# Question Paper Preview

**Notations :**

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

| | |
|---|---|
| **Question Paper Name:** | PGT PHYSICS FEMALE 4th July 2018 Shift2 |
| **Subject Name:** | PGT PHYSICS FEMALE |
| **Creation Date:** | 2018-07-04 18:29:37 |
| **Duration:** | 180 |
| **Total Marks:** | 300 |
| **Display Marks:** | Yes |
| **Share Answer Key With Delivery Engine:** | Yes |
| **Actual Answer Key:** | Yes |
| **Calculator:** | None |
| **Magnifying Glass Required?:** | No |
| **Ruler Required?:** | No |
| **Eraser Required?:** | No |
| **Scratch Pad Required?:** | No |
| **Rough Sketch/Notepad Required?:** | No |
| **Protractor Required?:** | No |

Mental Ability

| | |
|---|---|
| **Group Number :** | 1 |
| **Group Id :** | 167943117 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Mental Ability

| | |
|---|---|
| **Section Id :** | 167943176 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |

# Test Prime

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**Sub-Section Id:** 167943378
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Id : 1679436617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**
**Correct : 1 Wrong : 0.25**

Rohini starts walking straight towards East. After walking 75 metres, she turns to the left and walks 25 metres straight. Again, she turns to the left, walks 40 metres straight, again turns to the left and walks 25 metres straight. How far is she from the starting point?

**Options :**

✗ 33 metres

✓ 35 metres

✗ 45 metres

✗ 47 metres

**Question Number : 2 Question Id : 1679436618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**
**Correct : 1 Wrong : 0.25**

Read the given information carefully and answer the question that follows.

Anandh, Vikram, Monish and Barani are to be seated in a row. However, Monish and Barani cannot be together. Also, Vikram cannot be at the third place.
Which of the following must be FALSE?

**Options :**

✓ Anandh is at the first place

✗ Anandh is at the second place

✗ Anandh is at the third place

✗ Anandh is at the fourth place

**Question Number : 3 Question Id : 1679436619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**
**Correct : 1 Wrong : 0.25**

Elephant is related to Trumpet in the same way as Cat is related to:

**Options :**

✗ Kitten

✓ Mew

✗ Caw

✖ Squeak

**Question Number : 4 Question Id : 1679436620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Given is a statement and two assumptions. Select the correct comment about the assumptions from the given options.

**Statement:**
Opening a post office in City A is wasteful.

**Assumptions:**
I. There is an adequate number of post offices in City A.
II. Inhabitants of City A need post office.

**Options :**

✔ Only assumption I is implicit in the statement.

✖ Only assumption II is implicit in the statement.

✖ Either assumption I or II is implicit in the statement.

✖ Neither assumption I nor II is implicit in the statement.

**Question Number : 5 Question Id : 1679436621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Select the odd word pair from the following.

**Options :**

✖ Oil : Seed

✖ Paper : Pulp

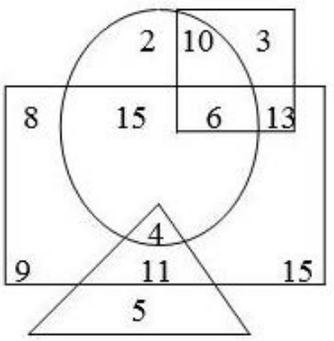
✖ Rubber : Latex

✔ Angle : Radian

**Question Number : 6 Question Id : 1679436622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Study the given diagram carefully and answer the question that follows.
(i) Circle represents 'urban'
(ii) Square represents 'government employee'
(iii) Rectangle represents 'female'
(iv) Triangle represents 'educated'




Which of the following options represents the number of government employees who are not female, not urban and not educated?

**Options :**

✖ 4

✔ 3

✖ 10

✖ 13

**Question Number : 7 Question Id : 1679436623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

From the options, select the pair that is similar to the following pair.

$7 : \frac{7}{48}$

**Options :**

✖ $6 : \frac{6}{36}$

✖ $8 : \frac{8}{82}$

✔ $11 : \frac{11}{120}$

✖ $15 : \frac{14}{224}$

**Question Number : 8 Question Id : 1679436624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which letter comes immediately before the eighth letter from the extreme left of the English alphabet?

**Options :**

✖ J

✖ I

✖ H

✔ G

**Question Number : 9 Question Id : 1679436625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

If 'book' is called 'school', 'school' is called 'pen', 'pen' is called 'eraser', 'eraser' is called 'bag' and 'bag' is called 'sharpener', what will a student write with?

**Options :**

✖ School

✖ Pen

✖ Bag

✔ Eraser

**Question Number : 10 Question Id : 1679436626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Kamala is the mother-in-law of Anu, who is the sister-in-law of Vijay. Velu is the father of Karthi, who is the only brother of Vijay. How is Vijay related to Kamala?

