ mol}^{-1}$. (Round off to the Nearest Integer).

Given--
Answer :

Question Type : SA
Question ID : 8643512307
Status : Not Answered

Q.7 In Duma's method of estimation of nitrogen, 0.1840 g of an organic compound gave 30 mL of nitrogen collected at 287 K and 758 mm of Hg pressure. The percentage composition of nitrogen in the compound is _____. (Round off to the Nearest Integer).

[Given : Aqueous tension at 287 K = 14 mm of Hg]

Given--
Answer :

Question Type : SA
Question ID : 8643512310
Status : Not Answered

Q.8 Ga (atomic mass 70 u) crystallizes in a hexagonal close packed structure. The total number of voids in 0.581 g of Ga is _____ $\times 10^{21}$. (Round off to the Nearest Integer).

[Given : $N_A = 6.023 \times 10^{23}$]

Given--
Answer :

Question Type : SA
Question ID : 8643512302
Status : Not Answered

Q.9 At 363 K, the vapour pressure of A is 21 kPa and that of B is 18 kPa. One mole of A and 2 moles of B are mixed. Assuming that this solution is ideal, the vapour pressure of the mixture is _____ kPa. (Round off to the Nearest Integer).

Given--
Answer :

Question Type : SA
Question ID : 8643512305
Status : Not Answered

Q.10 When 35 mL of 0.15 M lead nitrate solution is mixed with 20 mL of 0.12 M chromic sulphate solution, _____ $\times 10^{-5}$ moles of lead sulphate precipitate out. (Round off to the Nearest Integer).

Given--
Answer :

Question Type : SA
Question ID : 8643512301
Status : Not Answered

Section : Mathematics Section A

Q.1 Let $A(-1, 1)$, $B(3, 4)$ and $C(2, 0)$ be given three points. A line $y=mx$, $m>0$, intersects lines AC and BC at point P and Q respectively. Let A_1 and A_2 be the areas of $\triangle ABC$ and $\triangle PQC$ respectively, such that $A_1=3A_2$, then the value of m is equal to :

- Options
1. 2
 2. 1
 3. 3
 4. $\frac{4}{15}$

Question Type : **MCQ**

Question ID : **8643512325**

Option 1 ID : **8643516989**

Option 2 ID : **8643516987**

Option 3 ID : **8643516990**

Option 4 ID : **8643516988**

Status : **Answered**

Chosen Option : **2**

Q.2 If (x, y, z) be an arbitrary point lying on a plane P which passes through the points $(42, 0, 0)$, $(0, 42, 0)$ and $(0, 0, 42)$, then the value of the expression

$$3 + \frac{x-11}{(y-19)^2(z-12)^2} + \frac{y-19}{(x-11)^2(z-12)^2} + \frac{z-12}{(x-11)^2(y-19)^2} - \frac{x+y+z}{14(x-11)(y-19)(z-12)}$$

is equal to :

- Options
1. 3
 2. 0
 3. -45
 4. 39

Question Type : **MCQ**

Question ID : **8643512320**

Option 1 ID : **8643516970**

Option 2 ID : **8643516969**

Option 3 ID : **8643516967**

Option 4 ID : **8643516968**

Status : **Answered**

Chosen Option : **1**

Q.3 If the points of intersections of the ellipse $\frac{x^2}{16} + \frac{y^2}{b^2} = 1$ and the circle $x^2 + y^2 = 4b$, $b > 4$ lie on the curve $y^2 = 3x^2$, then b is equal to :

- Options
1. 10
 2. 6
 3. 5
 4. 12

Question Type : MCQ

Question ID : 8643512315

Option 1 ID : 8643516949

Option 2 ID : 8643516948

Option 3 ID : 8643516947

Option 4 ID : 8643516950

Status : Answered

Chosen Option : 3

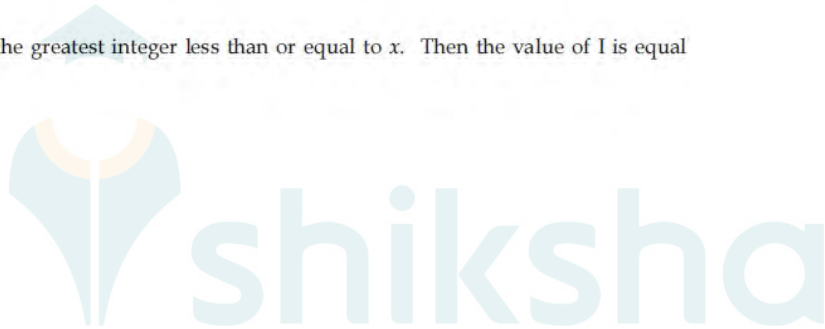
Q.4 Consider the integral

$$I = \int_0^{10} \frac{[x] e^{[x]}}{e^{x-1}} dx,$$

where $[x]$ denotes the greatest integer less than or equal to x . Then the value of I is equal

to :

