National Testing Agency

Question Paper Name :	PCM 22nd Sept 2020 Shift 1
Subject Name :	PCM
Creation Date :	2020-09-22 15:14:31
Duration :	150
Total Marks :	600
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes

PCM

Group Number :	1
Group Id :	6009648
Group Maximum Duration :	0
Group Minimum Duration :	150
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	600
Is this Group for Examiner? :	No

Part A Physics

Section Id :	60096422
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50

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Number of Questions to be attempted :	50
Section Marks :	200
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	60096422
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 6009641051 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The angle of 1′ (minute of arc) is nearly ($2\pi = 360^\circ$ and $\pi = 3.14$)

1. 2.42×10^{-6} rad
2. 2.85×10^{-6} rad
3. 2.91×10^{-4} rad
4. 1.75×10^{-2} rad

Options :

6009644201. 1

6009644202. 2

6009644203. 3

6009644204. 4

Question Number : 1 Question Id : 6009641051 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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1′ के कोण (चाप का मिनट) का मान होता है लगभग ($2\pi = 360^{\circ}$ तथा $\pi = 3.14$)

1. 2.42×10^{-6} रेडियन
2. 2.85×10^{-6} रेडियन
3. 2.91×10^{-4} रेडियन
4. 1.75×10^{-2} रेडियन

Options :

6009644201. 1

6009644202. 2

6009644203. 3

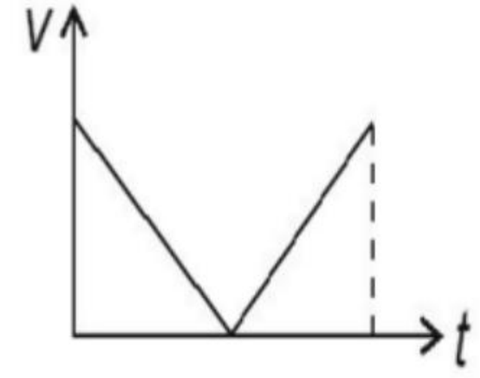
6009644204. 4

Question Number : 2 Question Id : 6009641052 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A ball is thrown vertically upward with certain velocity from the surface of the earth and after some time it returns back to the earth. The velocity – time (*v*-*t*) graph for the entire journey is given by

1.



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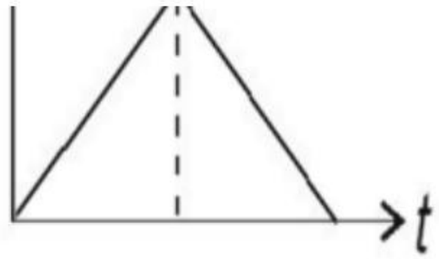
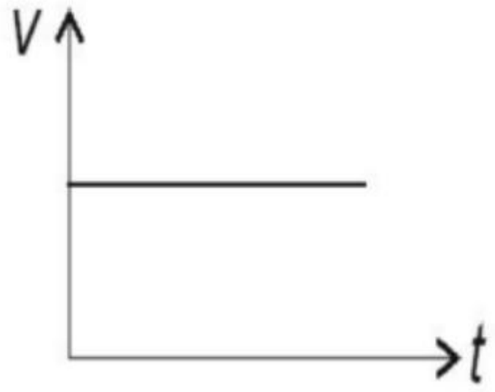
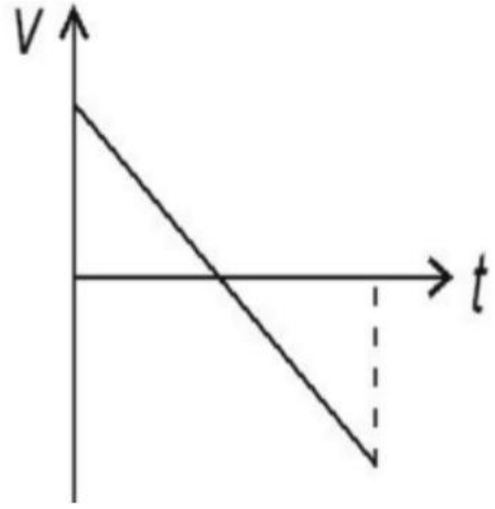
2.



3.



4.



Options :

6009644205. 1

6009644206. 2

6009644207. 3

6009644208. 4

Question Number : 2 Question Id : 6009641052 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question

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Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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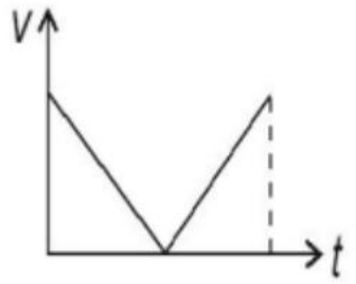
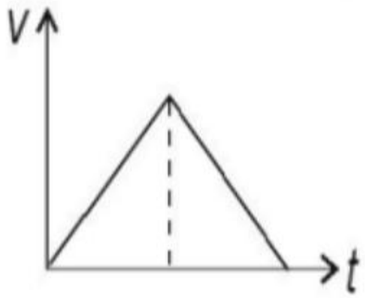
कोई गेंद किसी निश्चित वेग से पृथ्वी के पृष्ठ से ऊर्ध्वाधर ऊपरिमुखी फेंकी गयी है तथा कुछ समय पश्चात् यह वापस पृथ्वी पर लौट आती है। इस गेंद की सम्पूर्ण यात्रा के लिए वेग-समय (*v*-*t*) ग्राफ होगा

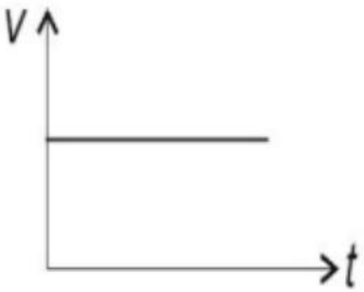
1.



2.



3.



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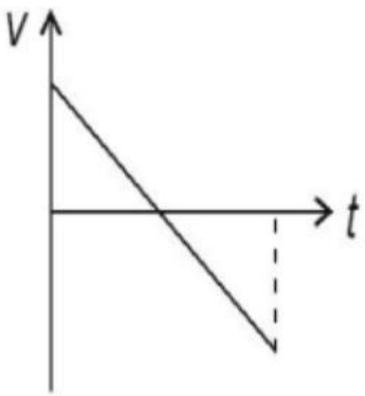

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Options :

6009644205. 1

6009644206. 2

6009644207. 3

6009644208. 4

Question Number : 3 Question Id : 6009641053 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A cricket ball is thrown at a speed of 32 ms^{-1} in a direction 30° above the horizontal. The maximum height it will attain is (take g = 10 ms^{-2})

1. 0.8 m
2. 12.8 m
3. 25.6 m
4. 51.2 m

Options :

6009644209. 1

6009644210. 2

6009644211. 3

6009644212. 4

Question Number : 3 Question Id : 6009641053 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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किसी क्रिकेट गेंद को क्षैतिज से 30° के कोण की दिशा में 32 ms^{-1} की चाल से फेंका गया है। इसके द्वारा तय की गयी अधिकतम
ऊँचाई है (g = 10 ms^{-2} लीजिए)

1. 0.8 m
2. 12.8 m
3. 25.6 m
4. 51.2 m

Options :
6009644209. 1
6009644210. 2
6009644211. 3
6009644212. 4

Question Number : 4 Question Id : 6009641054 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The motion of a particle of mass m is described by $y = ut + \frac{1}{2}gt^2$. The force acting on the particle is

1. Zero
2. $\frac{1}{2}$ mg
3. mg
4. 2 mg

Options :
6009644213. 1
6009644214. 2

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6009644215. 3
6009644216. 4

Question Number : 4 Question Id : 6009641054 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान m के किसी कण की गति का वर्णन $y = ut + \frac{1}{2}gt^2$ द्वारा किया गया है। इस कण पर कार्यरत बल है

1. शून्य
2. $\frac{1}{2}$ mg
3. mg
4. 2 mg

Options :

6009644213. 1
6009644214. 2
6009644215. 3
6009644216. 4

Question Number : 5 Question Id : 6009641055 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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A batsman hits back a ball of mass 0.2 kg straight in the direction of the bowler without changing its initial
speed of 10 m s^{-1}. Assuming linear motion of the ball, the impulse imparted to the ball is

1. 4 N s
2. 2 N s
3. Zero
4. – 4 N s

Options :

6009644217. 1
6009644218. 2
6009644219. 3
6009644220. 4

Question Number : 5 Question Id : 6009641055 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कोई बल्लेबाज़ 0.2 kg द्रव्यमान की गेंद को सीधे गेंदबाज की दिशा में उसकी प्रारम्भिक चाल 10 ms^{-1} में बिना कोई परिवर्तन किए हिट मारकर वापस भेज देता है। गेंद की गति को रैखिक मानते हुए गेंद को प्रदान किया गया आवेश है

1. 4 Ns
2. 2 Ns
3. शून्य
4. – 4 Ns

Options :

6009644217. 1
6009644218. 2

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6009644219. 3
6009644220. 4

Question Number : 6 Question Id : 6009641056 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A man of mass 70 kg stands on a weighing scale in a lift which is moving upwards with a uniform acceleration
of 10 m s^{-2}. The reading on the weighing scale will be (take g = 10 m s^{-2})

1. Zero
2. 35 kg
3. 70 kg
4. 140 kg

Options :
6009644221. 1
6009644222. 2
6009644223. 3
6009644224. 4

Question Number : 6 Question Id : 6009641056 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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70 kg द्रव्यमान का कोई व्यक्ति किसी लिफ्ट में, जो 10 ms^{-2} के एकसमान त्वरण से ऊपरिमुखी गति कर रही है, किसी भार मापने की मशीन पर खड़ा है। इस मशीन का पाठ्यांक होगा (g = 10 ms^{-2} लीजिए)

1. शून्य
2. 35 kg
3. 70 kg
4. 140 kg

Options :

6009644221. 1
6009644222. 2
6009644223. 3
6009644224. 4

Question Number : 7 Question Id : 6009641057 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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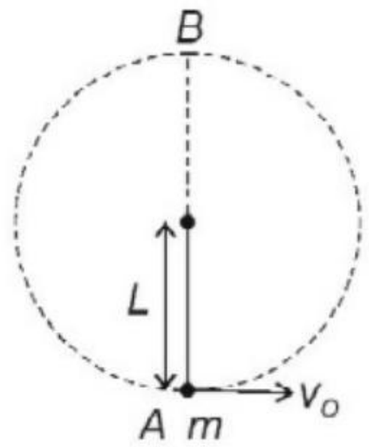
A bob of mass m is suspended by a thread of length L. At the lowest point A (see figure) of its position a horizontal velocity v_o is imparted such that it completes a semicircular trajectory in the vertical plane. The minimum velocity imparted should be



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

Options :

6009644225. 1

6009644226. 2

6009644227. 3

6009644228. 4

Question Number : 7 Question Id : 6009641057 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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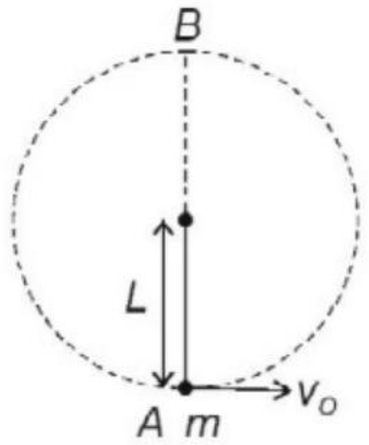
द्रव्यमान m का कोई गोलक लम्बाई L के किसी धागे से निलंबित है। इसके निम्नतम बिन्दु A पर (आरेख देखिए) इसे कोई क्षैतिज वेग v_0 इस प्रकार प्रदान किया जाता है कि यह गोलक ऊर्ध्वाधर तल में अर्धवृत्तीय प्रपथ (प्रक्षेप पथ) पूर्ण करता है। प्रदान किया गया निम्नतम वेग होना चाहिए



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

Options :

6009644225. 1

6009644226. 2

6009644227. 3

6009644228. 4

Question Number : 8 Question Id : 6009641058 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The moment of inertia of a disc of mass M and radius R about one of its diameter is

1. MR^2
2. $MR^2/2$
3. $MR^2/4$
4. $MR^2/6$

Options :

6009644229. 1
6009644230. 2
6009644231. 3
6009644232. 4

Question Number : 8 Question Id : 6009641058 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

द्रव्यमान M और त्रिज्या R की किसी चक्रिका का अपने किसी व्यास के परितः जड़त्व आघूर्ण होता है

1. MR^2
2. $MR^2/2$
3. $MR^2/4$
4. $MR^2/6$

Options :

6009644229. 1
6009644230. 2
6009644231. 3
6009644232. 4

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Question Number : 9 Question Id : 6009641059 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The speed of a planet at the perihelion is v_p and the sun planet distance is r_p. The corresponding quantities at the aphelion are v_a and r_a respectively. Then

1. $\frac{v_p}{v_a} = \frac{r_p}{r_a}$
2. $\frac{v_p}{v_a} = \frac{r_a}{r_p}$
3. $\frac{v_p}{v_a} = \frac{\sqrt{r_p}}{\sqrt{r_a}}$
4. $\frac{v_p}{v_a} = \frac{\sqrt{r_a}}{\sqrt{r_p}}$

Options :

6009644233. 1

6009644234. 2

6009644235. 3

6009644236. 4

Question Number : 9 Question Id : 6009641059 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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किसी ग्रह की रविनीच (उपसौर) पर चाल v_p है तथा सूर्य-ग्रह दूरी r_p है। ये तदनुरूपी राशियाँ रवि उच्च (अपसौर) पर क्रमशः v_a तथा r_a हैं। तब

1. $\frac{v_p}{v_a}=\frac{r_p}{r_a}$
2. $\frac{v_p}{v_a}=\frac{r_a}{r_p}$
3. $\frac{v_p}{v_a}=\frac{\sqrt{r_p}}{\sqrt{r_a}}$
4. $\frac{v_p}{v_a}=\frac{\sqrt{r_a}}{\sqrt{r_p}}$

Options :

6009644233. 1

6009644234. 2

6009644235. 3

6009644236. 4

Question Number : 10 Question Id : 6009641060 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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A comet is revolving around the sun in a highly elliptical orbit. Which of the following quantity has constant value during its revolution?

1. Linear speed
2. Angular momentum
3. Angular speed
4. Kinetic energy

Options :

6009644237. 1
6009644238. 2
6009644239. 3
6009644240. 4

Question Number : 10 Question Id : 6009641060 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कोई धूमकेतु अत्यधिक दीर्घवृत्तीय कक्षा में सूर्य की परिक्रमा कर रहा है। परिक्रमा करते समय नीचे दी गयी किस राशि का मान नियत रहता है?

1. रैखिक चाल
2. कोणीय संवेग
3. कोणीय चाल
4. गतिज ऊर्जा

Options :

6009644237. 1
6009644238. 2

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6009644239. 3
6009644240. 4

Question Number : 11 Question Id : 6009641061 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A water tank filled with water has a small hole at a depth *h* from the top surface of the water. If the tank is open to atmosphere and the cross-sectional area of the tank is much larger than that of the hole, then the speed of efflux is given by

1. $\sqrt{gh}$
2. $\sqrt{2gh}$
3. $2\sqrt{gh}$
4. $\sqrt{gh/2}$

Options :
6009644241. 1
6009644242. 2
6009644243. 3
6009644244. 4

Question Number : 11 Question Id : 6009641061 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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जल से भरी किसी जल टंकी में जल के शीर्ष पृष्ठ से h गहराई पर कोई सूक्ष्म छिद्र है। यदि यह टंकी ऊपर से खुली है तथा टंकी की अनुप्रस्थ-काट का क्षेत्रफल इस छिद्र की तुलना में बहुत अधिक है, तो छिद्र से जल के निकलने की चाल होगी

1. $\sqrt{gh}$
2. $\sqrt{2gh}$
3. $2\sqrt{gh}$
4. $\sqrt{gh/2}$

Options :

6009644241. 1
6009644242. 2
6009644243. 3
6009644244. 4

Question Number : 12 Question Id : 6009641062 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The density of water is maximum at the temperature of

1. 4 K
2. 4^{o} C
3. 4^{o} F
4. 0^{o} C

Options :

6009644245. 1
6009644246. 2
6009644247. 3
6009644248. 4

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Question Number : 12 Question Id : 6009641062 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से किस ताप पर जल का घनत्व अधिकतम होता है?

1. 4 K
2. 4^{o} C
3. 4^{o} F
4. 0^{o} C

Options :
6009644245. 1
6009644246. 2
6009644247. 3
6009644248. 4

Question Number : 13 Question Id : 6009641063 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A vessel contains two non-reactive gases: neon and helium. The ratio of their partial pressure is 3 : 2.

The ratio of their number of molecules will be

1. 1 : 1
2. 1 : 2
3. 2 : 3
4. 3 : 2

Options :

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6009644249. 1
6009644250. 2
6009644251. 3
6009644252. 4

Question Number : 13 Question Id : 6009641063 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

किसी पात्र में दो अक्रिय गैसें नियॉन तथा हीलियम भरी हैं। इनके आंशिक दाबों का अनुपात 3 : 2 है। इनके अणुओं की संख्या का अनुपात होगा

1. 1 : 1
2. 1 : 2
3. 2 : 3
4. 3 : 2

Options :

6009644249. 1
6009644250. 2
6009644251. 3
6009644252. 4

Question Number : 14 Question Id : 6009641064 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The mean free path of molecules each having diameter d, in a gas having n number of molecules per unit volume is given by

1. $1/(\sqrt{2}n\pi d^2)$
2. $1/(2n\pi d^2)$
3. $1/(\sqrt{2}n\pi^2 d^2)$
4. $1/(2nd^2)$

Options :

6009644253. 1
6009644254. 2
6009644255. 3
6009644256. 4

Question Number : 14 Question Id : 6009641064 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

किसी गैस, जिसके प्रति एकांक आयतन में अणुओं की संख्या n है तथा प्रत्येक अणु का व्यास d है, के अणुओं का माध्य-मुक्त पथ होता है

1. $1/(\sqrt{2}n\pi d^2)$
2. $1/(2n\pi d^2)$
3. $1/(\sqrt{2}n\pi^2 d^2)$
4. $1/(2nd^2)$

Options :

6009644253. 1
6009644254. 2
6009644255. 3

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6009644256. 4

Question Number : 15 Question Id : 6009641065 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The pressure of a gas, kept in an isothermal container is 200 Pa. The pressure when half of the gas is removed will be

1. 800 Pa
2. 400 Pa
3. 200 Pa
4. 100 Pa

Options :

6009644257. 1

6009644258. 2

6009644259. 3

6009644260. 4

Question Number : 15 Question Id : 6009641065 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

किसी समतापीय पात्र में भरी किसी गैस का दाब 200 Pa है। इस पात्र से आधी गैस निकालने के पश्चात् दाब होगा

1. 800 Pa
2. 400 Pa
3. 200 Pa
4. 100 Pa

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Options :

6009644257. 1

6009644258. 2

6009644259. 3

6009644260. 4

Question Number : 16 Question Id : 6009641066 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A 30 cm long pipe, open at both ends resonates with frequency 1.1 kHz. The mode of vibration will be (take velocity of sound 330 ms^{-1})

1. First harmonic
2. Second harmonic
3. Third harmonic
4. Fourth harmonic

Options :

6009644261. 1

6009644262. 2

6009644263. 3

6009644264. 4

Question Number : 16 Question Id : 6009641066 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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दोनों सिरों से खुला 30 cm लम्बाई का कोई पाइप 1.1 kHz की आवृत्ति से अनुनाद करता है। इसके कम्पन की विधा होगी (ध्वनि का वेग 330 ms^{-1} लीजिए)