**Options :**

✔ Son

✖ Brother

✖ Husband

✖ Brother-in-law

**Question Number : 11 Question Id : 1679436627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

From the options, select the pair that is similar to the following pair.

Badminton : Court

**Options :**

✖ Cricket : Ground

✖ Skating : Court

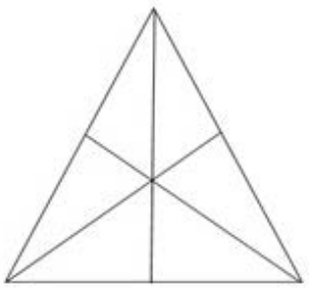
✖ Boxing : Arena

✔ Cricket : Pitch

**Question Number : 12 Question Id : 1679436628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

How many triangles are there in the following figure?



**Options :**

✖ 9

✖ 12

✔ 16

✖ 20

**Question Number : 13 Question Id : 1679436629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the following matrix, one block has a question mark in it. Select the correct term from the alternatives given that can replace question mark.

| | | |
|---|---|---|
| AC4 | BD6 | EG12 |
| HJ18 | ? | NP40 |
| QS36 | TV38 | WY76 |

**Options :**

✖ KM22

✔ KM20

✖ KL20

✖ KN24

**Question Number : 14 Question Id : 1679436630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In a queue, Monika is $10^{th}$ from the front, Kavya is $25^{th}$ from the back and Rohini is just in the middle of the two. If there are 50 students in the queue, what position does Rohini occupy from the front?

**Options :**

✖ $15^{th}$

✔ $18^{th}$

✖ $19^{th}$

✖ $22^{th}$

**Question Number : 15 Question Id : 1679436631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Read the following two statements, labelled as Assertion and Reason, and decide which of the given options is correct.

**Assertion (A):**
In India, females have higher life expectancy than the males.

**Reason (R):**
Females receive a better diet.

**Options :**

✗ A is true but R is false.

✗ A is false but R is true.

✗ Both A and R are true and R is the correct explanation of A.

✓ Both A and R are false.

**Question Number : 16 Question Id : 1679436632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

You are a team leader of a software company and two of your friends are having a strained relationship with each other. As a result, they are not contributing well in group activities. How will you handle such a situation?

**Options :**

✓ You will make an explicit effort to help them shake hands.

✗ You will punish them for not contributing by keeping them out of the team.

✗ You believe, "How am I bothered with such petty issues? At least the task is being done by others; so it is fine!"

✗ You will give them complementary tasks in which both have to work together.

**Question Number : 17 Question Id : 1679436633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

If '*' stands for 'addition', '<' for 'subtraction', '%' for 'division', '>' for 'multiplication', '=' for 'equal to', 'S' for 'greater than' and '#' for 'less than', then state which of the following statements is true?

**Options :**

✗ $3 * 2 < 4 \ S \ 16 > 2 \ \% \ 4$

✓ $5 > 2 \ \% \ 2 \ \# \ 10 < 4 * 8$

✗ $3 * 4 > 2 - 9 \ \% \ 3 < 3$

✗ $5 * 3 < 7 \ S \ 8 \ \% \ 4 * 1$

**Question Number : 18 Question Id : 1679436634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Read the following statements and select the alternative that aptly describes these statements.

I. The bank employees called off the strike that they were observing in protest against privatisation.
II. The bank employees went on strike anticipating a threat to their jobs.

**Options :**

✖ Statement I is the cause and II is its effect.

✖ Statement II is the cause and I is its effect.

✖ Both statements I and II are independent causes.

✔ Both statements I and II are effects of independent causes.

**Question Number : 19 Question Id : 1679436635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Read the given statements and decide which of the given conclusions logically follows from the statements.

**Statements:**
No fruit is jasmine.
No jasmine is rose.

**Conclusions:**
I. No fruit is rose.
II. Some roses are jasmines.

**Options :**

✖ Only conclusion I follows.

✖ Only conclusion II follows.

✖ Either conclusion I or II follows.

✔ Neither conclusion I nor II follows.

**Question Number : 20 Question Id : 1679436636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the following matrix, one block has a question mark in it. Select the correct term from the alternatives given that can replace question mark.

| | | |
|---|---|---|
| 7 | 4 | 5 |
| 8 | 7 | 6 |
| 3 | 3 | 5 |
| ? | 19 | 31 |

**Options :**

✖ 21

✖ 23

✖ 27

✔ 29

General Awareness

**Group Number :** 2
**Group Id :** 167943118
**Group Maximum Duration :** 0
**Group Minimum Duration :** 0
**Revisit allowed for view? :** No
**Revisit allowed for edit? :** No
**Break time:** 0
**Group Marks:** 20

General Awareness

**Section Id :** 167943177
**Section Number :** 1
**Section type :** Online
**Mandatory or Optional:** Mandatory
**Number of Questions:** 20
**Number of Questions to be attempted:** 20
**Section Marks:** 20
**Display Number Panel:** Yes
**Group All Questions:** No

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943379 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 21 Question Id : 1679436637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In which of the following years did Subhas Chandra Bose inaugurate the Azad Hind Sarkar (Government of Free India) in Singapore?