- Options
1. $9(e-1)$
 2. $45(e-1)$
 3. $45(e+1)$
 4. $9(e+1)$



Question Type : MCQ

Question ID : 8643512324

Option 1 ID : 8643516986

Option 2 ID : 8643516985

Option 3 ID : 8643516983

Option 4 ID : 8643516984

Status : Answered

Chosen Option : 2

Q.5 Let A denote the event that a 6-digit integer formed by 0, 1, 2, 3, 4, 5, 6 without repetitions, be divisible by 3. Then probability of event A is equal to :

Options

1. $\frac{3}{7}$

2. $\frac{9}{56}$

3. $\frac{11}{27}$

4. $\frac{4}{9}$

Question Type : **MCQ**

Question ID : **8643512317**

Option 1 ID : **8643516956**

Option 2 ID : **8643516958**

Option 3 ID : **8643516957**

Option 4 ID : **8643516955**

Status : **Answered**

Chosen Option : **1**

Q.6 Consider a rectangle ABCD having 5, 7, 6, 9 points in the interior of the line segments AB, CD, BC, DA respectively. Let α be the number of triangles having these points from different sides as vertices and β be the number of quadrilaterals having these points from different sides as vertices. Then $(\beta - \alpha)$ is equal to :

Options

1. 1173

2. 795

3. 1890

4. 717

Question Type : **MCQ**

Question ID : **8643512323**

Option 1 ID : **8643516979**

Option 2 ID : **8643516982**

Option 3 ID : **8643516980**

Option 4 ID : **8643516981**

Status : **Answered**

Chosen Option : **2**

Q.7

Let $\vec{a} = \hat{i} + 2\hat{j} - 3\hat{k}$ and $\vec{b} = 2\hat{i} - 3\hat{j} + 5\hat{k}$. If $\vec{r} \times \vec{a} = \vec{b} \times \vec{r}$, $\vec{r} \cdot (\alpha\hat{i} + 2\hat{j} + \hat{k}) = 3$

and $\vec{r} \cdot (2\hat{i} + 5\hat{j} - \alpha\hat{k}) = -1$, $\alpha \in \mathbb{R}$, then the value of $\alpha + |\vec{r}|^2$ is equal to :

- Options
1. 13
 2. 15
 3. 9
 4. 11

Question Type : MCQ

Question ID : 8643512313

Option 1 ID : 8643516941

Option 2 ID : 8643516942

Option 3 ID : 8643516939

Option 4 ID : 8643516940

Status : Answered

Chosen Option : 3

Q.8

Let C_1 be the curve obtained by the solution of differential equation $2xy \frac{dy}{dx} = y^2 - x^2$, $x > 0$.

Let the curve C_2 be the solution of $\frac{2xy}{x^2 - y^2} = \frac{dy}{dx}$. If both the curves pass through $(1, 1)$, then

the area enclosed by the curves C_1 and C_2 is equal to :

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

Question Type : MCQ

Question ID : 8643512330

Option 1 ID : 8643517009

Option 2 ID : 8643517007

Option 3 ID : 8643517008

Option 4 ID : 8643517010

Status : Answered

Chosen Option : 3

Q.9

Let $P(x) = x^2 + bx + c$ be a quadratic polynomial with real coefficients such that $\int_0^1 P(x) dx = 1$

and $P(x)$ leaves remainder 5 when it is divided by $(x - 2)$. Then the value of $9(b + c)$ is equal to :

- Options
1. 7
 2. 11
 3. 9
 4. 15

Question Type : MCQ

Question ID : 8643512322

Option 1 ID : 8643516975

Option 2 ID : 8643516977

Option 3 ID : 8643516976

Option 4 ID : 8643516978

Status : Answered

Chosen Option : 1

Q.10

The maximum value of $f(x) = \begin{vmatrix} \sin^2 x & 1 + \cos^2 x & \cos 2x \\ 1 + \sin^2 x & \cos^2 x & \cos 2x \\ \sin^2 x & \cos^2 x & \sin 2x \end{vmatrix}$, $x \in \mathbf{R}$ is :