1. प्रथम संनादी (हार्मोनिक)
2. द्वितीय संनादी (हार्मोनिक)
3. तृतीय संनादी (हार्मोनिक)
4. चतुर्थ संनादी (हार्मोनिक)

Options :

6009644261. 1
6009644262. 2
6009644263. 3
6009644264. 4

Question Number : 17 Question Id : 6009641067 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The length of a simple pendulum which ticks seconds is (take $g = 10\ ms^{-2}$; $\pi^2 = 10$)

1. 4 m
2. 2 m
3. 1 m
4. 0.5 m

Options :

6009644265. 1
6009644266. 2
6009644267. 3
6009644268. 4

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Question Number : 17 Question Id : 6009641067 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

उस सरल लोलक की लम्बाई, जो प्रति सेकण्ड टिक की ध्वनि करता है, होती है ($g = 10\ ms^{-2}$; $\pi^2 = 10$ लीजिए)

1. 4 m
2. 2 m
3. 1 m
4. 0.5 m

Options :

6009644265. 1

6009644266. 2

6009644267. 3

6009644268. 4

Question Number : 18 Question Id : 6009641068 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The temperature of two bodies measured by a thermometer are $T_1 = 40°C \pm 0.2°C$ and $T_2 = 10°C \pm 0.2°C$. The temperature difference $(T_1 - T_2)$ and the error therein is

1. $30\ °C \pm 0.0\ °C$
2. $30\ °C \pm 0.2\ °C$
3. $30\ °C \pm 0.4\ °C$
4. $30\ °C \pm 0.1\ °C$

Options :

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6009644269. 1
6009644270. 2
6009644271. 3
6009644272. 4

Question Number : 18 Question Id : 6009641068 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

किसी थर्मामीटर से मापने पर दो पिण्डों के ताप $T_1 = 40\ ^\circ C \pm 0.2\ ^\circ C$ तथा $T_2 = 10\ ^\circ C \pm 0.2\ ^\circ C$ हैं। इन तापों के बीच अन्तर
$(T_1 - T_2)$ तथा इसमें त्रुटि होगी

1. $30\ ^\circ C \pm 0.0\ ^\circ C$
2. $30\ ^\circ C \pm 0.2\ ^\circ C$
3. $30\ ^\circ C \pm 0.4\ ^\circ C$
4. $30\ ^\circ C \pm 0.1\ ^\circ C$

Options :
6009644269. 1
6009644270. 2
6009644271. 3
6009644272. 4

Question Number : 19 Question Id : 6009641069 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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What is the maximum acceleration of a train in which a box lying on its floor will remain stationary, given that the coefficient of static friction between the box and the train's floor is 0.2? (take g = 10 ms^{-2})

1. Zero
2. 1.0 ms^{-2}
3. 2.0 ms^{-2}
4. 4.0 ms^{-2}

Options :

6009644273. 1
6009644274. 2
6009644275. 3
6009644276. 4

Question Number : 19 Question Id : 6009641069 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

किसी ट्रेन का अधिकतम त्वरण क्या है जिसमें उसके फर्श पर रखा कोई बॉक्स स्थिर रहेगा, दिया है कि बॉक्स और ट्रेन के फर्श के बीच स्थैतिक घर्षण गुणांक 0.2 है? (g = 10 ms^{-2} लीजिए)

1. शून्य
2. 1.0 ms^{-2}
3. 2.0 ms^{-2}
4. 4.0 ms^{-2}

Options :

6009644273. 1
6009644274. 2

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6009644275. 3
6009644276. 4

Question Number : 20 Question Id : 6009641070 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Consider a rain drop of water of mass 2.0 g falling from a height of 1.0 km. After sometime it attains terminal velocity of 40 m s^{-1} due to viscous force of air. Then the magnitude of work done by viscous force as the water drop hits the ground is (take g = 10 m s^{-2})

1. 8.4 J
2. 12.4 J
3. 16.4 J
4. 18.4 J

Options :
6009644277. 1
6009644278. 2
6009644279. 3
6009644280. 4

Question Number : 20 Question Id : 6009641070 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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1.0 km की ऊँचाई से गिरते 2.0 g द्रव्यमान की वर्षा की जल-बूंद पर विचार कीजिए। वायु के श्यान बल के कारण कुछ समय पश्चात् यह बूंद अंतिम (टर्मिनल) वेग प्राप्त कर लेती है। जब यह जल-बूंद धरती से टकराती है तब श्यान बल द्वारा किए गए कार्य का परिमाण होता है (g = 10 ms^{-2} लीजिए)

1. 8.4 J
2. 12.4 J
3. 16.4 J
4. 18.4 J

Options :

6009644277. 1
6009644278. 2
6009644279. 3
6009644280. 4

Question Number : 21 Question Id : 6009641071 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The angular momentum about the origin for a particle of mass 5 kg moving with a velocity $\mathbf{v} = 10\,\hat{j}$ m s^{-1} and at a position given by $\mathbf{r} = 2\,\hat{i}$ m is

1. $10\,\hat{k}\,kg\,m^2\,s^{-1}$
2. $50\,\hat{j}\,kg\,m^2\,s^{-1}$
3. $100\,\hat{k}\,kg\,m^2\,s^{-1}$
4. $200\,\hat{i}\,kg\,m^2\,s^{-1}$

Options :

6009644281. 1

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6009644282. 2
6009644283. 3
6009644284. 4

Question Number : 21 Question Id : 6009641071 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

दी गयी स्थिति $\mathbf{r} = 2\hat{i}$ m पर वेग $\mathbf{v} = 10\hat{j}$ ms^{-1} से गतिमान 5 kg द्रव्यमान के किसी कण का मूलबिन्दु के परितः कोणीय संवेग होता है

1. $10\hat{k}\,kg\,m^2\,s^{-1}$
2. $50\hat{j}\,kg\,m^2\,s^{-1}$
3. $100\hat{k}\,kg\,m^2\,s^{-1}$
4. $200\hat{i}\,kg\,m^2\,s^{-1}$

Options :
6009644281. 1
6009644282. 2
6009644283. 3
6009644284. 4

Question Number : 22 Question Id : 6009641072 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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A steel rod of radius 10 mm and length 2.0 m is stretched by a force of 2×10^5 N along its length. The stress acting on the rod is nearly ($\pi = \frac{22}{7}$)

1. 3.18×10^8 N m^{-2}
2. 6.36×10^8 N m^{-2}
3. 3.18×10^6 N m^{-2}
4. 6.36×10^6 N m^{-2}

Options :

6009644285. 1
6009644286. 2
6009644287. 3
6009644288. 4

Question Number : 22 Question Id : 6009641072 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

लम्बाई 2.0 m और त्रिज्या 10 mm की किसी स्टील की छड़ को इसकी लम्बाई के अनुदिश 2×10^5 N के किसी बल द्वारा खींचा गया है। इस छड़ पर कार्यरत प्रतिबल है लगभग ($\pi = \frac{22}{7}$)

1. 3.18×10^8 N m^{-2}
2. 6.36×10^8 N m^{-2}
3. 3.18×10^6 N m^{-2}
4. 6.36×10^6 N m^{-2}

Options :

6009644285. 1
6009644286. 2

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6009644287. 3
6009644288. 4

Question Number : 23 Question Id : 6009641073 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

According to Stokes' law, the viscous force acting on a body falling through a viscous fluid, is proportional to
(η is the coefficient of viscosity)

1. η
2. η^{-1}
3. $\sqrt{\eta}$
4. η^2

Options :
6009644289. 1
6009644290. 2
6009644291. 3
6009644292. 4

Question Number : 23 Question Id : 6009641073 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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स्टोक्स के नियम के अनुसार किसी श्यान तरल में गिरते किसी पिण्ड पर कार्यरत श्यान बल अनुक्रमानुपाती होता है (η श्यानता गुणांक है)

1. η
2. η^{-1}
3. $\sqrt{\eta}$
4. η^2

Options :

6009644289. 1

6009644290. 2

6009644291. 3

6009644292. 4

Question Number : 24 Question Id : 6009641074 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A heat engine takes 100 J of heat from a hot reservoir and releases 25 J of heat to a cold reservoir.

The efficiency of the heat engine is

1. 0.25
2. 0.50
3. 0.75
4. 1.00

Options :

6009644293. 1

6009644294. 2

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6009644295. 3
6009644296. 4

Question Number : 24 Question Id : 6009641074 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

कोई ऊष्मा इंजन किसी गर्म कुण्ड से 100 J ऊष्मा लेता है तथा ठंडे कुण्ड को 25 J ऊष्मा मुक्त करता है। इस इंजन की दक्षता है

1. 0.25
2. 0.50
3. 0.75
4. 1.00

Options :
6009644293. 1
6009644294. 2
6009644295. 3
6009644296. 4

Question Number : 25 Question Id : 6009641075 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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A body oscillates with SHM according to the equation

$$x = 4\sin(2\pi t + \pi/4)\text{m}$$

Its displacement at t =1.0 s, is (take $\sqrt{2} = 1.4$)

1. 2.0 m
2. 2.8 m
3. 4.0 m
4. 5.6 m

Options :

6009644297. 1

6009644298. 2

6009644299. 3

6009644300. 4

Question Number : 25 Question Id : 6009641075 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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कोई पिण्ड समीकरण

$$x = 4\sin(2\pi t + \pi/4)\text{m}$$

के अनुसार सरल आवर्त गति (SHM) करता है। t =1.0 s पर इस पिण्ड का विस्थापन होगा ($\sqrt{2} = 1.4$ लीजिए)

1. 2.0 m
2. 2.8 m
3. 4.0 m
4. 5.6 m

Options :

6009644297. 1
6009644298. 2
6009644299. 3
6009644300. 4

Question Number : 26 Question Id : 6009641076 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A glass slab of refractive index 1.47 disappears in trough of liquid. The refractive index of the liquid will be

1. $1.47/\sqrt{2}$
2. $1.47\sqrt{2}$
3. 1.47
4. 1.0

Options :

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6009644301. 1
6009644302. 2
6009644303. 3
6009644304. 4

Question Number : 26 Question Id : 6009641076 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

1.47 अपवर्तनांक का कोई कांच का स्लैब किसी द्रव के कुण्ड में लुप्त हो जाता है। द्रव का अपवर्तनांक होगा

1. $1.47/\sqrt{2}$
2. $1.47\sqrt{2}$
3. 1.47
4. 1.0

Options :

6009644301. 1
6009644302. 2
6009644303. 3
6009644304. 4

Question Number : 27 Question Id : 6009641077 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Work function of certain metal is 3.3 eV. The threshold frequency for the same metal for photoelectric emission will be (h = 6.6×10^{-34} J s; 1 eV = 1.6×10^{-19} J)

1. 8.0×10^{14} Hz
2. 8.0×10^{16} Hz
3. 8.0×10^{18} Hz
4. 8.0×10^{19} Hz

Options :

6009644305. 1
6009644306. 2
6009644307. 3
6009644308. 4

Question Number : 27 Question Id : 6009641077 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

किसी धातु का कार्यफलन 3.3 eV है। प्रकाश-विद्युत् उत्सर्जन के लिए इसी धातु के लिए देहली आवृत्ति होगी (h = 6.6×10^{-34} J s;
1 eV = 1.6×10^{-19} J)

1. 8.0×10^{14} Hz
2. 8.0×10^{16} Hz
3. 8.0×10^{18} Hz
4. 8.0×10^{19} Hz

Options :

6009644305. 1

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6009644306. 2
6009644307. 3
6009644308. 4

Question Number : 28 Question Id : 6009641078 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The ground state energy of electron in hydrogen atom is −13.6 eV. The corresponding kinetic and potential energies are respectively

1. Zero ; −13.6 eV
2. −6.8 eV ; −6.8 eV
3. 13.6 eV ; −27.2 eV
4. −13.6 eV ; Zero

Options :
6009644309. 1
6009644310. 2
6009644311. 3
6009644312. 4

Question Number : 28 Question Id : 6009641078 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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हाइड्रोजन परमाणु में इलेक्ट्रॉन की निम्नतम अवस्था ऊर्जा –13.6 eV है। तदनुरूपी गतिज और स्थैतिक ऊर्जा क्रमशः हैं

1. शून्य ; –13.6 eV
2. –6.8 eV ; –6.8 eV
3. 13.6 eV ; –27.2 eV
4. –13.6 eV ; शून्य

Options :
6009644309. 1
6009644310. 2
6009644311. 3
6009644312. 4

Question Number : 29 Question Id : 6009641079 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Tritium undergoing β decay has a half-life of 12.5 y. The percentage of pure tritium which remains un-decayed after 50 y is

1. 93.75
2. 87.5
3. 6.25
4. 3.125

Options :
6009644313. 1
6009644314. 2
6009644315. 3
6009644316. 4

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Question Number : 29 Question Id : 6009641079 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

β क्षय होते ट्रीटियम की अर्धायु 12.5 वर्ष है। 50 वर्ष के पश्चात् बिना क्षयित् हुए शेष बचे शुद्ध ट्रीटियम की प्रतिशतता होगी

1. 93.75
2. 87.5
3. 6.25
4. 3.125

Options :

6009644313. 1
6009644314. 2
6009644315. 3
6009644316. 4

Question Number : 30 Question Id : 6009641080 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The symbol χ in the following nuclear reaction represents

$$^{238}_{92}U + n \rightarrow ^{239}_{92}U \rightarrow ^{239}_{93}Np + X + \bar{\nu}$$

1. γ-ray
2. Antiproton
3. α-particle
4. β-particle

Options :

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6009644317. 1
6009644318. 2
6009644319. 3
6009644320. 4

Question Number : 30 Question Id : 6009641080 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

नीचे दी गयी नाभिकीय अभिक्रिया में X किसको निरूपित करता है? $^{238}_{92}U + n \rightarrow ^{239}_{92}U \rightarrow ^{239}_{93}Np + X + \bar{\nu}$

1. γ-किरणें
2. एन्टी-प्रोटॉन
3. α-कण
4. β-कण

Options :

6009644317. 1
6009644318. 2
6009644319. 3
6009644320. 4

Question Number : 31 Question Id : 6009641081 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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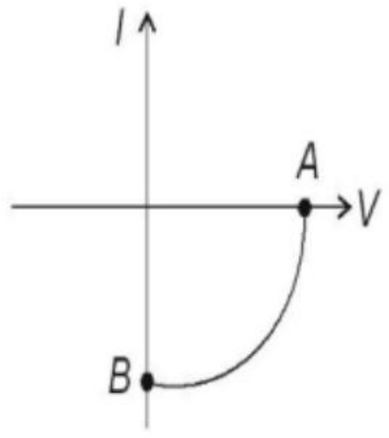
The *V-I* characteristics of a solar cell is shown in the figure. The points *A* and *B* are respectively called



1. Open circuit voltage ; short circuit current
2. Open circuit voltage ; open circuit current
3. Short circuit voltage ; short circuit current
4. Short circuit voltage ; open circuit current

Options :

6009644321. 1

6009644322. 2

6009644323. 3

6009644324. 4

Question Number : 31 Question Id : 6009641081 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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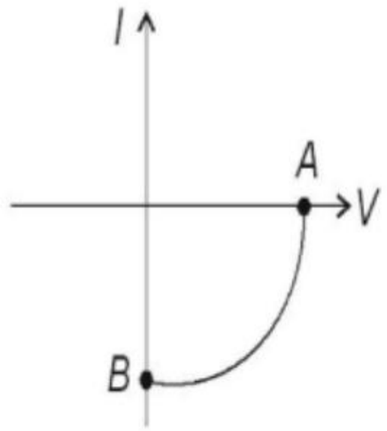
नीचे दिए आरेख में किसी सौर सेल का *V-I* अभिलाक्षणिक दर्शाया गया है। बिन्दु *A* और *B* क्रमशः कहलाते हैं



1. खुला परिपथ वोल्टता ; लघु परिपथ धारा
2. खुला परिपथ वोल्टता ; खुला परिपथ धारा
3. लघु परिपथ वोल्टता ; लघु परिपथ धारा
4. लघु परिपथ वोल्टता ; खुला परिपथ धारा

Options :

6009644321. 1

6009644322. 2

6009644323. 3

6009644324. 4

Question Number : 32 Question Id : 6009641082 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The frequency range of cellular radio mobile is

1. 540 – 1600 kHz
2. 88 – 108 MHz
3. 174 – 216 MHz
4. 896 – 935 MHz

Options :

6009644325. 1
6009644326. 2
6009644327. 3
6009644328. 4

Question Number : 32 Question Id : 6009641082 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

सेल्युलर रेडियों मोबाइल का आवृत्ति परिसर है

1. 540 – 1600 kHz
2. 88 – 108 MHz
3. 174 – 216 MHz
4. 896 – 935 MHz

Options :

6009644325. 1
6009644326. 2
6009644327. 3
6009644328. 4

Question Number : 33 Question Id : 6009641083 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The diode used for voltage regulation is

1. Zener diode
2. Light emitting diode
3. Photodiode
4. Solar cell

Options :

6009644329. 1
6009644330. 2
6009644331. 3
6009644332. 4

Question Number : 33 Question Id : 6009641083 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

वोल्टता नियमन के लिए उपयोग किए जाने वाला डायोड है

1. जेनर डायोड
2. प्रकाश उत्सर्जक डायोड (LED)
3. फोटोडायोड
4. सौर सेल

Options :

6009644329. 1
6009644330. 2
6009644331. 3
6009644332. 4

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Question Number : 34 Question Id : 6009641084 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

In optical fibre, the light travel along the fibre by undergoing repeated total internal reflections. For this purpose we ensure that the refractive index of the material

1. is low
2. decreases from centre towards surface
3. increases from centre towards surface
4. is high

Options :
6009644333. 1
6009644334. 2
6009644335. 3
6009644336. 4

Question Number : 34 Question Id : 6009641084 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

प्रकाशित तन्तु में तन्तु के अनुदिश प्रकाश पुनरावर्ती पूर्ण आन्तरिक परावर्तन होने के कारण गमन करता है। इसके लिए हम यह सुनिश्चित करते हैं कि तन्तु के पदार्थ का अपवर्तनांक

1. निम्न हो
2. केन्द्र से पृष्ठ की ओर घटे
3. केन्द्र से पृष्ठ की ओर बढ़े
4. उच्च हो

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Options :

6009644333. 1

6009644334. 2

6009644335. 3

6009644336. 4

Question Number : 35 Question Id : 6009641085 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

As a rare view mirror in a car, the type of mirror used is,

1. Plane
2. Concave
3. Convex
4. Cylindrical

Options :

6009644337. 1

6009644338. 2

6009644339. 3

6009644340. 4

Question Number : 35 Question Id : 6009641085 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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किसी कार में पश्च दृश्य दर्पण के रूप में उपयोग होने वाले दर्पण का प्रकार है

1. समतल
2. अवतल
3. उत्तल
4. बेलनाकार

Options :
6009644337. 1
6009644338. 2
6009644339. 3
6009644340. 4

Question Number : 36 Question Id : 6009641086 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

The reddish appearance of the Sun near the horizon is due to the following phenomenon of light

1. Refraction
2. Rayleigh Scattering
3. Diffraction
4. Total internal refraction

Options :
6009644341. 1
6009644342. 2
6009644343. 3
6009644344. 4

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Question Number : 36 Question Id : 6009641086 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

क्षितिज के समीप सूर्य के रक्ताभ प्रतीत होने का कारण नीचे दी गयी कौन-सी परिघटना है?