**Options :**

✖ 1941

✖ 1944

✖ 1942

✔ 1943

**Question Number : 22 Question Id : 1679436638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The first Emperor of Mughal dynasty was:

**Options :**

✖ Ahmad Shah

✖ Muhammad Shah

✖ Humayun

✔ Babur

**Question Number : 23 Question Id : 1679436639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The Harappan site Kalibangan is situated in the Indian state of:

**Options :**

✖ Gujarat

✖ Bihar

✖ Madhya Pradesh

✔ Rajasthan

Question Number : 24 Question Id : 1679436640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct : 1 Wrong : 0.25

In which state are the Dhupgarh Hills located?

Options :

✗ Rajasthan

✗ Andhra Pradesh

✗ Jammu and Kashmir

✓ Madhya Pradesh

Question Number : 25 Question Id : 1679436641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct : 1 Wrong : 0.25

In which state is the Jawaharlal Nehru Sea Port located?

Options :

✗ Gujarat

✓ Maharashtra

✗ Odisha

✗ Kerala

Question Number : 26 Question Id : 1679436642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct : 1 Wrong : 0.25

_____ has the power to promulgate an Ordinance under Article 123 of the Constitution of India.

Options :

✗ The Prime Minister

✓ The President

✗ The Governor

✗ The Attorney-General

Question Number : 27 Question Id : 1679436643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct : 1 Wrong : 0.25

The Finance Minister of India is appointed by:

**Options :**

✖ the Prime Minister

✔ the President

✖ the Vice-President

✖ the Attorney-General

**Question Number : 28 Question Id : 1679436644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which of the following is INCORRECT?

**Options :**

✔ A person of the age of 30 years can become the Governor of a State.

✖ The same person can be appointed as Governor for two States.

✖ The Governor of a State submits his resignation to the President.

✖ The Governor of a State is appointed by the President.

**Question Number : 29 Question Id : 1679436645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

When was the Foreign Exchange Management Act (FEMA) enacted?

**Options :**

✖ 1982

✔ 1999

✖ 1963

✖ 1947

**Question Number : 30 Question Id : 1679436646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

What is the rank occupied by India among the economies of the world in terms of export volume?

**Options :**

✖ $22^{nd}$

✖ $16^{th}$

✖ $14^{th}$

✔ $19^{th}$

**Question Number : 31 Question Id : 1679436647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

With which musical instrument is the famous musician T. K. Murthy associated?

**Options :**

✖ Sarangi

✖ Sitar

✖ Jaltarangam

✔ Mridangam

**Question Number : 32 Question Id : 1679436648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Dumhal is a famous folk dance of which of the following states?

**Options :**

✖ Madhya Pradesh

✔ Jammu and Kashmir

✖ Chhattisgarh

✖ Uttarakhand

**Question Number : 33 Question Id : 1679436649 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which city is famous for Chikankari type of embroidery?

**Options :**

✔ Lucknow

✖ Jaipur

✖ Raipur

✖ Nagpur

**Question Number : 34 Question Id : 1679436650 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'India Cements' has been associated with which franchise in the Indian Premier League cricket tournament?

**Options :**

✖ Mumbai Indians

✔ Chennai Super Kings

✖ Kolkata Knight Riders

✖ Royal Challengers Bangalore

**Question Number : 35 Question Id : 1679436651 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Who among the following created history at the Commonwealth Games 2018 by becoming India's youngest ever gold medal winner?

**Options :**

✖ N Ram Gautam

✖ Kavita Devi

✖ Deepak Lather

✔ Anish Bhanwala

**Question Number : 36 Question Id : 1679436652 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

We should wear cotton clothes in summer because it helps in _____ which makes our body comfortable.

**Options :**

✖ Sublimation process

✖ Centrifugation process

✔ Evaporation process

✖ Condensation process

**Question Number : 37 Question Id : 1679436653 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In which year was the Insurance Regulatory and Development Authority (IRDA) constituted as an autonomous body?

**Options :**

✖ 2005

✖ 1991

✔ 2000

✖ 1988

**Question Number : 38 Question Id : 1679436654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

What was India's electricity generation growth rate in March 2018?

**Options :**

✖ 2.8%

✖ 3.3%

✔ 4.5%

✖ 5.7%

**Question Number : 39 Question Id : 1679436655 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

What was the rank occupied by India in the FDI Confidence Index 2018 released by A T Kearney?

**Options :**

✔ $11^{th}$

✖ $7^{th}$

✖ $18^{th}$

✖ $24^{th}$

**Question Number : 40 Question Id : 1679436656 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Where was the $23^{rd}$ meeting of the Western Zonal Council held?