- Options
1. $\sqrt{5}$
 2. 5
 3. $\sqrt{7}$
 4. $\frac{3}{4}$

Question Type : MCQ

Question ID : 8643512327

Option 1 ID : 8643516995

Option 2 ID : 8643516996

Option 3 ID : 8643516997

Option 4 ID : 8643516998

Status : Answered

Chosen Option : 2

Q.11 If the foot of the perpendicular from point $(4, 3, 8)$ on the line $L_1 : \frac{x-a}{l} = \frac{y-2}{3} = \frac{z-b}{4}$, $l \neq 0$ is $(3, 5, 7)$, then the shortest distance between the line L_1 and line $L_2 : \frac{x-2}{3} = \frac{y-4}{4} = \frac{z-5}{5}$ is equal to :

Options

1. $\frac{1}{\sqrt{3}}$
2. $\frac{1}{2}$
3. $\frac{1}{\sqrt{6}}$
4. $\sqrt{\frac{2}{3}}$

Question Type : MCQ

Question ID : 8643512311

Option 1 ID : 8643516933

Option 2 ID : 8643516932

Option 3 ID : 8643516931

Option 4 ID : 8643516934

Status : Answered

Chosen Option : 3

Q.12 Let $A = \{2, 3, 4, 5, \dots, 30\}$ and ' \simeq ' be an equivalence relation on $A \times A$, defined by $(a, b) \simeq (c, d)$, if and only if $ad = bc$. Then the number of ordered pairs which satisfy this equivalence relation with ordered pair $(4, 3)$ is equal to :

Options

1. 5
2. 6
3. 7
4. 8

Question Type : MCQ

Question ID : 8643512321

Option 1 ID : 8643516971

Option 2 ID : 8643516972

Option 3 ID : 8643516973

Option 4 ID : 8643516974

Status : Answered

Chosen Option : 1

Q.13

Let $\alpha \in \mathbb{R}$ be such that the function $f(x) = \begin{cases} \frac{\cos^{-1}(1 - \{x\}^2) \sin^{-1}(1 - \{x\})}{\{x\} - \{x\}^3}, & x \neq 0 \\ \alpha, & x = 0 \end{cases}$ is

continuous at $x=0$, where $\{x\} = x - [x]$, $[x]$ is the greatest integer less than or equal to x .

Then :

Options 1. no such α exists

2. $\alpha = \frac{\pi}{4}$

3. $\alpha = \frac{\pi}{\sqrt{2}}$

4. $\alpha = 0$

Question Type : MCQ

Question ID : 8643512319

Option 1 ID : 8643516964

Option 2 ID : 8643516966

Option 3 ID : 8643516965

Option 4 ID : 8643516963

Status : Answered

Chosen Option : 1

Q.14 Given that the inverse trigonometric functions take principal values only. Then, the number

of real values of x which satisfy $\sin^{-1}\left(\frac{3x}{5}\right) + \sin^{-1}\left(\frac{4x}{5}\right) = \sin^{-1}x$ is equal to :

Options 1. 2

2. 1

3. 0

4. 3

Question Type : MCQ

Question ID : 8643512328

Option 1 ID : 8643517001

Option 2 ID : 8643517000

Option 3 ID : 8643516999

Option 4 ID : 8643517002

Status : Answered

Chosen Option : 2

Q.15 The least value of $|z|$ where z is complex number which satisfies the inequality

$$\exp\left(\frac{(|z| + 3)(|z| - 1)}{|z| + 1} \log_e 2\right) \geq \log_{\sqrt{2}} |5\sqrt{7} + 9i|, \quad i = \sqrt{-1}, \text{ is equal to :}$$

- Options
1. 3
 2. 2
 3. $\sqrt{5}$
 4. 8

Question Type : **MCQ**

Question ID : **8643512326**

Option 1 ID : **8643516993**

Option 2 ID : **8643516991**

Option 3 ID : **8643516992**

Option 4 ID : **8643516994**

Status : **Answered**

Chosen Option : **2**

Q.16 Let $f : S \rightarrow S$ where $S = (0, \infty)$ be a twice differentiable function such that $f(x+1) = xf(x)$. If $g : S \rightarrow \mathbb{R}$ be defined as $g(x) = \log_e f(x)$, then the value of $|g''(5) - g''(1)|$ is equal to :