1. अपवर्तन
2. रेले प्रकीर्णन
3. विवर्तन
4. पूर्ण आन्तरिक परावर्तन

Options :
6009644341. 1
6009644342. 2
6009644343. 3
6009644344. 4

Question Number : 37 Question Id : 6009641087 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The magnetic field due to a circular wire loop of radius R and carrying current I at its centre is given by (μ_0 is the permeability of free space)

1. $\mu_0 I/2R$
2. $\mu_0 I/2\pi R$
3. $\mu_0 I/2R^2$
4. $\mu_0 I/2\pi R^2$

Options :
6009644345. 1

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6009644346. 2
6009644347. 3
6009644348. 4

Question Number : 37 Question Id : 6009641087 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

त्रिज्या R के तार के वृत्ताकार पाश, जिससे धारा I प्रवाहित हो रही है, के कारण उसके केन्द्र पर चुम्बकीय क्षेत्र होता है
(यहाँ μ_0 मुक्त अवकाश की चुम्बकशीलता है)

1. $\mu_0 I/2R$
2. $\mu_0 I/2\pi R$
3. $\mu_0 I/2R^2$
4. $\mu_0 I/2\pi R^2$

Options :
6009644345. 1
6009644346. 2
6009644347. 3
6009644348. 4

Question Number : 38 Question Id : 6009641088 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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When a *p-n* junction diode is reversed bias, the width of the depletion region,

1. Increases
2. Decreases
3. Remains unaltered
4. Becomes zero

Options :

6009644349. 1

6009644350. 2

6009644351. 3

6009644352. 4

Question Number : 38 Question Id : 6009641088 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

जब कोई *p-n* डायोड पश्चदिशिक बायसित होता है, तो ह्रासी क्षेत्र की चौड़ाई

1. बढ़ जाती है
2. घट जाती है
3. अपरिवर्तित रहती है
4. शून्य हो जाती है

Options :

6009644349. 1

6009644350. 2

6009644351. 3

6009644352. 4

Question Number : 39 Question Id : 6009641089 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The electric field inside a uniformly charged thin spherical shell having radius R and total charge Q is (ε_0 is the permittivity of free space)

1. $Q/4\pi\varepsilon_0 R^2$
2. $Q/4\pi\varepsilon_0 R$
3. Zero
4. $Q/2\pi\varepsilon_0 R^2$

Options :
6009644353. 1
6009644354. 2
6009644355. 3
6009644356. 4

Question Number : 39 Question Id : 6009641089 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

कुल आवेश Q वाले त्रिज्या R के एकसमान आवेशित गोलीय खोल के भीतर विद्युत् क्षेत्र होता है (यहाँ ε_0 मुक्त अवकाश की विद्युत्शीलता/परावैद्युतांक है)

1. $Q/4\pi\varepsilon_0 R^2$
2. $Q/4\pi\varepsilon_0 R$
3. शून्य
4. $Q/2\pi\varepsilon_0 R^2$

Options :

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6009644353. 1
6009644354. 2
6009644355. 3
6009644356. 4

Question Number : 40 Question Id : 6009641090 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A Van de Graaff generator is used for

1. Accelerating neutron
2. Charging capacitor
3. Generating electricity
4. Accelerating charge particles

Options :
6009644357. 1
6009644358. 2
6009644359. 3
6009644360. 4

Question Number : 40 Question Id : 6009641090 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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वान डे ग्राफ जनित्र का उपयोग किया जाता है

1. न्यूट्रॉन को त्वरित करने के लिए
2. संधारित्र को आवेशित करने के लिए
3. विद्युत् के जनन के लिए
4. आवेशित कणों को त्वरित करने के लिए

Options :

6009644357. 1

6009644358. 2

6009644359. 3

6009644360. 4

Question Number : 41 Question Id : 6009641091 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A current is flowing through a conductor of non-uniform cross section. The quantity which remains constant along the conductor is

1. Current density
2. Drift velocity
3. Current
4. Electric field

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Options :

6009644361. 1

6009644362. 2

6009644363. 3

6009644364. 4

Question Number : 41 Question Id : 6009641091 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

किसी असमान अनुप्रस्थ-काट के चालक से कोई धारा प्रवाहित हो रही है। चालक के अनुदिश नियत रहने वाली राशि है

1. धारा घनत्व
2. अपवाह वेग
3. धारा
4. विद्युत् क्षेत्र

Options :

6009644361. 1

6009644362. 2

6009644363. 3

6009644364. 4

Question Number : 42 Question Id : 6009641092 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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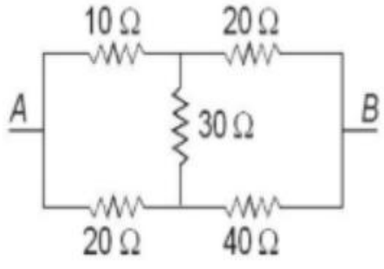
The total resistance between terminal *A* and *B* is (see figure)



1. 90 Ω
2. 60 Ω
3. 30 Ω
4. 20 Ω

Options :

6009644365. 1

6009644366. 2

6009644367. 3

6009644368. 4

Question Number : 42 Question Id : 6009641092 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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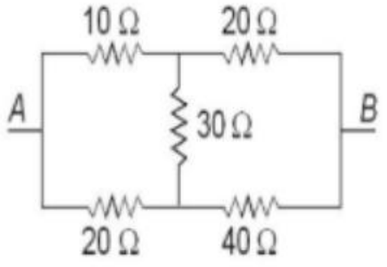
टर्मिनल A और B के बीच कुल प्रतिरोध है (आरेख देखिए)



1. 90 Ω
2. 60 Ω
3. 30 Ω
4. 20 Ω

Options :

6009644365. 1
6009644366. 2
6009644367. 3
6009644368. 4

Question Number : 43 Question Id : 6009641093 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The evidence of connection between electric and magnetic phenomena was demonstrated by

1. H.C. Oersted
2. H.A. Lorentz
3. Joseph Henry
4. Michael Faraday

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Options :

6009644369. 1

6009644370. 2

6009644371. 3

6009644372. 4

Question Number : 43 Question Id : 6009641093 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

वैद्युतीय और चुम्बकीय परिघटनाओं के बीच संबंध के प्रमाण को किसने निदर्शित किया था?

1. एच. सी. ऑर्स्टेट
2. एच. ए. लॉरेन्ज़
3. जोसेफ हेनरी
4. माइकेल फैराडे

Options :

6009644369. 1

6009644370. 2

6009644371. 3

6009644372. 4

Question Number : 44 Question Id : 6009641094 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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When a charged particle having charge q and mass m is accelerated in a cyclotron having magnetic field strength B, the cyclotron frequency is given by

1. $\pi m/qB$
2. $2\pi m/qB$
3. $qB/2\pi m$
4. $qB/\pi m$

Options :
6009644373. 1
6009644374. 2
6009644375. 3
6009644376. 4

Question Number : 44 Question Id : 6009641094 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

जब द्रव्यमान m और आवेश q के किसी आवेशित कण को चुम्बकीय क्षेत्र तीव्रता B के किसी साइक्लोट्रॉन द्वारा त्वरित किया जाता है, तो साइक्लोट्रॉन की आवृत्ति होती है

1. $\pi m/qB$
2. $2\pi m/qB$
3. $qB/2\pi m$
4. $qB/\pi m$

Options :
6009644373. 1
6009644374. 2

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6009644375. 3
6009644376. 4

Question Number : 45 Question Id : 6009641095 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

To convert a galvanometer to an ammeter we connect

1. A low resistance in parallel with the galvanometer
2. A low resistance in series with the galvanometer
3. A high resistance in parallel with the galvanometer
4. A high resistance in series with the galvanometer

Options :
6009644377. 1
6009644378. 2
6009644379. 3
6009644380. 4

Question Number : 45 Question Id : 6009641095 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

किसी गैल्वेनोमीटर को एमीटर में परिवर्तित करने के लिए हम संयोजित करते हैं?

1. गैल्वेनोमीटर के साथ पार्श्व में कोई निम्न प्रतिरोध
2. गैल्वेनोमीटर के साथ श्रेणी में कोई निम्न प्रतिरोध
3. गैल्वेनोमीटर के साथ पार्श्व में कोई उच्च प्रतिरोध
4. गैल्वेनोमीटर के साथ श्रेणी में कोई उच्च प्रतिरोध

Options :

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6009644377. 1
6009644378. 2
6009644379. 3
6009644380. 4

Question Number : 46 Question Id : 6009641096 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

At a certain place a horizontal component of earth's magnetic field is 0.26 G and the dip angle is 45°.

The magnetic field of the earth at this location is

1. $\sqrt{2}/0.26$ G
2. $\frac{\sqrt{3}}{2} \times 0.26$ G
3. $0.26/\sqrt{2}$ G
4. $0.26\sqrt{2}$ G

Options :
6009644381. 1
6009644382. 2
6009644383. 3
6009644384. 4

Question Number : 46 Question Id : 6009641096 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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किसी दिए गए स्थान पर पृथ्वी के चुम्बकीय क्षेत्र का क्षैतिज घटक 0.26 G तथा नति कोण 45° है। इस अवस्थिति पर पृथ्वी का चुम्बकीय क्षेत्र है

1. $\sqrt{2}/0.26\ G$
2. $\frac{\sqrt{3}}{2} \times 0.26\ G$
3. $0.26/\sqrt{2}\ G$
4. $0.26\sqrt{2}\ G$

Options :

6009644381. 1

6009644382. 2

6009644383. 3

6009644384. 4

Question Number : 47 Question Id : 6009641097 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Working of induction furnace is based on the principle of

1. Heating effect of current
2. Eddy current effect
3. Mutual induction
4. Self induction

Options :

6009644385. 1

6009644386. 2

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6009644387. 3
6009644388. 4

Question Number : 47 Question Id : 6009641097 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

प्रेरण भट्टी का कार्य किस सिद्धान्त पर आधारित है?

1. धारा का तापीय प्रभाव
2. भंवर धारा प्रभाव
3. अन्योन्य प्रेरण
4. स्वःप्रेरण

Options :
6009644385. 1
6009644386. 2
6009644387. 3
6009644388. 4

Question Number : 48 Question Id : 6009641098 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A 20 μF capacitor is connected to a 200 V, 50 Hz ac source. Its capacitive reactance is

1. $5\pi \times 10^3\Omega$
2. $5\pi \times 10^2\Omega$
3. $(5/\pi) \times 10^2\Omega$
4. $(5/\pi) \times 10^1\Omega$

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Options :

6009644389. 1

6009644390. 2

6009644391. 3

6009644392. 4

Question Number : 48 Question Id : 6009641098 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

20 μF धारिता का कोई संधारित्र 200 V, 50 Hz आवृत्ति के ac स्रोत से संयोजित है। इसका धारिता प्रतिघात है

1. $5\pi \times 10^3\ \Omega$
2. $5\pi \times 10^2\ \Omega$
3. $(5/\pi) \times 10^2\ \Omega$
4. $(5/\pi) \times 10^1\ \Omega$

Options :

6009644389. 1

6009644390. 2

6009644391. 3

6009644392. 4

Question Number : 49 Question Id : 6009641099 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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A plane electromagnetic wave of frequency 50 MHz is traveling in free space in *x*-direction. At a particular point in space and time, $\mathbf{E} = 6.3\,\hat{j}\ V\ m^{-1}$. The magnetic field **B** at this point is

1. $2.1 \times 10^{-8}\,\hat{k}T$
2. $-2.1 \times 10^{-8}\,\hat{k}T$
3. $1.89 \times 10^{-7}\,\hat{k}T$
4. $-1.89 \times 10^{-7}\,\hat{k}T$

Options :

6009644393. 1
6009644394. 2
6009644395. 3
6009644396. 4

Question Number : 49 Question Id : 6009641099 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

50 MHz आवृत्ति की कोई समतल विद्युत् चुम्बकीय तरंग मुक्त अवकाश में *x*-दिशा में गमन कर रही है। अवकाश और दिक्काल में किसी बिन्दु पर $\mathbf{E} = 6.3\hat{j}\ V\ m^{-1}$ है। इस बिन्दु पर चुम्बकीय क्षेत्र **B** है

1. $2.1 \times 10^{-8}\,\hat{k}T$
2. $-2.1 \times 10^{-8}\,\hat{k}T$
3. $1.89 \times 10^{-7}\,\hat{k}T$
4. $-1.89 \times 10^{-7}\,\hat{k}T$

Options :

6009644393. 1
6009644394. 2

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6009644395. 3
6009644396. 4

Question Number : 50 Question Id : 6009641100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A square loop of side 10 cm is placed vertically in the east west plane. A uniform magnetic field of 0.1 T is set up across the plane of the loop in the northeast direction. The flux linked with the loop is

1. $\sqrt{2} \times 10^{-2}$ Wb
2. $\sqrt{2} \times 10^{-3}$ Wb
3. $(1/\sqrt{2}) \times 10^{-2}$ Wb
4. $(1/\sqrt{2}) \times 10^{-3}$ Wb

Options :
6009644397. 1
6009644398. 2
6009644399. 3
6009644400. 4

Question Number : 50 Question Id : 6009641100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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10 cm भुजा का कोई वर्गाकार पाश पूर्व-पश्चिम तल में ऊर्ध्वाधरतः रखा है। इस पाश के तल के सिरों पर उत्तर-पूर्व दिशा में 0.1 T का कोई एकसमान चुम्बकीय क्षेत्र लगाया गया है। इस पाश से संबद्ध फ्लक्स है

1. $\sqrt{2} \times 10^{-2}$ Wb
2. $\sqrt{2} \times 10^{-3}$ Wb
3. $(1/\sqrt{2}) \times 10^{-2}$ Wb
4. $(1/\sqrt{2}) \times 10^{-3}$ Wb

Options :

6009644397. 1
6009644398. 2
6009644399. 3
6009644400. 4

Part B Chemistry

Section Id :	60096423
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	200
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	60096423
Question Shuffling Allowed :	Yes

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Question Number : 51 Question Id : 6009641101 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Ortho-sulphobenzimide is also known as

1. saccharin
2. sucralose
3. aspartame
4. alitame

Options :
6009644401. 1
6009644402. 2
6009644403. 3
6009644404. 4

Question Number : 51 Question Id : 6009641101 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

ऑर्थो-सल्फोबेंज़ीमाइड को निम्नलिखित में से किस नाम से भी जाना जाता है?

1. सैकेरिन
2. सुक्रालोस
3. एस्पार्टेम
4. एलिटेम

Options :
6009644401. 1

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6009644402. 2
6009644403. 3
6009644404. 4

Question Number : 52 Question Id : 6009641102 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Among the following hormones :

A. Calcitonin

B. Parathyroid

C. Oxytocin

D. Progesterone

Select the correct option which is/are responsible to maintain the concentration of calcium in plasma.

1. Only B
2. B, C and D
3. A, B and C
4. A and B

Options :
6009644405. 1
6009644406. 2
6009644407. 3
6009644408. 4

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Question Number : 52 Question Id : 6009641102 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

नीचे दिए गए हॉर्मोनों में से कौन-सा/से प्लैज़्मा में कैल्सियम की सांद्रता को बनाए रखने के लिए उत्तरदायी है/हैं :

A. कैल्सिटोनिन

B. पैराथायरॉयड

C. ऑक्सीटोसिन

D. प्रोजेस्टेरॉन

सही विकल्प चुनिए :

1. केवल B
2. B, C और D
3. A, B और C
4. A और B

Options :

6009644405. 1

6009644406. 2

6009644407. 3

6009644408. 4

Question Number : 53 Question Id : 6009641103 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

Which one of the following is used as a catalyst in the given reaction?

1. Pb (II)
2. Cu (I)
3. Pb (I)
4. Cu (II)

Options :

6009644409. 1

6009644410. 2

6009644411. 3

6009644412. 4

Question Number : 53 Question Id : 6009641103 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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दी गयी रासायनिक अभिक्रिया में नीचे दिए गया कौन-सा उत्प्रेरक उपयोग किया जाता है?

$$H_2C{=}CH_2 + O_2 \xrightarrow{\text{उत्प्रेरक (जल में)}} CH_3CHO$$

1. Pb (II)
2. Cu (I)
3. Pb (I)
4. Cu (II)

Options :

6009644409. 1

6009644410. 2

6009644411. 3

6009644412. 4

Question Number : 54 Question Id : 6009641104 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Match the polymers in Column I with their examples given in Column II :

Column I	Column II
A. Elastomer	I. Bakelite
B. Fibres	II. Buna-S
C. Thermoplastic polymers	III. Polystyrene
D. Thermosetting polymers	IV. Nylon-6,6

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

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

Options :

6009644413. 1

6009644414. 2

6009644415. 3

6009644416. 4

Question Number : 54 Question Id : 6009641104 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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कॉलम I में दिए गए बहुलक (पॉलीमर) का **कॉलम II** में दिए गए उनके उदाहरण से मिलान कीजिए :

कॉलम I	कॉलम II
A. प्रत्यास्थलक (इलैस्टोमर)	I. बैकेलाइट
B. रेशा (फाइबर)	II. ब्यूना-S
C. तापसुघट्य बहुलक (पॉलीमर)	III. पॉलिस्टाइरीन
D. ताप-दृढ़ बहुलक (पॉलीमर)	IV. नायलोन-6,6

नीचे दिए गए विकल्पों में से **सही** उत्तर चुनिए :

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

Options :

6009644413. 1

6009644414. 2

6009644415. 3

6009644416. 4

Question Number : 55 Question Id : 6009641105 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Select the correct option for the one letter code for asparagine, an amino acid.

1. N
2. T
3. A
4. S

Options :

6009644417. 1
6009644418. 2
6009644419. 3
6009644420. 4

Question Number : 55 Question Id : 6009641105 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

ऐस्पेराजीन, एक अमीनो अम्ल, के लिए निम्नलिखित में से एक अक्षर का कोड चुनिए :

1. N
2. T
3. A
4. S

Options :

6009644417. 1
6009644418. 2
6009644419. 3
6009644420. 4

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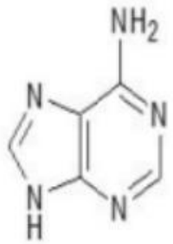
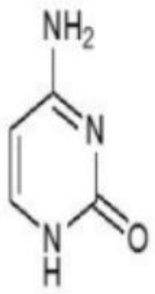
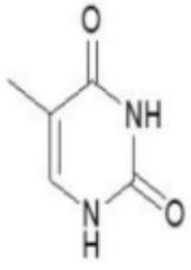
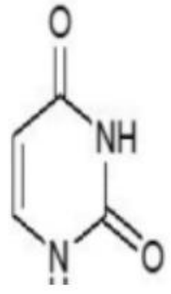
Question Number : 56 Question Id : 6009641106 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match the structure of the bases in **Column I** with their names given in **Column II**.

Column I	Column II
A. 	I. Uracil
B. 	II. Adenine
C. 	III. Cytosine
D. 	IV. Thymine

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H

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

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

Options :

6009644421. 1

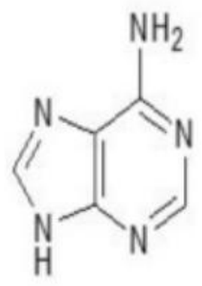
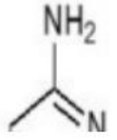
6009644422. 2

6009644423. 3

6009644424. 4

Question Number : 56 Question Id : 6009641106 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

कॉलम I में दिए गए क्षारों की संरचनाओं का **कॉलम II** में दिए उनके नामों से मिलान कीजिए :

कॉलम I	कॉलम II
A. 	I. यूरैसिल
	

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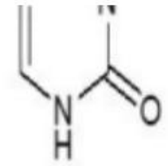
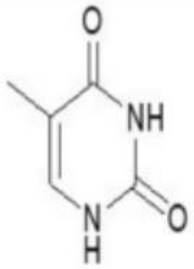
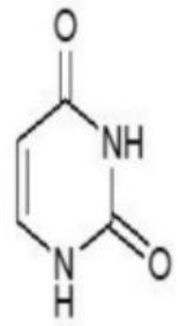
B. 	II. एडेनिन
C. 	III. सायटोसिन
D. 	IV. थायमिन

नीचे दिए गए विकल्पों में से **सही** उत्तर चुनिए :

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

Options :

6009644421. 1

6009644422. 2

6009644423. 3

6009644424. 4

Question Number : 57 Question Id : 6009641107 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

The reactivity of the halides (RCl, RBr, RI) with aliphatic amines varies in the order

1. RCl > RI > RBr
2. RBr > RCl > RI
3. RI > RBr > RCl
4. RI > RCl > RBr

Options :

6009644425. 1
6009644426. 2
6009644427. 3
6009644428. 4

Question Number : 57 Question Id : 6009641107 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

ऐलिफैटिक अमीनों के साथ हैलाइडों (RCl, RBr, RI) की सक्रियता किस क्रम में बदलती है?