**Options :**

✖ Ahmedabad

✖ Pune

✔ Gandhinagar

✖ Bhuj

Arithmetic Ability

| | |
|---|---|
| **Group Number :** | 3 |
| **Group Id :** | 167943119 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Arithmetic Ability

| | |
|---|---|
| **Section Id :** | 167943178 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 17 |
| **Number of Questions to be attempted:** | 17 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943380 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 41 Question Id : 1679436657 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A certain two-digit number is three times the sum of its digits. If 45 is added to the number, the digits are interchanged. What is the product of the digits of the number?

**Options :**

✖ 12

✔ 14

✖ 21

✖ 24

**Question Number : 42 Question Id : 1679436658 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The value of $\frac{0.00281 \div 0.625}{0.1405} \div \frac{0.203 \times 0.292}{0.073 \times 1.45 \times 0.7} \times \frac{6.5 \times 0.077}{65.077 - 64.934}$ lies between:

**Options :**

✖ 0.09 and 0.11

✖ 0.11 and 0.13

✔ 0.13 and 0.15

✖ 0.15 and 0.17

**Question Number : 43 Question Id : 1679436659 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

On simplification, $\frac{4.8 \times 1.8 \div 3.6 + 5.4 \text{ of } \frac{1}{9} - \frac{1}{5}}{2 \text{ of } 5 + 5 \times 2 \div 2 - 5\,[2 + 3\{2 - 2 \times 2 + 5\} - 10] \div 5}$ reduces to:

**Options :**

✔ $\frac{1}{5}$

✖ $\frac{2}{5}$

✖ $\frac{1}{3}$

✖ $\frac{2}{3}$

**Question Number : 44 Question Id : 1679436660 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The value of $\left(\frac{1}{25} \div \frac{3}{10}\right)$ of $\frac{\left(3\frac{1}{3} - 2\frac{1}{2}\right) \div \frac{1}{4} \text{ of } 1\frac{1}{4}}{\left(\frac{3}{10} + \frac{1}{6} \times \frac{1}{3}\right) \times \left(\frac{1}{4} \div \frac{1}{4} \text{ of } \frac{1}{4}\right)}$ is:

**Options :**

✖ $\frac{3}{2}$

✖ $\frac{3}{4}$

✖ $\frac{1}{2}$

✔ $\frac{1}{4}$

**Question Number : 45 Question Id : 1679436661 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

If the numerator of a fraction is increased by 2 and the denominator is increased by 3, the fraction becomes $\frac{7}{9}$, and if both the numerator and the denominator are decreased by 1, the fraction becomes $\frac{4}{5}$. The difference between the numerator and denominator of the original fraction is:

**Options :**

✔ 1

✖ 2

✖ 3

✖ 5

**Question Number : 46 Question Id : 1679436662 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The incomes of A, B and C are in the ratio of 7 : 9 : 12, and their expenditures are in the ratio of 8 : 9 : 15. If C saves $\frac{1}{4}$th of his income, then the ratio of the savings of A to that of B is:

**Options :**

✖ 5 : 6

✖ 6 : 5

✔ 11 : 18

✖ 18 : 11

**Question Number : 47 Question Id : 1679436663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

40% of the employees of a company are men and 75% of them earn more than ₹ 1,800 per month. If 45% of all the employees of the company earn more than ₹ 1,800 per month, then the percentage of the women employees earning ₹ 1,800 or less is:

**Options :**

✖ 45

✖ 50

✖ 70

✔ 75

**Question Number : 48 Question Id : 1679436664 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A shopkeeper marks up his goods such that he can make a 32% profit after giving a 12% discount on the marked price. If a customer avails a 15% discount on an item instead of 12%, then what is the per cent profit to the shopkeeper on that item?

**Options :**

✖ 17

✖ 20

✔ $27\frac{1}{2}$

✖ $33\frac{1}{2}$

**Question Number : 49 Question Id : 1679436665 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The difference between the compound interest and the simple interest on a sum at a rate of 20% per annum for 4 years is ₹ 6,840. What will the same sum become at half the rate and for $2\frac{1}{2}$ years?

**Options :**

✔ ₹ 31,762.50

✖ ₹ 31,672

✖ ₹ 32,762

✖ ₹ 32,762.50

**Question Number : 50 Question Id : 1679436666 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A sphere is placed in a cube such that it touches each surface of the cube. Now another cube is placed in this sphere in the same way. What is the ratio of the volume of the original cube to that of the smaller cube?

**Options :**

✖ $2\sqrt{3}:1$

✔ $3\sqrt{3}:1$

✖ $3:1$

✖ $2:1$

**Question Number : 51 Question Id : 1679436667 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The sum of two numbers is 275 and their HCF is 25. If each of the two numbers lies between 100 and 160, then the sum of their reciprocals is:

**Options :**

✖ $\frac{11}{250}$

✖ $\frac{11}{700}$

✔ $\frac{11}{750}$

✖ $\frac{11}{600}$

**Question Number : 52 Question Id : 1679436668 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

When 34294, 31467 and 26841 are divided by the greatest number $x$, the remainder in each case is $y$. What is the value of $(x+y)$?