- Options
1. $\frac{187}{144}$
 2. $\frac{197}{144}$
 3. 1
 4. $\frac{205}{144}$



shiksha

Question Type : **MCQ**

Question ID : **8643512329**

Option 1 ID : **8643517005**

Option 2 ID : **8643517004**

Option 3 ID : **8643517006**

Option 4 ID : **8643517003**

Status : **Answered**

Chosen Option : **3**

Q.17 Let C be the locus of the mirror image of a point on the parabola $y^2=4x$ with respect to the line $y=x$. Then the equation of tangent to C at P(2, 1) is :

- Options
1. $x - y = 1$
 2. $x + 2y = 4$
 3. $2x + y = 5$
 4. $x + 3y = 5$

Question Type : **MCQ**

Question ID : **8643512316**

Option 1 ID : **8643516953**

Option 2 ID : **8643516954**

Option 3 ID : **8643516952**

Option 4 ID : **8643516951**

Status : **Answered**

Chosen Option : **2**

Q.18 Let the lengths of intercepts on x -axis and y -axis made by the circle $x^2 + y^2 + ax + 2ay + c = 0$, ($a < 0$) be $2\sqrt{2}$ and $2\sqrt{5}$, respectively. Then the shortest distance from origin to a tangent to this circle which is perpendicular to the line $x + 2y = 0$, is equal to :

- Options
1. $\sqrt{11}$
 2. $\sqrt{6}$
 3. $\sqrt{10}$
 4. $\sqrt{7}$



shiksha

Question Type : **MCQ**

Question ID : **8643512312**

Option 1 ID : **8643516936**

Option 2 ID : **8643516938**

Option 3 ID : **8643516935**

Option 4 ID : **8643516937**

Status : **Answered**

Chosen Option : **1**

Q.19 Let f be a real valued function, defined on $\mathbb{R} - \{-1, 1\}$ and given by

$$f(x) = 3 \log_e \left| \frac{x-1}{x+1} \right| - \frac{2}{x-1}.$$

Then in which of the following intervals, function $f(x)$ is increasing ?

Options

1. $(-1, \frac{1}{2}]$
2. $(-\infty, -1) \cup ([\frac{1}{2}, \infty) - \{1\})$
3. $(-\infty, \frac{1}{2}] - \{-1\}$
4. $(-\infty, \infty) - \{-1, 1\}$

Question Type : MCQ

Question ID : 8643512314

Option 1 ID : 8643516946

Option 2 ID : 8643516944

Option 3 ID : 8643516945

Option 4 ID : 8643516943

Status : Answered

Chosen Option : 2

Q.20 If $y=y(x)$ is the solution of the differential equation $\frac{dy}{dx} + (\tan x) y = \sin x$, $0 \leq x \leq \frac{\pi}{3}$, with

$y(0)=0$, then $y(\frac{\pi}{4})$ equal to :

Options

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

Question Type : MCQ

Question ID : 8643512318

Option 1 ID : 8643516959

Option 2 ID : 8643516962

Option 3 ID : 8643516960

Option 4 ID : 8643516961

Status : Answered

Chosen Option : 4

Section : Mathematics Section B

Q.1 Let $f: \mathbb{R} \rightarrow \mathbb{R}$ and $g: \mathbb{R} \rightarrow \mathbb{R}$ be defined as

$$f(x) = \begin{cases} x+a, & x < 0 \\ |x-1|, & x \geq 0 \end{cases} \text{ and } g(x) = \begin{cases} x+1, & x < 0 \\ (x-1)^2+b, & x \geq 0 \end{cases}$$

where a, b are non-negative real numbers. If $(g \circ f)(x)$ is continuous for all $x \in \mathbb{R}$, then $a+b$ is equal to _____.