1. RCl > RI > RBr
2. RBr > RCl > RI
3. RI > RBr > RCl
4. RI > RCl > RBr

Options :

6009644425. 1
6009644426. 2
6009644427. 3
6009644428. 4

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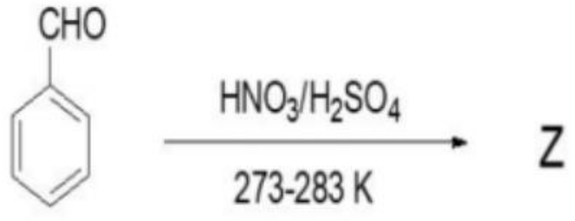
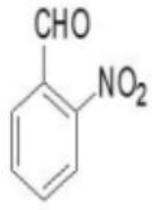
Question Number : 58 Question Id : 6009641108 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

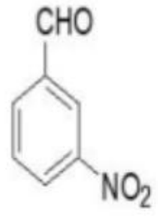
Correct Marks : 4 Wrong Marks : 1

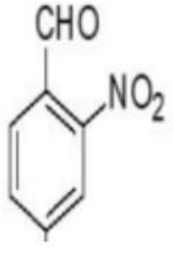
The major product (Z) for the following organic reaction



is

1. 

2. 

3. 

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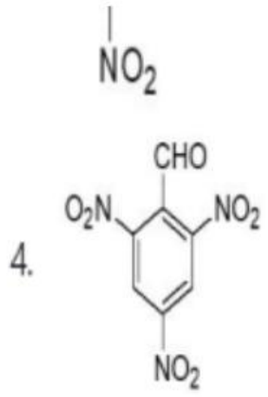
4. 

Options :

6009644429. 1

6009644430. 2

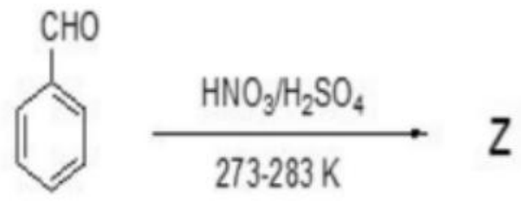
6009644431. 3

6009644432. 4

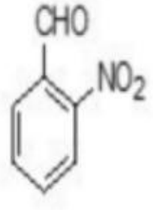
Question Number : 58 Question Id : 6009641108 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कार्बनिक अभिक्रिया



के लिए प्रमुख उत्पाद (Z) होगा :

1. 

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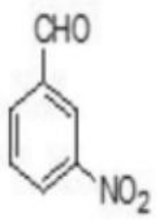
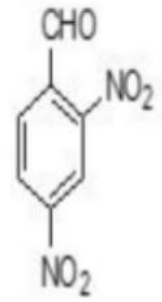
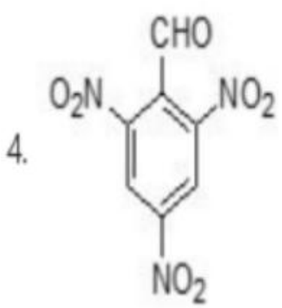
2. 

3. 

4. 

Options :

6009644429. 1

6009644430. 2

6009644431. 3

6009644432. 4

Question Number : 59 Question Id : 6009641109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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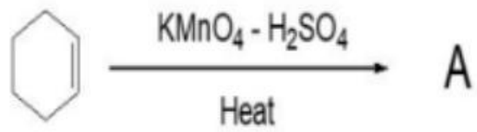
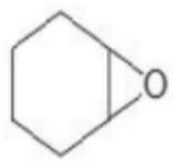
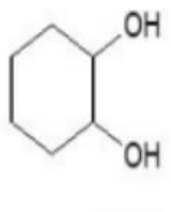
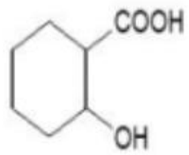
The major product `A` for the given organic reaction

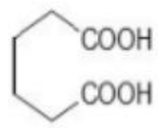


will be

1. 

2. 

3. 

4. 

Options :

6009644433. 1

6009644434. 2

6009644435. 3

6009644436. 4

Question Number : 59 Question Id : 6009641109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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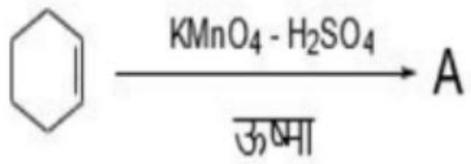
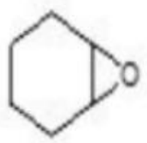
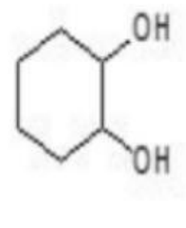
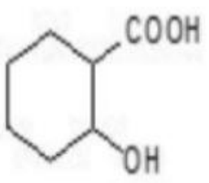
Correct Marks : 4 Wrong Marks : 1

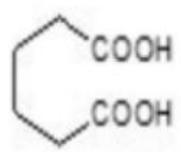
नीचे दी गयी कार्बनिक अभिक्रिया के लिए मुख्य उत्पाद 'A' क्या होगा?



1. 

2. 

3. 

4. 

Options :

6009644433. 1

6009644434. 2

6009644435. 3

6009644436. 4

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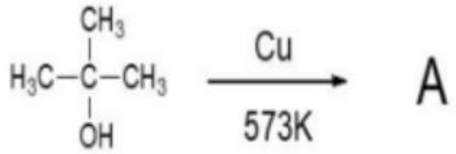
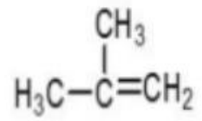
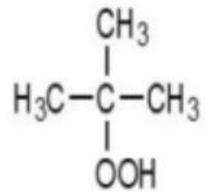
Question Number : 60 Question Id : 6009641110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

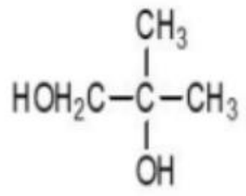
Correct Marks : 4 Wrong Marks : 1

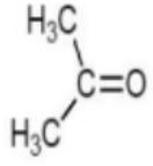
What will be the major product 'A' for the given organic reaction?



1. 

2. 

3. 

4. 

Options :

6009644437. 1

6009644438. 2

6009644439. 3

6009644440. 4

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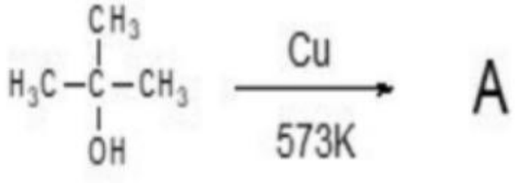
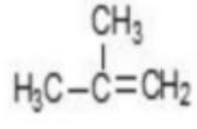
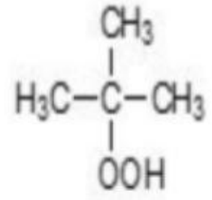
Question Number : 60 Question Id : 6009641110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

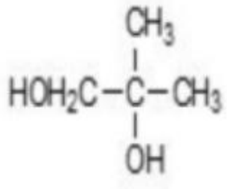
Correct Marks : 4 Wrong Marks : 1

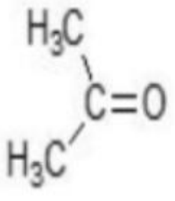
नीचे दी गयी कार्बनिक अभिक्रिया का प्रमुख 'A' उत्पाद क्या होगा?



1. 

2. 

3. 

4. 

Options :

6009644437. 1

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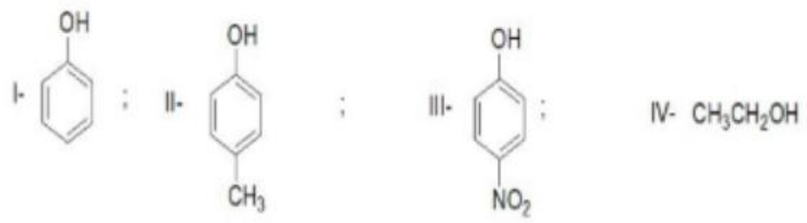
6009644438. 2
6009644439. 3
6009644440. 4

Question Number : 61 Question Id : 6009641111 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Consider the following compounds:



The correct increasing order of the acid strength of the compounds will be

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

Options :
6009644441. 1
6009644442. 2
6009644443. 3
6009644444. 4

Question Number : 61 Question Id : 6009641111 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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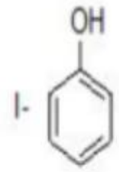
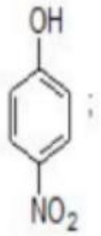
नीचे दिए गए यौगिकों पर विचार कीजिए :

I-  ; II- ; III-  ; IV- CH_3CH_2OH

यौगिकों के अम्लीय सामर्थ्य का सही बढ़ता क्रम होगा :

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

Options :

6009644441. 1

6009644442. 2

6009644443. 3

6009644444. 4

Question Number : 62 Question Id : 6009641112 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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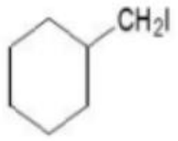
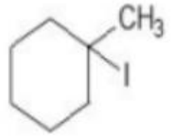
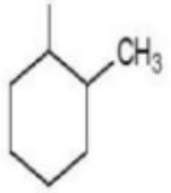
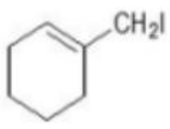
What will be the major product 'A' for the given organic reaction?

1. 

2. 

I

3. 

4. 

Options :

6009644445. 1

6009644446. 2

6009644447. 3

6009644448. 4

Question Number : 62 Question Id : 6009641112 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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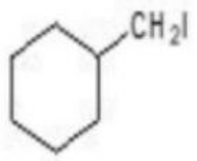
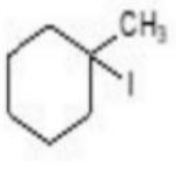
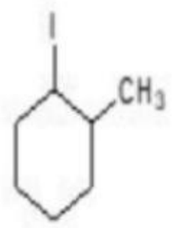
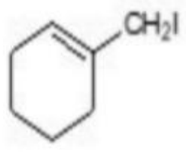
नीचे दी गयी कार्बनिक अभिक्रिया का प्रमुख उत्पाद 'A' क्या होगा?

1. 

2. 

3. 

4. 

Options :

6009644445. 1

6009644446. 2

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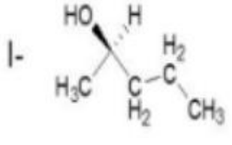
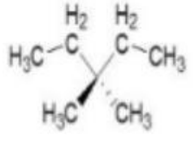
6009644447. 3
6009644448. 4

Question Number : 63 Question Id : 6009641113 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Consider the following compounds:

I-  ; II- 

Which one of the following is correct?

1. I and II are chiral
2. I and II are achiral
3. I is chiral and II is achiral
4. I is achiral and II is chiral

Options :
6009644449. 1
6009644450. 2
6009644451. 3
6009644452. 4

Question Number : 63 Question Id : 6009641113 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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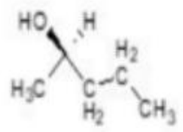
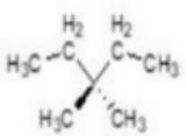
निम्न यौगिकों पर विचार कीजिए :

I-  ;

II- 

निम्न में से कौन-सा **सही** है?

1. I और II किरेल (इंगित) हैं
2. I और II अकिरेल हैं
3. I किरेल है तथा II अकिरेल है
4. I अकिरेल है तथा II किरेल है

Options :

6009644449. 1

6009644450. 2

6009644451. 3

6009644452. 4

Question Number : 64 Question Id : 6009641114 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Which one of the following hydrocarbons is most acidic?

1. $HC \equiv CH$
2. $H_3C—C \equiv CH$
3. $H_2C=CH_2$
4. $H_3C—C \equiv C—CH_3$

Options :

6009644453. 1
6009644454. 2
6009644455. 3
6009644456. 4

Question Number : 64 Question Id : 6009641114 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

नीचे दिये गये हाइड्रोकार्बनों में से कौन-सा सर्वाधिक अम्लीय है?

1. $HC \equiv CH$
2. $H_3C—C \equiv CH$
3. $H_2C=CH_2$
4. $H_3C—C \equiv C—CH_3$

Options :

6009644453. 1
6009644454. 2
6009644455. 3
6009644456. 4

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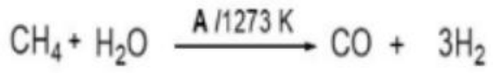
Question Number : 65 Question Id : 6009641115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For the given organic reaction



A is

1. PdO
2. Cu
3. Ni
4. Pb

Options :

6009644457. 1

6009644458. 2

6009644459. 3

6009644460. 4

Question Number : 65 Question Id : 6009641115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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नीचे दी गयी कार्बनिक अभिक्रिया के लिए 'A' क्या है?

$$CH_4 + H_2O \xrightarrow{A/1273\,K} CO + 3H_2$$

1. PdO
2. Cu
3. Ni
4. Pb

Options :

6009644457. 1

6009644458. 2

6009644459. 3

6009644460. 4

Question Number : 66 Question Id : 6009641116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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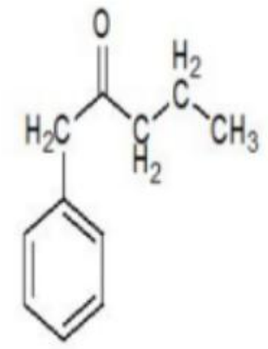
The number of sigma (σ) and pi (π) bonds present in the given compound will be



1. 26 σ, 3 π
2. 24 σ, 4 π
3. 24 σ, 3 π
4. 26 σ, 4 π

Options :

6009644461. 1

6009644462. 2

6009644463. 3

6009644464. 4

Question Number : 66 Question Id : 6009641116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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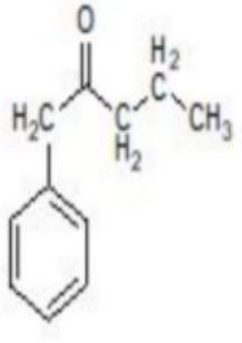
दिए गए यौगिक



में सिग्मा (σ) तथा पाई (Π) आबन्धों की संख्या होगी :

1. 26 σ, 3 Π
2. 24 σ, 4 Π
3. 24 σ, 3 Π
4. 26 σ, 4 Π

Options :

6009644461. 1

6009644462. 2

6009644463. 3

6009644464. 4

Question Number : 67 Question Id : 6009641117 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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A mixture of phenol and aniline is an example of

1. ideal solution
2. non-ideal solution exhibiting positive deviation from Raoult's law
3. non-ideal solution exhibiting negative deviation from Raoult's law
4. minimum boiling azeotrope

Options :

6009644465. 1
6009644466. 2
6009644467. 3
6009644468. 4

Question Number : 67 Question Id : 6009641117 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

फिनॉल और एनीलिन का मिश्रण निम्नलिखित में किसका एक उदाहरण है?

1. आदर्श विलयन
2. राउल्ट नियम से धनात्मक विचलन दर्शाता हुआ एक अनादर्श विलयन
3. राउल्ट नियम से ऋणात्मक विचलन दर्शाता हुआ एक अनादर्श विलयन
4. निम्नतम क्वथन वाला स्थिरक्वाथी

Options :

6009644465. 1
6009644466. 2
6009644467. 3
6009644468. 4

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Question Number : 68 Question Id : 6009641118 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The amount of $CaCl_2$ (i = 2.47) that must be dissolved in 3 litre of water such that its osmotic pressure is 4.94 atm at 27 °C is

1. 2.405×10^{-3} mol
2. 0.243 mol
3. 0.0267 mol
4. 1.486 mol

Options :

6009644469. 1

6009644470. 2

6009644471. 3

6009644472. 4

Question Number : 68 Question Id : 6009641118 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$CaCl_2$ (i = 2.47) की वह मात्रा, जिसे 3 लीटर जल में मिलाने पर 27 °C पर परासरण दाब 4.94 atm हो जाए, होगी :

1. 2.405×10^{-3} मोल
2. 0.243 मोल
3. 0.0267 मोल
4. 1.486 मोल

Options :

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6009644469. 1
6009644470. 2
6009644471. 3
6009644472. 4

Question Number : 69 Question Id : 6009641119 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Real gases show nearly ideal behaviour at :

1. low pressure and low temperature
2. high pressure and low temperature
3. high pressure and high temperature
4. low pressure and high temperature

Options :
6009644473. 1
6009644474. 2
6009644475. 3
6009644476. 4

Question Number : 69 Question Id : 6009641119 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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वास्तविक गैसें आदर्श व्यवहार दर्शाती हैं :

1. निम्न दाब और निम्न ताप पर
2. उच्च दाब और निम्न ताप पर
3. उच्च दाब और उच्च ताप पर
4. निम्न दाब और उच्च ताप पर

Options :
6009644473. 1
6009644474. 2
6009644475. 3
6009644476. 4

Question Number : 70 Question Id : 6009641120 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

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Match the following physical constants in **Column I** to their correct units given in **Column II**:

Column I	Column II
A. Rate constant (k) of a second-order reaction	I. $m^3\ mol^{-1}$
B. Cryoscopic constant, K_f	II. $mol^{-1}\ L\ s^{-1}$
C. van der Waals constant b	III. No units
D. Compressibility factor Z	IV. $kg\ K\ mol^{-1}$

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

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

Options :

6009644477. 1

6009644478. 2

6009644479. 3

6009644480. 4

Question Number : 70 Question Id : 6009641120 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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कॉलम I में दिए गए भौतिक नियतांकों का मिलान **कॉलम II** में दिए गए उनके मात्रकों के साथ कीजिए :

कॉलम I	कॉलम II
A. द्वितीय कोटि अभिक्रिया का वेग नियतांक (k)	I. $m^3\ mol^{-1}$
B. हिमांकमितीय स्थिरांक K_f	II. $mol^{-1}\ L\ s^{-1}$
C. वान्डरवाल्स नियतांक b	III. कोई मात्रक नहीं
D. संपीड्यता गुणांक Z	IV. $kg\ K\ mol^{-1}$

नीचे दिए गए विकल्पों में से **सही** उत्तर चुनिए :

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

Options :

6009644477. 1

6009644478. 2

6009644479. 3

6009644480. 4

Question Number : 71 Question Id : 6009641121 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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For the reaction of cyanamide $NH_2CN(g)$ with O_2 in a bomb calorimeter, ΔU was found to be −740 kJ/mol at 300 K. The enthalpy change for the reaction

$$NH_2CN\,(g) + \frac{3}{2}O_2\,(g) \rightarrow N_2\,(g) + CO_2\,(g) + H_2O\,(l)$$

will be

1. – 507.1 kJ/mol
2. – 1987.1 kJ/mol
3. – 738.75 kJ/mol
4. – 741.2 kJ/mol

Options :

6009644481. 1

6009644482. 2

6009644483. 3

6009644484. 4

Question Number : 71 Question Id : 6009641121 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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किसी बम कैलोरीमीटर में सायनामाइड $NH_2CN(g)$ की O_2 से अभिक्रिया के लिए, ΔU का मान 300 K पर –740 kJ/mol पाया गया। इस अभिक्रिया के लिए एन्थैल्पी परिवर्तन होगा :

$$NH_2CN(g) + \frac{3}{2} O_2(g) \rightarrow N_2(g) + CO_2(g) + H_2O(l)$$

1. – 507.1 kJ/mol
2. – 1987.1 kJ/mol
3. – 738.75 kJ/mol
4. – 741.2 kJ/mol

Options :

6009644481. 1

6009644482. 2

6009644483. 3

6009644484. 4

Question Number : 72 Question Id : 6009641122 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The **correct** expression out of the following is

1. $\Delta U = \Delta H + \Delta n_g RT$
2. $C_p - C_v = R$ for 1 mole of a non-ideal gas
3. $\Delta S_{total} > 0$ for a spontaneous process
4. $\ln K = \left(\frac{\Delta_r G}{RT}\right)$

Options :

6009644485. 1

6009644486. 2

6009644487. 3

6009644488. 4

Question Number : 72 Question Id : 6009641122 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से कौन-सा व्यंजक सही है?