**Options :**

✖ 357

✖ 359

✖ 363

✔ 370

**Question Number : 53 Question Id : 1679436669 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two buses, A and B, start at the same time from two stations towards each other, and after crossing each other, A and B reach their destinations after 6 hours 40 minutes and 3 hours 45 minutes, respectively. If the speed of B is 64 km/h, then what is the speed of A?

**Options :**

✖ 32 km/h

✖ 36 km/h

✔ 48 km/h

✖ 50 km/h

**Question Number : 54 Question Id : 1679436670 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

3 men and 2 women can complete a task in 8 days, whereas 2 men and 3 women can complete the same task in 10 days. How many women should assist 8 men to complete the task in $2\frac{1}{2}$ days?

**Options :**

✖ 8

✖ 10

✔ 12

✖ 14

**Sub-Section Number:** 2

**Sub-Section Id:** 167943381

**Question Shuffling Allowed :** Yes

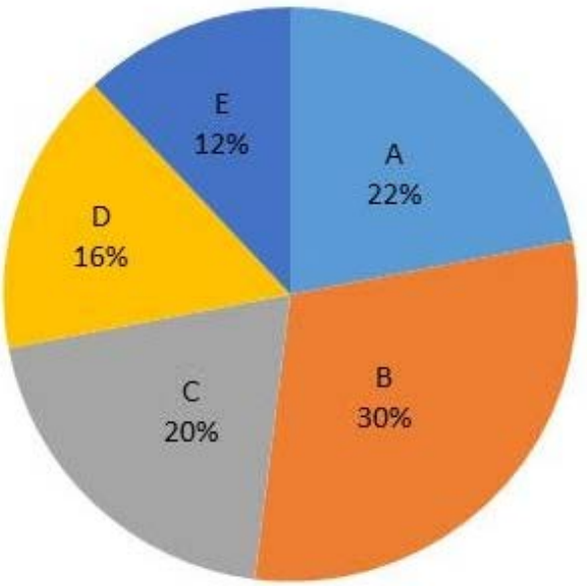
**Question Id : 1679436671 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No**

**Question Numbers : (55 to 56)**

Question Label : Comprehension

Study the following pie-chart and table and answer the questions that follow:

Total population of children below 12 years = 13200




Ratio between Boys and Girls

| Village | Boys : Girls |
|---|---|
| A | 5 : 6 |
| B | 9 : 13 |
| C | 3 : 5 |
| D | 5 : 7 |
| E | 7 : 4 |

**Sub questions**

**Question Number : 55 Question Id : 1679436672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

What is the ratio of the average number of boys (below 12 years) in villages A and D to that of girls in these two villages?

**Options :**

✖ 22 : 27

✖ 27 : 22

✖ 32 : 25

✔ 25 : 32

**Question Number : 56 Question Id : 1679436673 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The total number of boys in five villages is what per cent of the total number of children in these villages (nearest to a whole number)?

**Options :**

✖ 41

✔ 44

✖ 48

✖ 50

| | |
|---|---|
| **Sub-Section Number:** | 3 |
| **Sub-Section Id:** | 167943382 |
| **Question Shuffling Allowed :** | Yes |

**Question Id : 1679436674 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No**

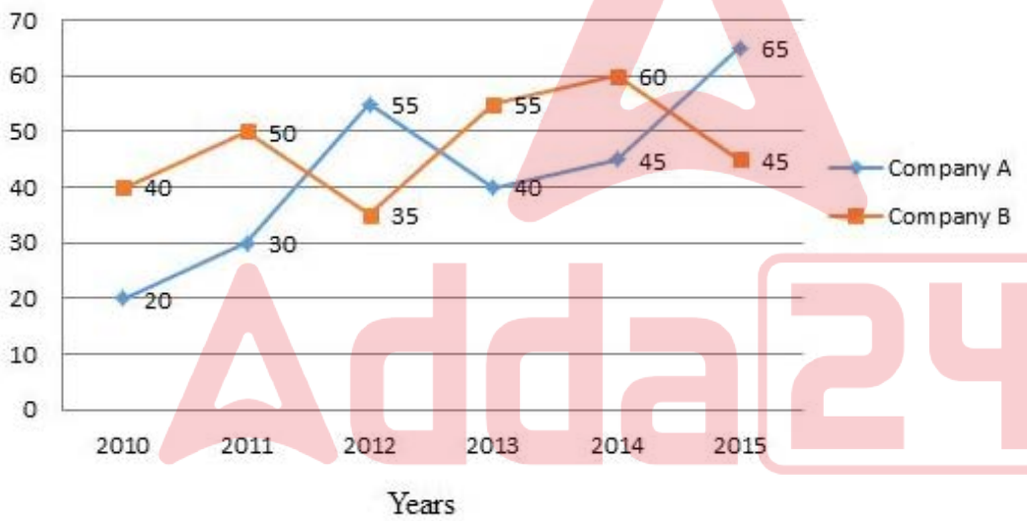
**Question Numbers : (57 to 58)**

Question Label : Comprehension

Study the following graph and answer the questions that follow:

Percent profit earned by Companies A and B over the years.

$$\text{Percent profit} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$




**Sub questions**

**Question Number : 57 Question Id : 1679436675 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In 2014, if the expenditure of companies A and B was the same, then what was the respective ratio of the income of A and B in that year?