Given 2
Answer :

Question Type : SA

Question ID : 8643512335

Status : Answered

Q.2 Let \vec{c} be a vector perpendicular to the vectors $\vec{a} = \hat{i} + \hat{j} - \hat{k}$ and $\vec{b} = \hat{i} + 2\hat{j} + \hat{k}$. If

$$\vec{c} \cdot (\hat{i} + \hat{j} + 3\hat{k}) = 8 \text{ then the value of } \vec{c} \cdot (\vec{a} \times \vec{b}) \text{ is equal to } \underline{\hspace{2cm}}.$$

Given 16
Answer :

Question Type : SA

Question ID : 8643512334

Status : Answered

Q.3 If the distance of the point $(1, -2, 3)$ from the plane $x+2y-3z+10=0$ measured parallel to

$$\text{the line, } \frac{x-1}{3} = \frac{2-y}{m} = \frac{z+3}{1} \text{ is } \frac{\sqrt{7}}{2}, \text{ then the value of } |m| \text{ is equal to } \underline{\hspace{2cm}}.$$

Given 0.6
Answer :

Question Type : SA

Question ID : 8643512333

Status : Answered

Q.4 Let n be a positive integer. Let $A = \sum_{k=0}^n (-1)^k nC_k \left[\left(\frac{1}{2}\right)^k + \left(\frac{3}{4}\right)^k + \left(\frac{7}{8}\right)^k + \left(\frac{15}{16}\right)^k + \left(\frac{31}{32}\right)^k \right]$

$$\text{If } 63A = 1 - \frac{1}{2^{30}}, \text{ then } n \text{ is equal to } \underline{\hspace{2cm}}.$$

Given 1
Answer :

Question Type : SA

Question ID : 8643512337

Status : Answered

Q.5 Let $\frac{1}{16}$, a and b be in G.P. and $\frac{1}{a}$, $\frac{1}{b}$, 6 be in A.P., where $a, b > 0$. Then $72(a + b)$ is equal to _____.

Given **360**
Answer :

Question Type : **SA**
Question ID : **8643512339**
Status : **Answered**

Q.6 In ΔABC , the lengths of sides AC and AB are 12 cm and 5 cm, respectively. If the area of ΔABC is 30 cm² and R and r are respectively the radii of circumcircle and incircle of ΔABC , then the value of $2R + r$ (in cm) is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **8643512332**
Status : **Not Answered**

Q.7 Let $A = \begin{bmatrix} a_1 \\ a_2 \end{bmatrix}$ and $B = \begin{bmatrix} b_1 \\ b_2 \end{bmatrix}$ be two 2×1 matrices with real entries such that $A = XB$, where

$$X = \frac{1}{\sqrt{3}} \begin{bmatrix} 1 & -1 \\ 1 & k \end{bmatrix}, \text{ and } k \in \mathbb{R}. \text{ If } a_1^2 + a_2^2 = \frac{2}{3}(b_1^2 + b_2^2) \text{ and } (k^2 + 1) b_2^2 \neq -2 b_1 b_2, \text{ then the}$$

value of k is _____.

Given --
Answer :

Question Type : **SA**
Question ID : **8643512338**
Status : **Not Answered**

Q.8 Let $S_n(x) = \log_{a^{1/2}} x + \log_{a^{1/3}} x + \log_{a^{1/6}} x + \log_{a^{1/11}} x + \log_{a^{1/18}} x + \log_{a^{1/27}} x + \dots$ up to n -terms, where $a > 1$. If $S_{24}(x) = 1093$ and $S_{12}(2x) = 265$, then value of a is equal to _____.

Given --
Answer :

Question Type : **SA**
Question ID : **8643512340**
Status : **Not Answered**

Q.9 Consider the statistics of two sets of observations as follows :

	Size	Mean	Variance
Observation I	10	2	2
Observation II	n	3	1

If the variance of the combined set of these two observations is $\frac{17}{9}$, then the value of n is equal to _____.

Given--
Answer :

Question Type : SA

Question ID : 8643512336

Status : Not Answered

Q.10 For real numbers α , β , γ and δ , if

$$\int \frac{(x^2-1) + \tan^{-1}\left(\frac{x^2+1}{x}\right)}{(x^4+3x^2+1) \tan^{-1}\left(\frac{x^2+1}{x}\right)} dx$$

$$= \alpha \log_e \left(\tan^{-1} \left(\frac{x^2+1}{x} \right) \right) + \beta \tan^{-1} \left(\frac{\gamma(x^2-1)}{x} \right) + \delta \tan^{-1} \left(\frac{x^2+1}{x} \right) + C$$

where C is an arbitrary constant, then the value of $10(\alpha + \beta\gamma + \delta)$ is equal to _____.

Given--
Answer :

Question Type : SA

Question ID : 8643512331

Status : Not Answered