1. $\Delta U = \Delta H + \Delta n_g RT$
2. $C_p - C_v = R$ (किसी अनादर्श गैस के 1 मोल के लिए)
3. $\Delta S_{total} > 0$ (किसी स्वतः प्रक्रम के लिए)
4. $\ln K = \left(\frac{\Delta_r G}{RT}\right)$

Options :

6009644485. 1

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6009644486. 2
6009644487. 3
6009644488. 4

Question Number : 73 Question Id : 6009641123 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If the equilibrium constant for a reaction $aA + bB \rightleftharpoons cC + dD$ is K_c, then the equilibrium constant for the reaction $naA + nbB \rightleftharpoons ncC + ndD$ will be equal to

1. $\sqrt[n]{K_c}$
2. $(K_c)^n$
3. $\frac{K_c}{n}$
4. nK_c

Options :
6009644489. 1
6009644490. 2
6009644491. 3
6009644492. 4

Question Number : 73 Question Id : 6009641123 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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यदि अभिक्रिया aA + bB ⇌ cC + dD के लिए साम्य स्थिरांक K_c है, तब अभिक्रिया naA + nbB ⇌ ncC + ndD के लिए साम्य स्थिरांक होगा :

1. $\sqrt[n]{K_c}$
2. $(K_c)^n$
3. $\frac{K_c}{n}$
4. nK_c

Options :

6009644489. 1

6009644490. 2

6009644491. 3

6009644492. 4

Question Number : 74 Question Id : 6009641124 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The pH of a buffer solution formed by mixing 25 mL of 0.2*M* NH_4Cl and 50 mL of 0.1*M* of NH_3 solution at 25 °C is

(Given pK_b (NH_3) = 4.75)

1. 4.75
2. 4.45
3. 5.05
4. 9.25

Options :

6009644493. 1
6009644494. 2
6009644495. 3
6009644496. 4

Question Number : 74 Question Id : 6009641124 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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25 °C पर 0.2 *M* NH_4Cl के 25 mL और 0.1*M* NH_3 विलयन के 50 mL को मिलाने पर बनने वाले बफर विलयन का pH होगा :

[दिया गया है pK_b (NH_3) = 4.75]

1. 4.75
2. 4.45
3. 5.05
4. 9.25

Options :

6009644493. 1
6009644494. 2
6009644495. 3
6009644496. 4

Question Number : 75 Question Id : 6009641125 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Which one of the following salts will not give rise to an acidic solution when dissolved in water?

1. HCOONa
2. NH_4Cl
3. NH_4NO_3
4. $(NH_4)_2SO_4$

Options :

6009644497. 1
6009644498. 2

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6009644499. 3
6009644500. 4

Question Number : 75 Question Id : 6009641125 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

नीचे दिए गया कौन-सा लवण जल में घोलने पर अम्लीय विलयन **नहीं** देगा?

1. $HCOONa$
2. NH_4Cl
3. NH_4NO_3
4. $(NH_4)_2SO_4$

Options :
6009644497. 1
6009644498. 2
6009644499. 3
6009644500. 4

Question Number : 76 Question Id : 6009641126 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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In the reaction $2Cu_2O(s) + Cu_2S(s) \rightarrow 6Cu(s) + SO_2(g)$, species which acts as an oxidant is

1. O (–II)
2. S (–II)
3. Cu (I)
4. Cu (0)

Options :

6009644501. 1
6009644502. 2
6009644503. 3
6009644504. 4

Question Number : 76 Question Id : 6009641126 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

दी गयी रासायनिक अभिक्रिया $2Cu_2O(s) + Cu_2S(s) \rightarrow 6Cu(s) + SO_2(g)$ में कौन-सी स्पीशीज़ ऑक्सीकारक (उपचायक) की भांति कार्य करती है?

1. O (–II)
2. S (–II)
3. Cu (I)
4. Cu (0)

Options :

6009644501. 1
6009644502. 2
6009644503. 3

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6009644504. 4

Question Number : 77 Question Id : 6009641127 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

How much electricity in terms of Faraday is required to produce 20 g of Al from molten Al_2O_3?

1. 2.22 F
2. 22.2 F
3. 4.44 F
4. 1.11 F

Options :
6009644505. 1
6009644506. 2
6009644507. 3
6009644508. 4

Question Number : 77 Question Id : 6009641127 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

गलित Al_2O_3 से 20 g Al उत्पन्न करने के लिए फैराडे के पदों में कितनी विद्युत् की आवश्यकता होगी?

1. 2.22 F
2. 22.2 F
3. 4.44 F
4. 1.11 F

Options :

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6009644505. 1
6009644506. 2
6009644507. 3
6009644508. 4

Question Number : 78 Question Id : 6009641128 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The dispersal of a precipitated material into colloidal solution by the action of an electrolyte in solution is called

1. coagulation
2. dialysis
3. peptization
4. ultrafiltration

Options :
6009644509. 1
6009644510. 2
6009644511. 3
6009644512. 4

Question Number : 78 Question Id : 6009641128 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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किसी विलयन में किसी वैद्युत-अपघट्य की क्रिया द्वारा कोलाइडी विलयन में अवक्षेपित पदार्थ का परिक्षेपण कहलाता है
:

1. स्कंदन
2. अपोहन
3. पेप्टीभवन
4. परानिस्यन्दन

Options :
6009644509. 1
6009644510. 2
6009644511. 3
6009644512. 4

Question Number : 79 Question Id : 6009641129 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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Consider the following facts :

A. Copper solution can be stirred with a silver spoon

B. Zinc solution can be stirred with a silver spoon

C. Copper solution cannot be stored in a zinc pot

Based on the above facts, choose the correct order of the standard reduction potential of Cu^{2+}/Cu; Zn^{2+}/Zn and Ag^{+}/Ag.

1. $E^{\circ}_{Cu^{2+}/Cu} > E^{\circ}_{Ag^{+}/Ag} > E^{\circ}_{Zn^{2+}/Zn}$
2. $E^{\circ}_{Cu^{2+}/Cu} < E^{\circ}_{Ag^{+}/Ag} < E^{\circ}_{Zn^{2+}/Zn}$
3. $E^{\circ}_{Ag^{+}/Ag} > E^{\circ}_{Cu^{2+}/Cu} > E^{\circ}_{Zn^{2+}/Zn}$
4. $E^{\circ}_{Zn^{2+}/Zn} > E^{\circ}_{Cu^{2+}/Cu} > E^{\circ}_{Ag^{+}/Ag}$

Options :

6009644513. 1

6009644514. 2

6009644515. 3

6009644516. 4

Question Number : 79 Question Id : 6009641129 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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निम्न तथ्यों पर विचार कीजिये :

A. कॉपर विलयन एक सिल्वर चम्मच से विलोड़ा जा सकता है।

B. जिंक विलयन को सिल्वर चम्मच से विलोड़ा जा सकता है।

C. कॉपर विलयन को जिंक के पात्र में संग्रहित नहीं किया जा सकता है।

उपरोक्त तथ्यों के आधार पर Cu^{2+}/Cu; Zn^{2+}/Zn तथा Ag^{+}/Ag के मानक अपचयन विभवों का सही क्रम चुनिये :

1. $E^{\circ}_{Cu^{2+}/Cu} > E^{\circ}_{Ag^{+}/Ag} > E^{\circ}_{Zn^{2+}/Zn}$
2. $E^{\circ}_{Cu^{2+}/Cu} < E^{\circ}_{Ag^{+}/Ag} < E^{\circ}_{Zn^{2+}/Zn}$
3. $E^{\circ}_{Ag^{+}/Ag} > E^{\circ}_{Cu^{2+}/Cu} > E^{\circ}_{Zn^{2+}/Zn}$
4. $E^{\circ}_{Zn^{2+}/Zn} > E^{\circ}_{Cu^{2+}/Cu} > E^{\circ}_{Ag^{+}/Ag}$

Options :

6009644513. 1

6009644514. 2

6009644515. 3

6009644516. 4

Question Number : 80 Question Id : 6009641130 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Which of the following statements about a catalyst is **incorrect**?

1. A catalyst cannot catalyse a non-spontaneous reaction.
2. A catalyst provides an alternate pathway to the reaction by reducing the activation energy.
3. A catalyst alters the thermodynamic parameters like ΔG of a reaction.
4. A catalyst helps to attain equilibrium faster but does not change the equilibrium constant.

Options :

6009644517. 1
6009644518. 2
6009644519. 3
6009644520. 4

Question Number : 80 Question Id : 6009641130 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

किसी उत्प्रेरक के विषय में नीचे दिया गया कौन-सा कथन सही नहीं है?

1. कोई उत्प्रेरक किसी स्वतः नहीं होने वाली अभिक्रिया को उत्प्रेरित नहीं कर सकता है।
2. कोई उत्प्रेरक सक्रियण ऊर्जा को कम करके अभिक्रिया को कोई वैकल्पिक पथ प्रदान करता है।
3. कोई उत्प्रेरक किसी अभिक्रिया के ΔG जैसे ऊष्मागतिकीय प्राचालों (मानदंडों) को पलट देता है।
4. कोई उत्प्रेरक साम्यावस्था लाने में सहायता करता है, परन्तु साम्य स्थिरांक को परिवर्तित नहीं करता है।

Options :

6009644517. 1
6009644518. 2
6009644519. 3
6009644520. 4

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Question Number : 81 Question Id : 6009641131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For a reaction with activation energy 210 kJ/mol at 300 K, the fraction of molecules having energy equal to or greater than the activation energy is

1. $2.303 \log(-84.19)$
2. $10^{-84.19}$
3. $\exp(-84.19)$
4. $\ln(-8526.18)$

Options :

6009644521. 1

6009644522. 2

6009644523. 3

6009644524. 4

Question Number : 81 Question Id : 6009641131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

300 K पर 210 kJ/mol सक्रियण ऊर्जा वाली किसी अभिक्रिया के लिए अणुओं का वह भाग, जिसकी ऊर्जा सक्रियण ऊर्जा के बराबर या अधिक होती है, होगा :

1. $2.303 \log(-84.19)$
2. $10^{-84.19}$
3. $\exp(-84.19)$
4. $\ln(-8526.18)$

Options :

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6009644521. 1
6009644522. 2
6009644523. 3
6009644524. 4

Question Number : 82 Question Id : 6009641132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A sol of hydrated ferric oxide prepared by adding $FeCl_3$ to excess of hot water is

1. positively charged due to the adsorption of H^+ ions
2. negatively charged due to the adsorption of OH^- ions
3. positively charged due to the adsorption of Fe^{3+} ions
4. positively charged due to the adsorption of Fe^{2+} ions

Options :
6009644525. 1
6009644526. 2
6009644527. 3
6009644528. 4

Question Number : 82 Question Id : 6009641132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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गर्म जल के आधिक्य में $FeCl_3$ मिलाकर बनाया गया जलयोजित फेरिक ऑक्साइड विलयन होता है :

1. H^+ आयनों के अधिशोषण के कारण धन आवेशित
2. OH^- आयनों के अधिशोषण के कारण ऋण आवेशित
3. Fe^{3+} आयनों के अधिशोषण के कारण धन आवेशित
4. Fe^{2+} आयनों के अधिशोषण के कारण धन आवेशित

Options :

6009644525. 1

6009644526. 2

6009644527. 3

6009644528. 4

Question Number : 83 Question Id : 6009641133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Density of 2 *M* solution of NaCl is 1.25 g mL^{-1}. The molality of the solution is

1. 2.79 *m*
2. 1.43 *m*
3. 1.76 *m*
4. 1.66 *m*

Options :

6009644529. 1

6009644530. 2

6009644531. 3

6009644532. 4

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Question Number : 83 Question Id : 6009641133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

NaCl के 2 *M* विलयन का घनत्व 1.25 g mL^{-1} है। इस विलयन की मोललता है :

1. 2.79 *m*
2. 1.43 *m*
3. 1.76 *m*
4. 1.66 *m*

Options :

6009644529. 1

6009644530. 2

6009644531. 3

6009644532. 4

Question Number : 84 Question Id : 6009641134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

On the basis of magnetic property, magnetite is classified as

1. ferromagnetism
2. ferrimagnetism
3. antiferromagnetism
4. diamagnetism

Options :

6009644533. 1

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6009644534. 2
6009644535. 3
6009644536. 4

Question Number : 84 Question Id : 6009641134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

चुम्बकीय गुणधर्मों के आधार पर मैग्नेटाइट का वर्गीकरण निम्नलिखित में से किस रूप में किया जाता है?

1. लोहचुम्बकत्व
2. लघु लोहचुम्बकत्व (फेरीचुम्बकत्व)
3. प्रति-लोहचुम्बकत्व
4. प्रतिचुम्बकत्व

Options :
6009644533. 1
6009644534. 2
6009644535. 3
6009644536. 4

Question Number : 85 Question Id : 6009641135 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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Energy of radiation in eV for l = 300 nm (1 eV = 1.6020 x 10^{-19} J) is

1. 3.98 eV
2. 3.25 eV
3. 2.68 eV
4. 4.14 eV

Options :

6009644537. 1
6009644538. 2
6009644539. 3
6009644540. 4

Question Number : 85 Question Id : 6009641135 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

λ = 300 nm के लिए eV में विकिरणों की ऊर्जा होती है (1 eV = 1.6020 x 10^{-19} J)

1. 3.98 eV
2. 3.25 eV
3. 2.68 eV
4. 4.14 eV

Options :

6009644537. 1
6009644538. 2
6009644539. 3
6009644540. 4

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Question Number : 86 Question Id : 6009641136 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match the scientists in **Column I** with the concept/discovery associated with them given in **Column II** :

Column I	Column II
A. Johann Dobereiner	I. Krypton and Xenon
B. Ramsay	II. Law of Octave
C. Peter Debye	III. Law of Triads
D. John Alexander Newland	IV. X-ray diffraction

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

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

Options :

6009644541. 1

6009644542. 2

6009644543. 3

6009644544. 4

Question Number : 86 Question Id : 6009641136 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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कॉलम I में दिए गए वैज्ञानिकों का मिलान **कॉलम II** में दी गयी उनसे संबद्ध खोज/संकल्पना से कीजिए :

कॉलम I	कॉलम II
A. जोहन डॉबेराइनर	I. क्रिप्टन और जेनॉन
B. रैम्ज़े	II. अष्टक का नियम
C. पीटर डेबाई	III. त्रिक् का नियम
D. जॉन अलेक्ज़ेन्डर न्यूलैण्ड	IV. X-किरण विवर्तन

नीचे दिए गए विकल्पों में से **सही** उत्तर चुनिए :

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

Options :

6009644541. 1

6009644542. 2

6009644543. 3

6009644544. 4

Question Number : 87 Question Id : 6009641137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The bond order and magnetic behaviour of C_2 molecule is

1. 3 and paramagnetic
2. 2 and paramagnetic
3. 3 and diamagnetic
4. 2 and diamagnetic

Options :

6009644545. 1
6009644546. 2
6009644547. 3
6009644548. 4

Question Number : 87 Question Id : 6009641137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

C_2 अणु का आबन्ध क्रम तथा चुम्बकीय व्यवहार होता है :

1. 3 और अनुचुम्बकीय
2. 2 और अनुचुम्बकीय
3. 3 और प्रतिचुम्बकीय
4. 2 और प्रतिचुम्बकीय

Options :

6009644545. 1
6009644546. 2
6009644547. 3
6009644548. 4

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Question Number : 88 Question Id : 6009641138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The bond dissociation enthalpy for a single bond between two atoms is highest for

1. F-F
2. H-H
3. Cl-Cl
4. Br-Br

Options :

6009644549. 1
6009644550. 2
6009644551. 3
6009644552. 4

Question Number : 88 Question Id : 6009641138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

दो अणुओं के बीच एकल आबन्ध के लिए निम्नलिखित में से किसके लिए आबंध वियोजन ऐन्थैली उच्चतम होती है?

1. F-F
2. H-H
3. Cl-Cl
4. Br-Br

Options :

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6009644549. 1
6009644550. 2
6009644551. 3
6009644552. 4

Question Number : 89 Question Id : 6009641139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

On heating, lithium nitrate gives

1. $LiNO_2$
2. $Li_2O+NO_2 + O_2$
3. $LiNO_2 + Li$
4. $Li + NO_2$

Options :
6009644553. 1
6009644554. 2
6009644555. 3
6009644556. 4

Question Number : 89 Question Id : 6009641139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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गर्म करने पर लीथियम नाइट्रेट देता है :

1. $LiNO_2$
2. $Li_2O+NO_2 + O_2$
3. $LiNO_2 + Li$
4. $Li + NO_2$

Options :
6009644553. 1
6009644554. 2
6009644555. 3
6009644556. 4

Question Number : 90 Question Id : 6009641140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

When borax is heated with CoO in a Bunsen burner flame on a loop of platinum wire, a blue coloured bead is formed. The bead is of

1. $CoBO_2$
2. $Co(BO_2)_3$
3. $Co(BO_3)_2$
4. $Co(BO_2)_2$

Options :
6009644557. 1
6009644558. 2

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6009644559. 3
6009644560. 4

Question Number : 90 Question Id : 6009641140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

जब प्लैटिनम के तार के पाश में CoO को बोरैक्स के साथ बुन्सन बर्नर की ज्वाला में तप्त किया जाता है, तो एक नीले वर्ण की मणिका (बीड) बनती है। मणिका जिसकी है, वह है :

1. $CoBO_2$
2. $Co(BO_2)_3$
3. $Co(BO_3)_2$
4. $Co(BO_2)_2$

Options :
6009644557. 1
6009644558. 2
6009644559. 3
6009644560. 4

Question Number : 91 Question Id : 6009641141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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Which of the following is an amphoteric oxide?

1. CO_2
2. SiO_2
3. GeO_2
4. PbO_2

Options :

6009644561. 1
6009644562. 2
6009644563. 3
6009644564. 4

Question Number : 91 Question Id : 6009641141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में कौन-सा उभयधर्मी ऑक्साइड है?

1. CO_2
2. SiO_2
3. GeO_2
4. PbO_2

Options :

6009644561. 1
6009644562. 2
6009644563. 3
6009644564. 4

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Question Number : 92 Question Id : 6009641142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Zone refining method is used to purify

1. boron
2. barium
3. sodium
4. magnesium

Options :
6009644565. 1
6009644566. 2
6009644567. 3
6009644568. 4

Question Number : 92 Question Id : 6009641142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

मण्डल परिष्करण (ज़ोन रिफाइनिंग) विधि का उपयोग निम्नलिखित में से किसका शोधन करने के लिए किया जाता है?