**Options :**

✖ 28 : 31

✔ 29 : 32

✖ 29 : 33

✖ 13 : 15

**Question Number : 58 Question Id : 1679436676 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

If the expenditure of company B in 2010 was ₹ 3.6 lakhs, then what was its profit (in lakhs) in that year?

**Options :**

✖ 1.24

✖ 1.25

✔ 1.44

✖ 1.55

**Sub-Section Number:** 4
**Sub-Section Id:** 167943383
**Question Shuffling Allowed :** Yes

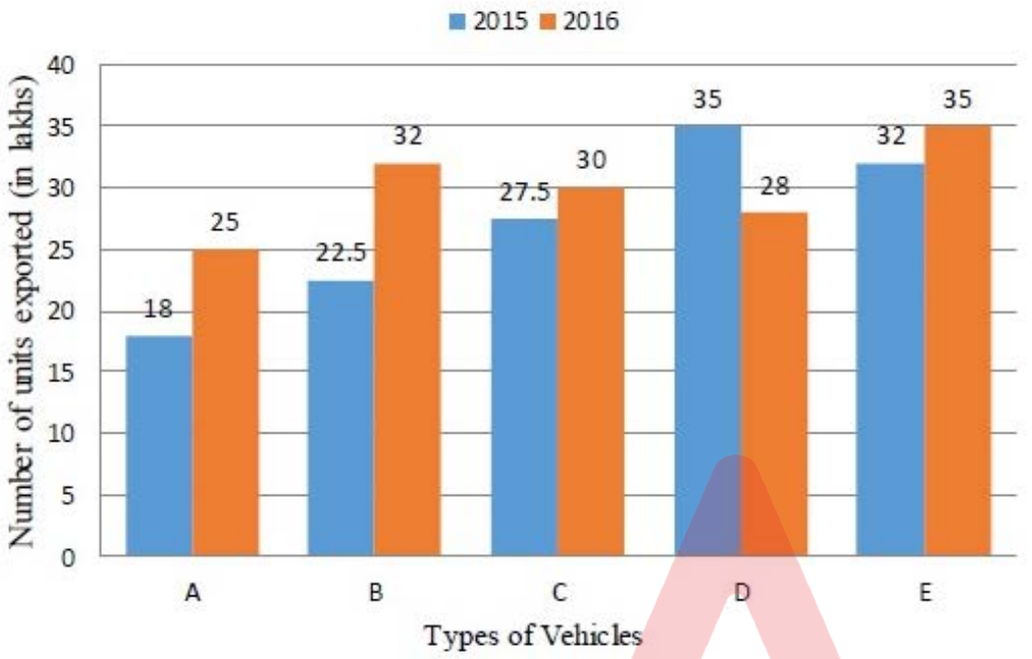
**Question Id : 1679436677 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No**

**Question Numbers : (59 to 60)**

Question Label : Comprehension

Study the following bar graph and answer the questions that follow:

Different types of vehicles (in lakhs) exported by a company in 2015 and 2016.




**Sub questions**

**Question Number : 59 Question Id : 1679436678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The percentage change (increase or decrease) in the number of vehicles exported from 2015 to 2016 was below 10% in case of vehicles:

**Options :**

✖ A and C

✖ B and E

✔ C and E

✖ D and C

**Question Number : 60 Question Id : 1679436679 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The total number of A, C and E type vehicles exported by the company in 2015 is what per cent more than the total number of B and D type vehicles exported in 2016 (correct to one decimal place)?

**Options :**

✖ 27.4

✖ 27.8

✖ 28.6

✔ 29.2

General English

**Group Number :** 4
**Group Id :** 167943120
**Group Maximum Duration :** 0
**Group Minimum Duration :** 0
**Revisit allowed for view? :** No
**Revisit allowed for edit? :** No
**Break time:** 0
**Group Marks:** 20

General English

**Section Id :** 167943179
**Section Number :** 1
**Section type :** Online
**Mandatory or Optional:** Mandatory
**Number of Questions:** 16
**Number of Questions to be attempted:** 16
**Section Marks:** 20
**Display Number Panel:** Yes
**Group All Questions:** No

**Sub-Section Number:** 1
**Sub-Section Id:** 167943384
**Question Shuffling Allowed :** Yes

**Question Number : 61 Question Id : 1679436680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the correct synonym of:

genuine

**Options :**

✖ fine

✔ real

✖ kind

✖ gentle

**Question Number : 62 Question Id : 1679436681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the correct antonym of:

jumbo

**Options :**

✖ monstrous

✔ miniature

✖ grand

✖ hilarious

**Question Number : 63 Question Id : 1679436682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the correct antonym of the underlined word to fill in the blank.