1. बोरॉन
2. बोरियम
3. सोडियम
4. गैम्नीशियम

Options :
6009644565. 1
6009644566. 2

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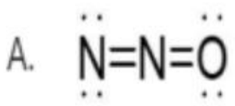
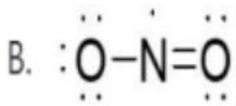
6009644567. 3
6009644568. 4

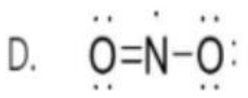
Question Number : 93 Question Id : 6009641143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Following resonating structures for nitrogen (I) oxide are suggested

A. 

B. 

C.

D. 

Which of them is/are correct?

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

Options :
6009644569. 1

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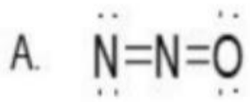
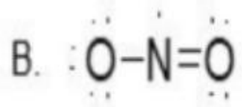
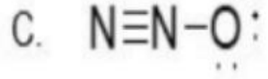
6009644570. 2
6009644571. 3
6009644572. 4

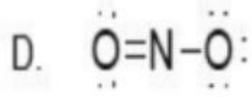
Question Number : 93 Question Id : 6009641143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

नाइट्रोजन (I) ऑक्साइड के लिए निम्न अनुनादित संरचनाएँ पस्तावित हैं :

A. 

B. 

C. 

D. 

उपरोक्त में से कौन-सा/से **सही** है/हैं?

1. A और C
2. केवल A
3. A और B
4. C और D

Options :

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6009644569. 1
6009644570. 2
6009644571. 3
6009644572. 4

Question Number : 94 Question Id : 6009641144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

How many σ and π bonds are present in peroxodisulphuric acid?

1. 10 σ, 4 π
2. 11 σ, 4 π
3. 10 σ, 3 π
4. 11 σ, 3 π

Options :
6009644573. 1
6009644574. 2
6009644575. 3
6009644576. 4

Question Number : 94 Question Id : 6009641144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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पार-ऑक्सोडाइसल्फ्यूरिक अम्ल में कितने σ और π आबन्ध उपस्थित हैं?

1. 10 σ, 4 π
2. 11 σ, 4 π
3. 10 σ, 3π
4. 11 σ, 3 π

Options :
6009644573. 1
6009644574. 2
6009644575. 3
6009644576. 4

Question Number : 95 Question Id : 6009641145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

If X and X′are halogens, select the correct option for the general formula of their perhalate, hypohalite, halite and halate respectively.

1. XX'_7, XX', XX'_3, XX'_5
2. XX', XX'_7, XX'_3, XX'_5
3. XX', XX'_3, XX'_5, XX'_7
4. XX'_5, XX'_7, XX', XX'_3

Options :
6009644577. 1
6009644578. 2
6009644579. 3
6009644580. 4

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Question Number : 95 Question Id : 6009641145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि X और X′ हैलोजन हैं, तो क्रमशः उनके परहैलेट, हाइपोहैलाइट, हैलाइट और हैलेट के सामान्य सूत्र का सही विकल्प चुनिए :

1. XX'_7, XX', XX'_3, XX'_5
2. XX', XX'_7, XX'_3, XX'_5
3. XX', XX'_3, XX'_5, XX'_7
4. XX'_5, XX'_7, XX', XX'_3

Options :
6009644577. 1
6009644578. 2
6009644579. 3
6009644580. 4

Question Number : 96 Question Id : 6009641146 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Which of following group 18 elements **does not** form fluoride?

1. He
2. Xe
3. Kr
4. Rn

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Options :

6009644581. 1

6009644582. 2

6009644583. 3

6009644584. 4

Question Number : 96 Question Id : 6009641146 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समूह 18 का कौन-सा तत्त्व फ्लुओराइड नहीं बनाता है?

1. He
2. Xe
3. Kr
4. Rn

Options :

6009644581. 1

6009644582. 2

6009644583. 3

6009644584. 4

Question Number : 97 Question Id : 6009641147 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Which of the following matches between the process and the catalyst used is **incorrect**?

1. Contact process -V_2O_5
2. Haber's process - Mo
3. Catalytic hydrogenation - Ni
4. Stephen reaction - $SnCl_2$

Options :

6009644585. 1
6009644586. 2
6009644587. 3
6009644588. 4

Question Number : 97 Question Id : 6009641147 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से दिए गए प्रक्रम और उसमें प्रयुक्त होने वाले उत्प्रेरक के गलत मिलान को चुनिए :

1. संस्पर्श प्रक्रम-V_2O_5
2. हेबर प्रक्रम- Mo
3. उत्प्रेरकी हाइड्रोजनीकरण - Ni
4. स्टेफेन अभिक्रिया - $SnCl_2$

Options :

6009644585. 1
6009644586. 2
6009644587. 3
6009644588. 4

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Question Number : 98 Question Id : 6009641148 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Which one of the following statements is **correct**?

1. Ce^{4+} is a strong reductant.
2. Eu^{2+} is a strong oxidant.
3. Yb^{2+} is a reductant.
4. Tb^{4+} is a reductant.

Options :
6009644589. 1
6009644590. 2
6009644591. 3
6009644592. 4

Question Number : 98 Question Id : 6009641148 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से कौन-सा कथन सहीं है?

1. Ce^{4+} एक प्रबल अपचायक है
2. Eu^{2+} एक प्रबल उपचायक है
3. Yb^{2+} एक अपचायक है
4. Tb^{4+} एक अपचायक है

Options :
6009644589. 1
6009644590. 2

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6009644591. 3
6009644592. 4

Question Number : 99 Question Id : 6009641149 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

You are given the following complexes :

$[MnCl_6]^{3-}$, $[FeF_6]^{3-}$ and $[CoF_6]^{3-}$

The number of unpaired electrons respectively will be (consider these complexes as high spin complexes)

1. 5, 4, 4
2. 4, 4, 5
3. 4, 5, 4
4. 5, 4, 5

Options :
6009644593. 1
6009644594. 2
6009644595. 3
6009644596. 4

Question Number : 99 Question Id : 6009641149 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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आपको निम्न संकुल दिये जाते हैं :

$[MnCl_6]^{3-}$, $[FeF_6]^{3-}$ और $[CoF_6]^{3-}$

इनमें अयुग्मित इलेक्ट्रॉनों की संख्या क्रमशः होगी (इन संकुलों को उच्च प्रचक्रण संकुलों मे लीजिए)

1. 5, 4, 4
2. 4, 4, 5
3. 4, 5, 4
4. 5, 4, 5

Options :

6009644593. 1

6009644594. 2

6009644595. 3

6009644596. 4

Question Number : 100 Question Id : 6009641150 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

d-orbital splitting in an octahedral crystal field is

1. (0.4) Δ_o above barycentre and (0.6) Δ_o below barycentre
2. (0.4) Δ_t below barycentre and (0.6) Δ_t above barycentre
3. (0.4) Δ_t above barycentre and (0.6) Δ_t below barycentre
4. (0.4) Δ_o below barycentre and (0.6) Δ_o above barycentre

Options :

6009644597. 1

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6009644598. 2
6009644599. 3
6009644600. 4

Question Number : 100 Question Id : 6009641150 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

एक अष्टफलकीय क्रिस्टल क्षेत्र में d-कक्षक विपाटन है :

1. (0.4) Δ_o केन्द्रक के ऊपर और (0.6) Δ_o केन्द्रक के नीचे
2. (0.4) Δ_t केन्द्रक के नीचे और (0.6) Δ_t केन्द्रक के ऊपर
3. (0.4) Δ_t केन्द्रक के ऊपर और (0.6) Δ_t केन्द्रक के नीचे
4. (0.4) Δ_o केन्द्रक के नीचे और (0.6) Δ_o केन्द्रक के ऊपर

Options :
6009644597. 1
6009644598. 2
6009644599. 3
6009644600. 4

Part C Mathematics

Section Id :	60096424
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	200
Display Number Panel :	Yes

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Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	60096424
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 6009641151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Let A and B be two sets containing 3 elements and 2 elements respectively. Then, the number of subsets of $A \times B$ having 2 or more elements is

1. 64
2. 57
3. 63
4. 47

Options :

6009644601. 1

6009644602. 2

6009644603. 3

6009644604. 4

Question Number : 101 Question Id : 6009641151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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मान लीजिए कि A और B क्रमशः 3 अवयवों और 2 अवयवों वाले दो समुच्चय हैं। तब $A \times B$ के 2 या अधिक अवयवों वाले उपसमुच्चयों की संख्या है

1. 64
2. 57
3. 63
4. 47

Options :

6009644601. 1

6009644602. 2

6009644603. 3

6009644604. 4

Question Number : 102 Question Id : 6009641152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If $2f(x) + f\left(\frac{1}{x}\right) = \log x$, for all $x > 0$, then $f(e^x)$ is

1. x^2
2. x
3. $2x$
4. $\frac{x}{2}$

Options :

6009644605. 1

6009644606. 2

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6009644607. 3
6009644608. 4

Question Number : 102 Question Id : 6009641152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि सभी $x > 0$ के लिए $2f(x) + f\left(\frac{1}{x}\right) = \log x$ है, तो $f(e^x)$ है

1. x^2
2. x
3. $2x$
4. $\frac{x}{2}$

Options :
6009644605. 1
6009644606. 2
6009644607. 3
6009644608. 4

Question Number : 103 Question Id : 6009641153 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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Let $f: [0,1] \to [0, 1]$ be defined by

$$f(x) = \begin{cases} x & , \text{ if } x \text{ is rational} \\ 1-x & , \text{ if x is irrational} \end{cases}$$

Then $f \circ f(x)$ is

1. x
2. x^2
3. $x + 1$
4. not defined

Options :

6009644609. 1

6009644610. 2

6009644611. 3

6009644612. 4

Question Number : 103 Question Id : 6009641153 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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मान लीजिए कि $f: [0,1] \to [0, 1]$ फलन

$$f(x) = \begin{cases} x & , \text{ यदि } x \text{ परिमेय है} \\ 1 - x & , \text{ यदि } x \text{ अपरिमेय है} \end{cases}$$

द्वारा परिभाषित है।

तब $f \circ f(x)$ है

1. x
2. x^2
3. $x + 1$
4. परिभाषित नहीं

Options :

6009644609. 1

6009644610. 2

6009644611. 3

6009644612. 4

Question Number : 104 Question Id : 6009641154 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Period of the function $f(x) = \sin^4 x + \cos^4 x$ is

1. π
2. 2π
3. $\frac{\pi}{4}$
4. $\frac{\pi}{2}$

Options :

6009644613. 1

6009644614. 2

6009644615. 3

6009644616. 4

Question Number : 104 Question Id : 6009641154 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

फलन $f(x) = \sin^4 x + \cos^4 x$ का आवर्त है

1. π
2. 2π
3. $\frac{\pi}{4}$
4. $\frac{\pi}{2}$

Options :

6009644613. 1

6009644614. 2

6009644615. 3

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6009644616. 4

Question Number : 105 Question Id : 6009641155 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The base of a triangle is 80 cm and one of the base angles is 60°. The sum of the lengths of the other two sides is 90 cm. Then the length of the shortest side is

1. 18 cm
2. 16 cm
3. 17 cm
4. 13 cm

Options :

6009644617. 1
6009644618. 2
6009644619. 3
6009644620. 4

Question Number : 105 Question Id : 6009641155 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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किसी त्रिभुज का आधार 80 cm है तथा आधार कोणों में से एक कोण 60° का है। अन्य दो भुजाओं की लंबाइयों का योग 90 cm है। तब सबसे छोटी भुजा की लंबाई है

1. 18 cm
2. 16 cm
3. 17 cm
4. 13 cm

Options :

6009644617. 1

6009644618. 2

6009644619. 3

6009644620. 4

Question Number : 106 Question Id : 6009641156 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If $\tan^{-1}\left(\frac{1-x}{1+x}\right) = 2\tan^{-1}x$, then the value of x is

1. $\tan\frac{\pi}{8}$
2. $\tan\frac{\pi}{12}$
3. $\sqrt{3}$
4. $\frac{1}{\sqrt{3}}$

Options :

6009644621. 1

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6009644622. 2
6009644623. 3
6009644624. 4

Question Number : 106 Question Id : 6009641156 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि $\tan^{-1}\left(\frac{1-x}{1+x}\right) = 2\tan^{-1}x$ है, तो x का मान है

1. $\tan\frac{\pi}{8}$
2. $\tan\frac{\pi}{12}$
3. $\sqrt{3}$
4. $\frac{1}{\sqrt{3}}$

Options :
6009644621. 1
6009644622. 2
6009644623. 3
6009644624. 4

Question Number : 107 Question Id : 6009641157 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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The number of 2×2 matrices A, with each element as a real number and satisfying $A + A^T = I$ and $A^T A = I$, is

1. 0
2. 1
3. 2
4. infinitely many

Options :

6009644625. 1

6009644626. 2

6009644627. 3

6009644628. 4

Question Number : 107 Question Id : 6009641157 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

2×2 आव्यूहों A की संख्या, जिनका प्रत्येक अवयव एक वास्तविक संख्या है तथा जो $A + A^T = I$ और $A^T A = I$ को संतुष्ट करते हैं,है

1. 0
2. 1
3. 2
4. अपरिमित रूप से अनेक

Options :

6009644625. 1

6009644626. 2

6009644627. 3

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6009644628. 4

Question Number : 108 Question Id : 6009641158 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If $\Delta = \begin{vmatrix} 0 & b-a & c-a \\ a-b & 0 & c-b \\ a-c & b-c & 0 \end{vmatrix}$, then Δ equals

1. $(a+b+c)$
2. $-(a+b+c)$
3. abc
4. 0

Options :

6009644629. 1

6009644630. 2

6009644631. 3

6009644632. 4

Question Number : 108 Question Id : 6009641158 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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यदि $\Delta = \begin{vmatrix} 0 & b-a & c-a \\ a-b & 0 & c-b \\ a-c & b-c & 0 \end{vmatrix}$ है, तो Δ बराबर है

1. $(a+b+c)$
2. $-(a+b+c)$
3. abc
4. 0

Options :

6009644629. 1

6009644630. 2

6009644631. 3

6009644632. 4

Question Number : 109 Question Id : 6009641159 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f(x) = \dfrac{\log(1-x+x^2)+\log(1+x+x^2)}{\sec x - \cos x}, x \neq 0$

Then the value of $f(0)$ so that f is continuous at $x = 0$, is

1. 0
2. 2
3. 1
4. $\frac{1}{2}$

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Options :

6009644633. 1

6009644634. 2

6009644635. 3

6009644636. 4

Question Number : 109 Question Id : 6009641159 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

मान लीजिए कि $f(x)=\frac{\log(1-x+x^2)+\log(1+x+x^2)}{\sec x-\cos x}$; $x \neq 0$ है। तब $x = 0$ पर f के संतत होने के लिए, $f(0)$ का मान है

1. 0

2. 2

3. 1

4. $\frac{1}{2}$

Options :

6009644633. 1

6009644634. 2

6009644635. 3

6009644636. 4

Question Number : 110 Question Id : 6009641160 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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If $f(x+y)=f(x)\cdot f(y)$ for all $x,y\in R$ such that $f(5)=2$ and $f'(0)=3$, then the value of $f'(5)$ is

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

Options :

6009644637. 1

6009644638. 2

6009644639. 3

6009644640. 4

Question Number : 110 Question Id : 6009641160 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि सभी $x,y\in R$ के लिए $f(x+y)=f(x)\cdot f(y)$ इस प्रकार है कि $f(5)=2$ और $f'(0)=3$, तो $f'(5)$ का मान है

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

Options :

6009644637. 1

6009644638. 2

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6009644639. 3
6009644640. 4

Question Number : 111 Question Id : 6009641161 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Let $y = f\left(\frac{x+e^x}{e^x}\right)$ satisfies $f'(1) = 2$. Then the value of $\frac{dy}{dx}$ at $x = 0$ equals

1. 1
2. 2
3. 0
4. 3

Options :
6009644641. 1
6009644642. 2
6009644643. 3
6009644644. 4

Question Number : 111 Question Id : 6009641161 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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मान लीजिए कि $y = f\left(\frac{x+e^x}{e^x}\right)$ कथन $f'(1) = 2$ को संतुष्ट करता है। तब $x = 0$ पर $\frac{dy}{dx}$ का मान है

1. 1
2. 2
3. 0
4. 3

Options :

6009644641. 1

6009644642. 2

6009644643. 3

6009644644. 4

Question Number : 112 Question Id : 6009641162 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 4 Wrong Marks : 1

The maximum value of the function $f(x) = (x-1)(x-2)(x-3)$ is

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

Options :

6009644645. 1

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6009644646. 2
6009644647. 3
6009644648. 4

Question Number : 112 Question Id : 6009641162 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

फलन $f(x) = (x-1)(x-2)(x-3)$ का अधिकतम मान है

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

Options :
6009644645. 1
6009644646. 2
6009644647. 3
6009644648. 4

Question Number : 113 Question Id : 6009641163 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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The equation of tangent to the curve $x^{2/3} + y^{2/3} = a^{2/3}$ at $(a, 0)$ passes through which of the following points?

1. $(0, a)$
2. $(2, 0)$
3. $(0, 2)$
4. (a, a)

Options :

6009644649. 1

6009644650. 2

6009644651. 3

6009644652. 4

Question Number : 113 Question Id : 6009641163 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

वक्र $x^{2/3} + y^{2/3} = a^{2/3}$ की $(a, 0)$ पर स्पर्श-रेखा निम्न में से किस बिंदु से होकर जाती है?

1. $(0, a)$
2. $(2, 0)$
3. $(0, 2)$
4. (a, a)

Options :

6009644649. 1

6009644650. 2

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6009644651. 3
6009644652. 4

Question Number : 114 Question Id : 6009641164 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If $\int f(x) \cdot \sin x \cos x \ dx = \frac{1}{2(b^2-a^2)} \cdot \log(f(x)) + C$, then $f(x)$ is

1. $\frac{1}{a^2 \sin^2 x + b^2 \cos^2 x}$
2. $\frac{1}{a^2 \sin^2 x - b^2 \cos^2 x}$
3. $\frac{1}{a \cos^2 x + b \sin^2 x}$
4. $\frac{1}{a^2 \cos^2 x - b^2 \sin^2 x}$

Options :
6009644653. 1
6009644654. 2
6009644655. 3
6009644656. 4

Question Number : 114 Question Id : 6009641164 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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यदि $\int f(x) \cdot \sin x \cos x \ dx = \frac{1}{2(b^2-a^2)} \cdot \log(f(x)) + C$ है, तो $f(x)$ है

1. $\frac{1}{a^2 \sin^2 x + b^2 \cos^2 x}$
2. $\frac{1}{a^2 \sin^2 x - b^2 \cos^2 x}$
3. $\frac{1}{a \cos^2 x + b \sin^2 x}$
4. $\frac{1}{a^2 \cos^2 x - b^2 \sin^2 x}$

Options :

6009644653. 1

6009644654. 2

6009644655. 3

6009644656. 4

Question Number : 115 Question Id : 6009641165 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $\int \frac{\sqrt{x}}{\sqrt{1-x^3}} dx = \frac{2}{3} \cdot g \circ f(x) + C$. Then

1. $f(x) = \sqrt{x}$
2. $f(x) = x^{\frac{3}{2}}$
3. $g(x) = \sin x$
4. $g(x) = \sqrt[3]{\sin x}$

Options :

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6009644657. 1
6009644658. 2
6009644659. 3
6009644660. 4

Question Number : 115 Question Id : 6009641165 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

मान लीजिए कि $\int \frac{\sqrt{x}}{\sqrt{1-x^3}} dx = \frac{2}{3} \cdot g \circ f(x) + C$ है। तब

1. $f(x) = \sqrt{x}$
2. $f(x) = x^{\frac{3}{2}}$
3. $g(x) = \sin x$
4. $g(x) = \sqrt[3]{\sin x}$

Options :
6009644657. 1
6009644658. 2
6009644659. 3
6009644660. 4

Question Number : 116 Question Id : 6009641166 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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The area bounded by the parabola $y^2 = 8x$, its normal at point (2, 4), and x-axis in the first quadrant is

1. $\frac{40}{3}$ sq. units
2. $\frac{20}{3}$ sq. units
3. $\frac{28}{3}$ sq. units
4. $\frac{8}{3}$ sq. units

Options :

6009644661. 1

6009644662. 2

6009644663. 3

6009644664. 4

Question Number : 116 Question Id : 6009641166 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

परवलय $y^2 = 8x$ और बिंदु (2, 4) पर उसके अभिलंब तथा x-अक्ष द्वारा प्रथम चतुर्थांश में परिबद्ध क्षेत्र का क्षेत्रफल है

1. $\frac{40}{3}$ वर्ग इकाई
2. $\frac{20}{3}$ वर्ग इकाई
3. $\frac{28}{3}$ वर्ग इकाई
4. $\frac{8}{3}$ वर्ग इकाई

Options :

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6009644661. 1
6009644662. 2
6009644663. 3
6009644664. 4

Question Number : 117 Question Id : 6009641167 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The solution of differential equation $\cos(x+y)\,dy = dx$ is given by

1. $y = x\sec\left(\frac{y}{x}\right) + C$
2. $y + \cos^{-1}\left(\frac{y}{x}\right) = C$
3. $y = \tan\left(\frac{x+y}{2}\right) + C$
4. $y = \cot\left(\frac{x+y}{2}\right) + C$

Options :
6009644665. 1
6009644666. 2
6009644667. 3
6009644668. 4

Question Number : 117 Question Id : 6009641167 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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अवकल समीकरण $\cos(x+y)\,dy = dx$ का हल निम्न में से किसके द्वारा दिया जाएगा ?