Aunt Beena is a stingy lady compared to my mother who is very _____.

**Options :**

✖ persuasive

✖ caring

✔ liberal

✖ protective

**Question Number : 64 Question Id : 1679436683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the most appropriate option to complete the sentence.

I met my sisters over _____ weekend before the last and we made our vacation plans.

**Options :**

✖ some

✖ any

✖ a

✔ the

**Question Number : 65 Question Id : 1679436684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Fill in the blank with the appropriate word.

Anna _____ not answer simple questions in English even though she had been learning English for a year.

**Options :**

✔ could

✖ is

✖ were

✖ was

**Question Number : 66 Question Id : 1679436685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Fill in the blank with the appropriate word.

I am not a movie fan. I _____ watch movies on television.

**Options :**

✖ often

✖ always

✔ rarely

✖ almost

**Question Number : 67 Question Id : 1679436686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the following sentence four words or phrases have been underlined. One of them is incorrect. Choose the INCORRECT word or phrase from the given options.

Competencies are characteristics that we use to achieve success. These characteristics or traits can be included things like knowledge, aspects of leadership, self-esteem, skills or relationship-building.

**Options :**

✗ we use to

✓ can be included

✗ aspects of leadership

✗ or relationship-building.

**Question Number : 68 Question Id : 1679436687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the following sentence four words or phrases have been underlined. One of them is incorrect. Choose the INCORRECT word or phrase from the given options.

Savita's neighbour said that however hard she will try, she would not be able to become the table tennis champion of the college.

**Options :**

✗ said that

✓ will try

✗ be able to become

✗ of the college

**Question Number : 69 Question Id : 1679436688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the passive voice form of the given sentence.

The gardener warned the children not to pluck flowers.

**Options :**

✗ The gardener warned the children not to pluck flowers.

✓ The children were warned by the gardener not to pluck flowers.

✗ The gardener is warning the children not to pluck flowers.

✗ The children warned the gardener not to pluck flowers.

**Question Number : 70 Question Id : 1679436689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the most appropriate indirect speech form for the following sentence.

Anjali said to Seema, "I'm not going to Manali with you. I know there are other people waiting to grab my job and I don't want to lose it."

**Options :**

✗ Anjali said I'm not going to Manali with you Seema. I know there are other people waiting to grab my job and I don't want to lose it.

✗ Anjali said, "I'm not going to Manali with you. I know there are other people waiting to grab my job and I don't want to lose it."

✓ Anjali told Seema that she was not going to Manali with her as she knew there were other people waiting to grab her job and she did not want to lose it.

✗ Anjali said Seema that she's not going to Manali with her. She knows there are other people waiting to grab her job and she don't want to lose it."

**Question Number : 71 Question Id : 1679436690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the option that best combines the two given sentences.

Caring for all human beings is the essence of all religions. You should not forget it.

**Options :**

✗ You should not forget it that caring for all human beings is the essence of all religions.

✓ You should not forget that caring for all human beings is the essence of all religions.

✗ Caring for all human beings is the essence of all religions what you should not forget.

✗ Caring for all human beings which is the essence of all religions you should not forget.

**Question Number : 72 Question Id : 1679436691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the sentence that is correctly punctuated.

**Options :**

✗ "What a pleasant day? "said Prabhu, "lets go on a picnic to Surajkund."

✓ "What a pleasant day!" said Prabhu, "Let's go on a picnic to Surajkund."

✗ What a pleasant day?" said Prabhu, "lets go on a picnic to Surajkund."

✗ "What a pleasant day, said Prabhu," "Lets go on a picnic to Surajkund."

**Question Number : 73 Question Id : 1679436692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the word that is correctly spelt.

**Options :**

✗ Immagination

✓ Desperate

✗ Controvertial

✗ Aknowledge

**Question Number : 74 Question Id : 1679436693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Fill in the blank with the appropriate idiomatic expression.

The teacher _____ the students' request for an outdoor event in the hills.

**Options :**

✗ cut a sorry figure at

✗ was at arm's length to

✗ took to task

✓ turned a deaf ear to

**Question Number : 75 Question Id : 1679436694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Fill in the blank with the appropriate phrase/phrasal verb.

We found ourselves _____ of food supplies after being stranded in the hills for 5 days.