1. $y = x\sec\left(\frac{y}{x}\right) + C$
2. $y + \cos^{-1}\left(\frac{y}{x}\right) = C$
3. $y = \tan\left(\frac{x+y}{2}\right) + C$
4. $y = \cot\left(\frac{x+y}{2}\right) + C$

Options :

6009644665. 1

6009644666. 2

6009644667. 3

6009644668. 4

Question Number : 118 Question Id : 6009641168 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The degree of the differential equation satisfying the relation $\sqrt{1+x^2} + \sqrt{1+y^2} = \lambda\left(x\sqrt{1+y^2} - y\sqrt{1+x^2}\right)$ is

1. 1
2. 2
3. 4
4. not defined

Options :

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6009644669. 1
6009644670. 2
6009644671. 3
6009644672. 4

Question Number : 118 Question Id : 6009641168 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

संबंध $\sqrt{1+x^2}+\sqrt{1+y^2}=\lambda\left(x\sqrt{1+y^2}-y\sqrt{1+x^2}\right)$ को संतुष्ट करने वाली अवकल समीकरण की घात है

1. 1
2. 2
3. 4
4. परिभाषित नहीं

Options :
6009644669. 1
6009644670. 2
6009644671. 3
6009644672. 4

Question Number : 119 Question Id : 6009641169 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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A vector $\vec{c}$, perpendicular to the vectors $\vec{a} = \hat{i} - 2\hat{j} + 3\hat{k}$ and $\vec{b} = 2\hat{i} + 3\hat{j} - \hat{k}$, and satisfying $\vec{c} \cdot (2\hat{i} + \hat{j} - \hat{k}) = -7$, is

1. $\frac{7}{2}(\hat{i} - \hat{j} + \hat{k})$
2. $\frac{7}{2}(-\hat{i} + \hat{j} + \hat{k})$
3. $7(\hat{i} - \hat{j} + \hat{k})$
4. $7(-\hat{i} + \hat{j} + \hat{k})$

Options :

6009644673. 1

6009644674. 2

6009644675. 3

6009644676. 4

Question Number : 119 Question Id : 6009641169 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सदिश $\vec{c}$, जो सदिशों $\vec{a} = \hat{i} - 2\hat{j} + 3\hat{k}$ और $\vec{b} = 2\hat{i} + 3\hat{j} - \hat{k}$ पर लंब तथा $\vec{c} \cdot (2\hat{i} + \hat{j} - \hat{k}) = -7$ को संतुष्ट करता है,

1. $\frac{7}{2}(\hat{i} - \hat{j} + \hat{k})$
2. $\frac{7}{2}(-\hat{i} + \hat{j} + \hat{k})$
3. $7(\hat{i} - \hat{j} + \hat{k})$
4. $7(-\hat{i} + \hat{j} + \hat{k})$

Options :

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6009644673. 1
6009644674. 2
6009644675. 3
6009644676. 4

Question Number : 120 Question Id : 6009641170 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The three vertices of a parallelogram *ABCD* are *A* (1, 2, 3), *B* (−1, −2, −1) and *C* (2, 3, 2). The coordinates of the fourth vertex *D* are

1. (−2, −3, 0)
2. (4, 7, 6)
3. (2, 3, 4)
4. (−2, −3, 4)

Options :
6009644677. 1
6009644678. 2
6009644679. 3
6009644680. 4

Question Number : 120 Question Id : 6009641170 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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किसी समांतर चतुर्भुज $ABCD$ के तीन शीर्ष A (1, 2, 3), B (−1, −2, −1) और C (2, 3, 2) हैं। चौथे शीर्ष D के निर्देशांक हैं

1. (−2, −3, 0)
2. (4, 7, 6)
3. (2, 3, 4)
4. (−2, −3, 4)

Options :

6009644677. 1

6009644678. 2

6009644679. 3

6009644680. 4

Question Number : 121 Question Id : 6009641171 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The lines $x = py + q, z = ry + s$ and $x = p'y + q', z = r'y + s'$ are perpendicular to each other, if

1. $\frac{p}{p'} + \frac{q}{q'} = 1$
2. $\frac{p}{q} + \frac{p'}{q'} = 1$
3. $pp' + rr' + 1 = 0$
4. $pq' - p'q + 1 = 0$

Options :

6009644681. 1

6009644682. 2

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6009644683. 3
6009644684. 4

Question Number : 121 Question Id : 6009641171 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

रेखाएँ $x = py + q, z = ry + s$ तथा $x = p'y + q', z = r'y + s'$ परस्पर लंब हैं, यदि

1. $\frac{p}{p'} + \frac{q}{q'} = 1$
2. $\frac{p}{q} + \frac{p'}{q'} = 1$
3. $pp' + rr' + 1 = 0$
4. $pq' - p'q + 1 = 0$

Options :
6009644681. 1
6009644682. 2
6009644683. 3
6009644684. 4

Question Number : 122 Question Id : 6009641172 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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The image of a point A (1, 3, 4) in the plane $2x - y + z + 3 = 0$ is

1. (−3, 5, 2)
2. (5, 1, 6)
3. (3, −5, −2)
4. (5, −1, 6)

Options :

6009644685. 1
6009644686. 2
6009644687. 3
6009644688. 4

Question Number : 122 Question Id : 6009641172 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

समतल $2x - y + z + 3 = 0$ में बिंदु A (1, 3, 4) का प्रतिबिम्ब है

1. (−3, 5, 2)
2. (5, 1, 6)
3. (3, −5, −2)
4. (5, −1, 6)

Options :

6009644685. 1
6009644686. 2
6009644687. 3
6009644688. 4

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Question Number : 123 Question Id : 6009641173 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

From 10 tickets numbered 1, 2, 3, ..., 9, 10; three tickets with numbers a, b, and c ($a < b < c$) are drawn at random. Then the probability that the numbers on them are in AP, is

1. $\frac{2}{3}$
2. $\frac{1}{5}$
3. $\frac{1}{10}$
4. $\frac{1}{6}$

Options :

6009644689. 1

6009644690. 2

6009644691. 3

6009644692. 4

Question Number : 123 Question Id : 6009641173 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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10 टिकटों में से, जिन पर संख्याएँ 1, 2, 3, ..., 9, 10 लिखी हुई हैं, संख्याओं a, b और c ($a < b < c$) लिखे तीन टिकट यादृच्छिक रूप से निकाले जाते हैं। तब उन पर लिखी संख्याओं के AP में होने की प्रायिकता है

1. $\frac{2}{3}$
2. $\frac{1}{5}$
3. $\frac{1}{10}$
4. $\frac{1}{6}$

Options :

6009644689. 1

6009644690. 2

6009644691. 3

6009644692. 4

Question Number : 124 Question Id : 6009641174 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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If a and b are one-digit positive integers, then the probability that (a, b) lies inside $y = ax^2 - bx$ is

1. $\frac{10}{81}$
2. $\frac{19}{81}$
3. $\frac{17}{81}$
4. $\frac{1}{9}$

Options :

6009644693. 1

6009644694. 2

6009644695. 3

6009644696. 4

Question Number : 124 Question Id : 6009641174 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि a और b एक-अंकीय धनात्मक पूर्णांक हैं, तो $y = ax^2 - bx$ के अंदर (a, b) के स्थित होने की प्रायिकता है

1. $\frac{10}{81}$
2. $\frac{19}{81}$
3. $\frac{17}{81}$
4. $\frac{1}{9}$

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Options :

6009644693. 1

6009644694. 2

6009644695. 3

6009644696. 4

Question Number : 125 Question Id : 6009641175 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Maximize $Z = 4x + 6y$

subject to

$3x + 2y \leq 12, \quad x + y \geq 2, \quad x, y \geq 0$

1. 24 at (6, 0)
2. 36 at (0, 6)
3. 24 at (0, 4)
4. 16 at (4, 0)

Options :

6009644697. 1

6009644698. 2

6009644699. 3

6009644700. 4

Question Number : 125 Question Id : 6009641175 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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$3x + 2y \leq 12,\ x + y \geq 2,\ x,\ y \geq 0$ के अंतर्गत $Z = 4x + 6y$ को अधिकतम कीजिए।

1. (6, 0) पर 24
2. (0, 6) पर 36
3. (0, 4) पर 24
4. (4, 0) पर 16

Options :

6009644697. 1
6009644698. 2
6009644699. 3
6009644700. 4

Question Number : 126 Question Id : 6009641176 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If $10^n + 3 \times 4^{n+2} + \lambda$ is exactly divisible by 9 for all $n \in N$, then the least positive integral value of λ is

1. 3
2. 1
3. 4
4. 5

Options :

6009644701. 1
6009644702. 2
6009644703. 3
6009644704. 4

Question Number : 126 Question Id : 6009641176 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि $10^n + 3 \times 4^{n+2} + \lambda$ सभी $n \in N$ के लिए 9 से पूर्णतया विभाज्य है, तो λ का न्यूनतम धनात्मक पूर्णांकीय मान है

1. 3
2. 1
3. 4
4. 5

Options :
6009644701. 1
6009644702. 2
6009644703. 3
6009644704. 4

Question Number : 127 Question Id : 6009641177 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If $3 + 4i$ is a root of the quadratic equation $x^2 + ax + b = 0$, then the product ab is equal to

1. 15
2. −150
3. −25
4. 5

Options :
6009644705. 1
6009644706. 2
6009644707. 3

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6009644708. 4

Question Number : 127 Question Id : 6009641177 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि $3+4i$ द्विघात समीकरण $x^2+ax+b=0$ का एक मूल है, तो गुणनफल ab बराबर है

1. 15
2. −150
3. −25
4. 5

Options :
6009644705. 1
6009644706. 2
6009644707. 3
6009644708. 4

Question Number : 128 Question Id : 6009641178 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A five-digit number divisible by 3 is to be formed using the digits 0, 1, 2, 3, 4 and 5 without repetition. The total number of ways in which this can be done, is

1. 216
2. 210
3. 96
4. 120

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Options :

6009644709. 1

6009644710. 2

6009644711. 3

6009644712. 4

Question Number : 128 Question Id : 6009641178 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अंकों 0, 1, 2, 3, 4 और 5 का उपयोग करते हुए, अंकों की पुनरावृत्ति के बिना, 3 से विभाज्य एक पाँच-अंकीय संख्या बनाई जानी है। ऐसा करने की विधियों की कुल संख्या है

1. 216

2. 210

3. 96

4. 120

Options :

6009644709. 1

6009644710. 2

6009644711. 3

6009644712. 4

Question Number : 129 Question Id : 6009641179 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The total number of rectangles (of all possible sizes) on a chessboard is

1. ${}^{8}C_{2} \times {}^{8}C_{2}$
2. ${}^{9}C_{2} \times {}^{9}C_{2}$
3. ${}^{8}C_{2} \times {}^{9}C_{2}$
4. 785

Options :

6009644713. 1

6009644714. 2

6009644715. 3

6009644716. 4

Question Number : 129 Question Id : 6009641179 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक शतरंज के बोर्ड पर आयतों (सभी संभव मापों के) की कुल संख्या है

1. ${}^{8}C_{2} \times {}^{8}C_{2}$
2. ${}^{9}C_{2} \times {}^{9}C_{2}$
3. ${}^{8}C_{2} \times {}^{9}C_{2}$
4. 785

Options :

6009644713. 1

6009644714. 2

6009644715. 3

6009644716. 4

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Question Number : 130 Question Id : 6009641180 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

In the expansion of $(\sqrt{3}+4^{1/5})^{100}$ the total number of irrational terms is

1. 50
2. 11
3. 90
4. 91

Options :
6009644717. 1
6009644718. 2
6009644719. 3
6009644720. 4

Question Number : 130 Question Id : 6009641180 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

$(\sqrt{3}+4^{1/5})^{100}$ के प्रसार में अपरिमेय पदों की कुल संख्या है

1. 50
2. 11
3. 90
4. 91

Options :
6009644717. 1
6009644718. 2

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6009644719. 3
6009644720. 4

Question Number : 131 Question Id : 6009641181 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If the coefficient of x^5 in the expansion of $\left(x^3 - \frac{\lambda}{x}\right)^7$ is 560, then the value(s) of λ is/are

1. 2 only
2. −2 only
3. ±2
4. ±4

Options :
6009644721. 1
6009644722. 2
6009644723. 3
6009644724. 4

Question Number : 131 Question Id : 6009641181 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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यदि $\left(x^3 - \frac{\lambda}{x}\right)^7$ के प्रसार में x^5 का गुणांक 560 है, तो λ का / के मान है / हैं

1. केवल 2
2. केवल −2
3. ± 2
4. ± 4

Options :

6009644721. 1

6009644722. 2

6009644723. 3

6009644724. 4

Question Number : 132 Question Id : 6009641182 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The maximum possible sum of the series $20 + 19\frac{1}{3} + 18\frac{2}{3} + \cdots$ is

1. 310
2. $309\frac{1}{3}$
3. $310\frac{1}{3}$
4. 309

Options :

6009644725. 1

6009644726. 2

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6009644727. 3
6009644728. 4

Question Number : 132 Question Id : 6009641182 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

श्रेणी $20 + 19\frac{1}{3} + 18\frac{2}{3} + \ldots$ का अधिकतम संभव योग है

1. 310
2. $309\frac{1}{3}$
3. $310\frac{1}{3}$
4. 309

Options :
6009644725. 1
6009644726. 2
6009644727. 3
6009644728. 4

Question Number : 133 Question Id : 6009641183 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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The slopes of the lines which make an angle of 45° with the line $3x - y + 4 = 0$ are

1. 2 and $-\frac{1}{2}$
2. −2 and $\frac{1}{2}$
3. 2 and $\frac{1}{2}$
4. −2 and $-\frac{1}{2}$

Options :

6009644729. 1

6009644730. 2

6009644731. 3

6009644732. 4

Question Number : 133 Question Id : 6009641183 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

उन रेखाओं की प्रवणताएँ, जो रेखा $3x - y + 4 = 0$ के साथ 45° का कोण बनाती हैं, हैं

1. 2 और $-\frac{1}{2}$
2. −2 और $\frac{1}{2}$
3. 2 और $\frac{1}{2}$
4. −2 और $-\frac{1}{2}$

Options :

6009644729. 1

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6009644730. 2
6009644731. 3
6009644732. 4

Question Number : 134 Question Id : 6009641184 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The coordinate(s) of the points on the parabola $y^2 = 8x$, whose focal distance is 4, is/are

1. (2, 4) only
2. (2, 4) and (2, −4)
3. $(1, 2\sqrt{2})$ and $(1, -2\sqrt{2})$
4. (−2, 4) and (−2, −4)

Options :
6009644733. 1
6009644734. 2
6009644735. 3
6009644736. 4

Question Number : 134 Question Id : 6009641184 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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परवलय $y^2 = 8x$, जिसकी नाभीय दूरी 4 है, पर स्थित बिंदुओं का / के निर्देशांक है / हैं

1. केवल (2, 4)
2. (2, 4) और (2, −4)
3. $(1, 2\sqrt{2})$ और $(1, -2\sqrt{2})$
4. (−2, 4) और (−2, −4)

Options :

6009644733. 1

6009644734. 2

6009644735. 3

6009644736. 4

Question Number : 135 Question Id : 6009641185 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The mean of 49 terms is 100. If the first term is increased by 1, second by 2 and so on, then the new mean

1. is 149
2. is 124.5
3. is 125
4. remains the same

Options :

6009644737. 1

6009644738. 2

6009644739. 3

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6009644740. 4

Question Number : 135 Question Id : 6009641185 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

49 पदों का माध्य 100 है। यदि पहले पद में 1 की वृद्धि की जाए, दूसरे में 2 की वृद्धि की जाए तथा आगे भी ऐसा हो, तो
नया माध्य

1. 149 होगा
2. 124.5 होगा
3. 125 होगा
4. वही रहेगा

Options :
6009644737. 1
6009644738. 2
6009644739. 3
6009644740. 4

Question Number : 136 Question Id : 6009641186 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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If the variance of 1, 2, 3, ..., 9, 10 is $\frac{33}{4}$, then the standard deviation of 2, 4, 6, ..., 18, 20 is

1. $\frac{\sqrt{33}}{2}$
2. $\sqrt{33}$
3. $\sqrt{66}$
4. $\frac{33}{2}$

Options :

6009644741. 1

6009644742. 2

6009644743. 3

6009644744. 4

Question Number : 136 Question Id : 6009641186 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि 1, 2, 3, ..., 9, 10 का प्रसरण $\frac{33}{4}$ है, तो 2, 4, 6, ..., 18, 20 का मानक विचलन है

1. $\frac{\sqrt{33}}{2}$
2. $\sqrt{33}$
3. $\sqrt{66}$
4. $\frac{33}{2}$

Options :

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6009644741. 1
6009644742. 2
6009644743. 3
6009644744. 4

Question Number : 137 Question Id : 6009641187 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Suppose 'p : a natural number n is odd' and 'q : a natural number n is not divisible by 2'. Then the biconditional statement $p \Leftrightarrow q$ is

1. a natural number n is odd if and only if it is divisible by 2
2. a natural number n is odd if and only if it is not divisible by 2
3. if a natural number n is odd, then it is not divisible by 2
4. a natural number n is divisible by 2 if and only if it is odd

Options :
6009644745. 1
6009644746. 2
6009644747. 3
6009644748. 4

Question Number : 137 Question Id : 6009641187 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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मान लीजिए कि 'p : एक प्राकृत संख्या n विषम है' तथा 'q : एक प्राकृत संख्या n, 2 से विभाज्य नहीं है' हैं। तब द्वि-प्रतिबंधित कथन $p \Leftrightarrow q$ है

1. एक प्राकृत संख्या n विषम है, यदि और केवल यदि यह 2 से विभाज्य है
2. एक प्राकृत संख्या n विषम है, यदि और केवल यदि यह 2 से विभाज्य नहीं है
3. यदि एक प्राकृत संख्या n विषम है, तो यह 2 से विभाज्य नहीं है
4. एक प्राकृत संख्या n, 2 से विभाज्य है, यदि और केवल यदि यह विषम है

Options :

6009644745. 1

6009644746. 2

6009644747. 3

6009644748. 4

Question Number : 138 Question Id : 6009641188 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The solution set of $|x-1| \leq 5, \quad |x| \geq 2$ is given by

1. $[-4, -2]$
2. $[2, 6]$
3. $[-4, -2] \cup [2, 6]$
4. $[-2, 2]$

Options :

6009644749. 1

6009644750. 2

6009644751. 3

6009644752. 4

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Question Number : 138 Question Id : 6009641188 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

$|x-1| \leq 5,\ |x| \geq 2$ का हल समुच्चय निम्न में से किसके द्वारा दिया जाएगा ?

1. $[-4, -2]$
2. $[2, 6]$
3. $[-4, -2] \cup [2, 6]$
4. $[-2, 2]$

Options :
6009644749. 1
6009644750. 2
6009644751. 3
6009644752. 4

Question Number : 139 Question Id : 6009641189 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The work done by the force $3\hat{i} - 5\hat{j} + 2\hat{k}$ in moving a particle along a straight line from the point $(5, 1, -2)$ to the point $(3, -2, 0)$ is

1. 15 units
2. 13 units
3. 25 units
4. 5 units

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Options :

6009644753. 1

6009644754. 2

6009644755. 3

6009644756. 4

Question Number : 139 Question Id : 6009641189 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक सरल रेखा के अनुदिश किसी कण को बिंदु $(5, 1, -2)$ से बिंदु $(3, -2, 0)$ तक ले जाने के लिए बल $3\hat{i} - 5\hat{j} + 2\hat{k}$ द्वारा किया गया कार्य है

1. 15 इकाई
2. 13 इकाई
3. 25 इकाई
4. 5 इकाई

Options :

6009644753. 1

6009644754. 2

6009644755. 3

6009644756. 4

Question Number : 140 Question Id : 6009641190 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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The brakes are applied to a train travelling at 72 km/h. After passing over 200 m, its speed reduces to 36 km/h. The distance the train will travel before coming to rest, is

1. 66 m
2. 70 m
3. $66\frac{2}{3}$ m
4. $72\frac{2}{3}$ m

Options :

6009644757. 1
6009644758. 2
6009644759. 3
6009644760. 4

Question Number : 140 Question Id : 6009641190 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

72 km/h की चाल से चल रही एक रेलगाड़ी पर ब्रेक लगाया जाता है। 200 m की दूरी तय करने के बाद उसकी चाल 36 km/h रह जाती है। विश्राम तक आने में रेलगाड़ी द्वारा तय की गई दूरी होगी

1. 66 m
2. 70 m
3. $66\frac{2}{3}$ m
4. $72\frac{2}{3}$ m

Options :

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6009644757. 1
6009644758. 2
6009644759. 3
6009644760. 4

Question Number : 141 Question Id : 6009641191 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R :**

Assertion A : If $f(x) = \cos x\,(3\cos x + \cos 3x)$, then $f(x) \geq 0$ for all real x.

Reason R : $\cos\theta < 0$ when $\theta \in \left(\frac{\pi}{2}, \pi\right)$.

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

1. Both **A** and **R** are correct and **R** is the correct explanation of **A**
2. Both **A** and **R** are correct but **R** is **NOT** the correct explanation of **A**
3. **A** is correct but **R** is not correct
4. **A** is not correct but **R** is correct

Options :
6009644761. 1
6009644762. 2
6009644763. 3
6009644764. 4

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Question Number : 141 Question Id : 6009641191 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं। एक को **अभिकथन A** कहा गया है तथा दूसरे को **कारण R**।

अभिकथन A : यदि $f(x) = \cos x\,(3\cos x + \cos 3x)$, तो सभी वास्तविक x के लिए $f(x) \geq 0$ है।

कारण R : $\cos\theta < 0$ है, जब $\theta \in \left(\frac{\pi}{2}, \pi\right)$ है।

उपरोक्त को दृष्टिगत रखते हुए निम्न विकल्पों में से सबसे उपयुक्त उत्तर चुनिए :

1. **A** और **R** दोनों सही हैं तथा **A** का **R** सही स्पष्टीकरण है।
2. **A** और **R** दोनों सही हैं परंतु **A** का **R** सही स्पष्टीकरण नहीं है।
3. **A** सही है परंतु **R** सही नहीं है।
4. **A** सही नहीं है परंतु **R** सही है।

Options :
6009644761. 1
6009644762. 2
6009644763. 3
6009644764. 4

Question Number : 142 Question Id : 6009641192 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

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Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R :**

Assertion A : If $x \in R$, then the maximum value of the expression $3^x + 3^{1-x}$ is $2\sqrt{3}$.

Reason R : Arithmetic Mean ≥ Geometric Mean.

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

1. Both **A** and **R** are correct and **R** is the correct explanation of **A**
2. Both **A** and **R** are correct but **R** is **NOT** the correct explanation of **A**
3. **A** is correct but **R** is not correct
4. **A** is not correct but **R** is correct

Options :

6009644765. 1

6009644766. 2

6009644767. 3

6009644768. 4

Question Number : 142 Question Id : 6009641192 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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नीचे दो कथन दिए गए हैं। एक को **अभिकथन A** कहा गया है तथा दूसरे को **कारण R**।

अभिकथन A : यदि $x \in R$ है, तो व्यंजक $3^x + 3^{1-x}$ का अधिकतम मान $2\sqrt{3}$ है।

कारण R : समांतर माध्य ≥ गुणोत्तर माध्य होता है।

उपरोक्त को दृष्टिगत रखते हुए निम्न विकल्पों में से सबसे उपयुक्त उत्तर चुनिए :

1. **A** और **R** दोनों सही हैं तथा **A** का **R** सही स्पष्टीकरण है।
2. **A** और **R** दोनों सही हैं परंतु **A** का **R** सही स्पष्टीकरण नहीं है।
3. **A** सही है परंतु **R** सही नहीं है।
4. **A** सही नहीं है परंतु **R** सही है।

Options :

6009644765. 1

6009644766. 2

6009644767. 3

6009644768. 4

Question Number : 143 Question Id : 6009641193 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R :**

Assertion A : The minimum area of a circle passing through the points $A(2, 3)$ and $B(4, 1)$ is 2π sq. units.

Reason R : Equation of the above circle is $x^2 + y^2 - 4x - 6y + 11 = 0$.

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

1. Both **A** and **R** are correct and **R** is the correct explanation of **A**
2. Both **A** and **R** are correct but **R** is **NOT** the correct explanation of **A**
3. **A** is correct but **R** is not correct
4. **A** is not correct but **R** is correct

Options :

6009644769. 1

6009644770. 2

6009644771. 3

6009644772. 4

Question Number : 143 Question Id : 6009641193 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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नीचे दो कथन दिए गए हैं। एक को **अभिकथन A** कहा गया है तथा दूसरे को **कारण R**।

अभिकथन A : बिंदुओं $A(2, 3)$ और $B(4, 1)$ से होकर जाने वाले वृत्त का न्यूनतम क्षेत्रफल 2π वर्ग इकाई है।

कारण R : उपरोक्त वृत्त का समीकरण $x^2 + y^2 - 4x - 6y + 11 = 0$ है।

उपरोक्त को दृष्टिगत रखते हुए, निम्न विकल्पों में से सबसे उपयुक्त उत्तर चुनिए :

1. **A** और **R** दोनों सही हैं तथा **A** का **R** सही स्पष्टीकरण है।
2. **A** और **R** दोनों सही हैं तथा **A** का **R** सही स्पष्टीकरण नहीं है।
3. **A** सही है परंतु **R** सही नहीं है।
4. **A** सही नहीं है परंतु **R** सही है।

Options :

6009644769. 1

6009644770. 2

6009644771. 3

6009644772. 4

Question Number : 144 Question Id : 6009641194 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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Match **List I** with **List II :**

List I	List II
A. $f(x)=\frac{1}{\sqrt{x-2}}+\frac{1}{\sqrt{3-x}}$	I. Domain $f(x)=[2,\ 3]$
B. $f(x)=\sqrt{\frac{x-2}{3-x}}$	II. Domain $f(x)=(2,\ 3]$
C. $f(x)=\sqrt{\frac{3-x}{x-2}}$	III. Domain $f(x)=[2,\ 3)$
D. $f(x)=\sqrt{(x-2)(3-x)}$	IV. Domain $f(x)=(2,\ 3)$

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

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

Options :

6009644773. 1

6009644774. 2

6009644775. 3

6009644776. 4

Question Number : 144 Question Id : 6009641194 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

सूची–I का **सूची–II** से सुमेलन कीजिए :

सूची–I	सूची–II
A. $f(x)=\frac{1}{\sqrt{x-2}}+\frac{1}{\sqrt{3-x}}$	I. प्रांत $f(x)=[2,\ 3]$
B. $f(x)=\sqrt{\frac{x-2}{3-x}}$	II. प्रांत $f(x)=(2,\ 3]$
C. $f(x)=\sqrt{\frac{3-x}{x-2}}$	III. प्रांत $f(x)=[2,\ 3)$
D. $f(x)=\sqrt{(x-2)(3-x)}$	IV. प्रांत $f(x)=(2,\ 3)$

नीचे दिए गए विकल्पों में से सही उत्तर चुनिए :

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

Options :

6009644773. 1

6009644774. 2

6009644775. 3

6009644776. 4

Question Number : 145 Question Id : 6009641195 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Match **List I** with **List II** :

List I	List II
A. $\int_0^{\pi/2} \frac{\sin 2x}{\sin^4 x + \cos^4 x}\, dx$	I. $\frac{\pi}{4}$
B. $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x}\, dx$	II. π
C. $\int_0^{2\pi} \frac{1}{1 + e^{\sin x}}\, dx$	III. $\frac{\pi}{12}$
D. $\int_0^{\pi/2} \frac{1}{9\sin^2 x + 4\cos^2 x}\, dx$	IV. $\frac{\pi}{2}$

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

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

Options :

6009644777. 1
6009644778. 2
6009644779. 3
6009644780. 4

Question Number : 145 Question Id : 6009641195 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

सूची–I का **सूची–II** से सुमेलन कीजिए :

सूची–I	सूची–II
A. $\int_0^{\pi/2} \frac{\sin 2x}{\sin^4 x + \cos^4 x}\, dx$	I. $\frac{\pi}{4}$
B. $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x}\, dx$	II. π
C. $\int_0^{2\pi} \frac{1}{1 + e^{\sin x}}\, dx$	III. $\frac{\pi}{12}$
D. $\int_0^{\pi/2} \frac{1}{9\sin^2 x + 4\cos^2 x}\, dx$	IV. $\frac{\pi}{2}$

नीचे दिए गए विकल्पों में से सही उत्तर चुनिए :

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

Options :
6009644777. 1
6009644778. 2
6009644779. 3
6009644780. 4

Question Number : 146 Question Id : 6009641196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Match **List I** with **List II** :

List I	List II
A. $\lim\limits_{x\to 0} \dfrac{\sqrt{1+x}-\sqrt{1-x}}{2x}$	I. 2
B. $\lim\limits_{x\to \frac{\pi}{4}} \dfrac{\sqrt{2}-\cos x-\sin x}{\left(\frac{\pi}{4}-x\right)^2}$	II. $\dfrac{1}{2}$
C. $\lim\limits_{n\to\infty} \dfrac{n^2}{1+2+3+\cdots+n}$	III. 1
D. $\lim\limits_{x\to 1} \dfrac{x-1}{\log_e x}$	IV. $\dfrac{1}{\sqrt{2}}$

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

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

Options :
6009644781. 1
6009644782. 2
6009644783. 3
6009644784. 4

Question Number : 146 Question Id : 6009641196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

सूची-I का **सूची-II** से सुमेलन कीजिए :

सूची-I	सूची-II
A. $\lim_{x\to 0} \frac{\sqrt{1+x}-\sqrt{1-x}}{2x}$	I. 2
B. $\lim_{x\to \frac{\pi}{4}} \frac{\sqrt{2}-\cos x-\sin x}{\left(\frac{\pi}{4}-x\right)^2}$	II. $\frac{1}{2}$
C. $\lim_{n\to\infty} \frac{n^2}{1+2+3+\cdots+n}$	III. 1
D. $\lim_{x\to 1} \frac{x-1}{\log_e x}$	IV. $\frac{1}{\sqrt{2}}$

नीचे दिए गए विकल्पों में से सही उत्तर चुनिए :

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

Options :
6009644781. 1
6009644782. 2
6009644783. 3
6009644784. 4

Question Number : 147 Question Id : 6009641197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is

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Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

In a university, out of 100 students, 17 offered Mathematics only; 14 offered Statistics only; 10 offered Physics only; 40 offered Physics and Mathematics; 22 offered Physics and Statistics; 8 offered Mathematics and Statistics; 6 offered all the three subjects.

A. The number of students who offered Mathematics is 60.

B. The number of students who did not offer any of the three subjects is 1.

C. The number of students who offered only one subject is 41.

D. The number of students who offered exactly two of the subjects is 50.

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

1. A and B only
2. B and D only
3. B and C only
4. B, C and D only

Options :

6009644785. 1
6009644786. 2
6009644787. 3
6009644788. 4

Question Number : 147 Question Id : 6009641197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

किसी विश्वविद्यालय में 100 विद्यार्थियों में से केवल 17 ने गणित विषय लिया; केवल 14 ने सांख्यिकी विषय लिया; केवल 10 ने भौतिकी विषय लिया; 40 ने भौतिकी और गणित विषयों को लिया; 22 ने भौतिकी और सांख्यिकी विषयों को लिया; 8 ने गणित और सांख्यिकी विषयों को लिया तथा 6 ने सभी तीन विषयों को लिया।

A. गणित विषय लेने वाले विद्यार्थियों की संख्या 60 है।

B. उन विद्यार्थियों की संख्या, जिन्होंने तीनों विषयों में से कोई भी विषय नहीं लिया, 1 है।

C. उन विद्यार्थियों की संख्या, जिन्होंने केवल एक ही विषय लिया, 41 है।

D. उन विद्यार्थियों की संख्या, जिन्होंने ठीक दो विषयों को लिया, 50 है।

नीचे दिए गए विकल्पों में से सही उत्तर चुनिए :

1. केवल A और B
2. केवल B और D
3. केवल B और C
4. केवल B, C और D

Options :

6009644785. 1

6009644786. 2

6009644787. 3

6009644788. 4

Question Number : 148 Question Id : 6009641198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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Correct Marks : 4 Wrong Marks : 1

Given three vectors $\vec{a} = \hat{i} + 2\hat{j} - 3\hat{k}$, $\vec{b} = 2\hat{i} + 3\hat{j} - \hat{k}$ and $\vec{c} = -\hat{i} + \hat{j} + 4\hat{k}$.

A. Volume of a parallelopiped whose coterminous edges are vectors $\vec{a}$, $\vec{b}$ and $\vec{c}$ is 16 cubic units.

B. $|\vec{a}| + |\vec{b}| = |\vec{c}|$.

C. $\vec{c}$ is perpendicular to $\vec{a} \times \vec{b}$.

D. Projection of $\vec{a} + \vec{c}$ on $\vec{b}$ is $\frac{8}{\sqrt{14}}$.

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

1. A only
2. A and C only
3. C and D only
4. A and D only

Options :

6009644789. 1

6009644790. 2

6009644791. 3

6009644792. 4

Question Number : 148 Question Id : 6009641198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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तीन सदिश $\vec{a} = \hat{i} + 2\hat{j} - 3\hat{k}, \vec{b} = 2\hat{i} + 3\hat{j} - \hat{k}$ और $\vec{c} = -\hat{i} + \hat{j} + 4\hat{k}$ दिए हैं।

A. उस समांतर षट्फलक का आयतन, जिसके एक ही बिंदु पर मिलने वाले किनारे $\vec{a}$, $\vec{b}$ और $\vec{c}$ सदिश हैं, 16 घन इकाई है।

B. $|\vec{a}| + |\vec{b}| = |\vec{c}|$.

C. $\vec{a} \times \vec{b}$ पर $\vec{c}$ लंब है।

D. $\vec{b}$ पर $\vec{a} + \vec{c}$ का प्रक्षेप $\frac{8}{\sqrt{14}}$ है।

नीचे दिए गए विकल्पों में से सही उत्तर चुनिए :

1. केवल A
2. केवल A और C
3. केवल C और D
4. केवल A और D

Options :

6009644789. 1

6009644790. 2

6009644791. 3

6009644792. 4

Question Number : 149 Question Id : 6009641199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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For any two complex numbers, $z_1 = 1 + i$ and $z_2 = 1 - i$,

A. $|z_1 + z_2|^2 + |z_1 - z_2|^2 = 2\{|z_1|^2 + |z_2|^2\}$

B. Polar form of $\frac{z_1}{z_2}$ is given by $\cos\frac{\pi}{2} + i\sin\frac{\pi}{2}$

C. $\arg(z_1) + \arg(z_2) = \pi$

D. $\left|\frac{z_1+2z_2+5i}{2z_1-z_2-5}\right| = 1$

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

1. A and B only
2. A, B and D only
3. B and D only
4. C and D only

Options :

6009644793. 1

6009644794. 2

6009644795. 3

6009644796. 4

Question Number : 149 Question Id : 6009641199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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किन्हीं दो सम्मिश्र संख्याओं $z_1 = 1 + i$ और $z_2 = 1 - i$ के लिए

A. $|z_1 + z_2|^2 + |z_1 - z_2|^2 = 2\{|z_1|^2 + |z_2|^2\}$ है।

B. $\frac{z_1}{z_2}$ का ध्रुवीय रूप $\cos\frac{\pi}{2} + i\sin\frac{\pi}{2}$ द्वारा दिया जाता है।

C. $\arg(z_1) + \arg(z_2) = \pi$ है।

D. $\left|\frac{z_1+2z_2+5i}{2z_1-z_2-5}\right| = 1$ है।

नीचे दिए गए विकल्पों में से सही उत्तर चुनिए :

1. केवल A और B
2. केवल A, B और D
3. केवल B और D
4. केवल C और D

Options :

6009644793. 1

6009644794. 2

6009644795. 3

6009644796. 4

Question Number : 150 Question Id : 6009641200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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If $x = a(\cos\theta + \theta\sin\theta)$, $y = a(\sin\theta - \theta\cos\theta)$, then at $\theta = \frac{\pi}{4}$, we have

A. $\frac{dy}{dx} = 1$

B. $\frac{d^2y}{dx^2} = \frac{8\sqrt{2}}{a\pi}$

C. $\frac{dy}{dx} = -1$

D. $\frac{d^2y}{dx^2} = \frac{-8\sqrt{2}}{a\pi}$

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

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

Options :

6009644797. 1

6009644798. 2

6009644799. 3

6009644800. 4

Question Number : 150 Question Id : 6009641200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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यदि $x = a(\cos\theta + \theta\sin\theta)$ और $y = a(\sin\theta - \theta\cos\theta)$ है, तो $\theta = \frac{\pi}{4}$ पर हम प्राप्त करते हैं

A. $\frac{dy}{dx} = 1$

B. $\frac{d^2y}{dx^2} = \frac{8\sqrt{2}}{a\pi}$

C. $\frac{dy}{dx} = -1$

D. $\frac{d^2y}{dx^2} = \frac{-8\sqrt{2}}{a\pi}$

नीचे दिए गए विकल्पों में से सही उत्तर चुनिए।

1. केवल A और B
2. केवल B और C
3. केवल D
4. केवल B

Options :

6009644797. 1
6009644798. 2
6009644799. 3
6009644800. 4

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