**Options :**

✗ running down

✓ running out

✗ looking out

wearing out

| | |
|---|---|
| **Sub-Section Number:** | 2 |
| **Sub-Section Id:** | 167943385 |
| **Question Shuffling Allowed :** | Yes |

**Question Id : 1679436695 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No**

**Question Numbers : (76 to 80)**

Question Label : Comprehension

Read the following passage and answer the questions that follow.

Life is as vast as space, but somehow we use our brain in a limited way. Our brain has been using thought as its instrument for millions of years. Thought created 'i'. This creation has had tremendous effect on the brain as it is limited to 'i'. Our whole life is lost in being a doctor, engineer or something else, and hence, we have pigeonholed ourselves into the roles of our professions. So our love is limited to our specific role. We have discarded the whole and limited ourselves to the parts. The profundity of life is lost.

Our mind is our thoughts and thoughts are nothing but what we talk to ourselves. Our mind is constantly chattering. It is a kind of inner self-talk, and it is constantly rehearsing the future, chewing its experiences. This is because you have no one to talk to, so you are talking to yourself. If you can peep into your mind, you will find that the mind is madness in motion. Perhaps someday, an instrument can look into the audio-video of our thoughts. Then it may become clear that it is some kind of madness operating. But we never look into ourselves, for if we look, we can see the madness of our minds.

The Katha Upanishad says, "We always look outward and never look within; thus we destroy ourselves. Only the courageous person looks within." When you face your madness with courage, then your intelligence will search for sanity beyond the maddening mind.

When you look deeply within, you will realise you are not mind, but there is an inner space where the mind exists. The mind is like a cloud, and you are the sky in which the cloud is floating. Only in that transcendence, madness of the mind will drop.

**Sub questions**

**Question Number : 76 Question Id : 1679436696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

According to the passage, how have human beings been affected by the thought of self?

**Options :**

✖ People are becoming doctors and engineers.

✖ The brain is getting smarter.

✖ Professions are getting narrowed.

✔ People's love is narrowed to their own selves.

**Question Number : 77 Question Id : 1679436697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose the INCORRECT option to complete the meaning of the sentence as per the given passage.

Our mind is always _____.

**Options :**

✔ looking inwards

✖ talking to itself

✖ reflecting on experience

✖ planning the future

**Question Number : 78 Question Id : 1679436698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Choose an option to fill in the blank in the following sentence.

"We always look outward and never look within …
Only the courageous person looks within."
In this sentence the writer suggests that a person should be _____ in his or her search for the real self.

**Options :**

✖ mad

✔ fearless

✖ intelligent

✖ outgoing

**Question Number : 79 Question Id : 1679436699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Complete the statement with the most appropriate option as per the given passage.

If the body is like the _____, the mind is like the _____.

**Options :**

✖ cloud; sky

✖ sky; air

✔ sky; cloud

✖ cloud; air

**Question Number : 80 Question Id : 1679436700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

According to the passage, what can bring an end to man's obsession with the self?

**Options :**

✖ Having an audio-video of the working of the mind.

✔ Understanding the mind to realise the innermost self.

✖ Floating in the air all through the day.

✖ Becoming like the beautiful blue sky.

General Hindi

| | |
|---|---|
| **Group Number :** | 5 |
| **Group Id :** | 167943121 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |

**Group Marks:** 20

General Hindi

**Section Id :** 167943180
**Section Number :** 1
**Section type :** Online
**Mandatory or Optional:** Mandatory
**Number of Questions:** 16
**Number of Questions to be attempted:** 16
**Section Marks:** 20
**Display Number Panel:** Yes
**Group All Questions:** No

**Sub-Section Number:** 1
**Sub-Section Id:** 167943386
**Question Shuffling Allowed :** Yes

**Question Id : 1679436701 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No**

**Question Numbers : (81 to 85)**

Question Label : Comprehension

निम्नलिखित गद्यांश को पढ़कर पूछे गए प्रश्नों के उत्तर लिखिए।

भाग्य और 'पुरुषार्थ' वस्तुत: कार्य और कारण की तरह एक - दूसरे से जुड़े हुए है। पुरुषार्थ अथवा कर्म यदि नहीं है तो भाग्य कहाँ से टपकेगा और यदि भाग्य साथ नहीं दे रहा है तो हमारे भीतर कर्म की, पुरुषार्थ की सद्प्रेरणा और संकल्प पैदा कैसे हो सकेगा। इसीलिए कुछ कवि और विचारक दोनों में भेद नहीं करते। तुलसीदास जी ने कहा है-

कर्म- प्रधान विश्व करि राखा।
कोकरि तर्क बढ़ाबहि साखा।।

यहाँ कर्म और भाग्य को पर्यायवाची माना गया है तथा कहा गया है कि सारा संसार ही कर्म के अधीन है। हम जैसा कर्म करते हैं, वैसा ही फल भोगते हैं। फूलो के बीज बोने पर फूल और फलों के बीज बोने पर फलों की प्राप्ति होगी; किंतु कीकर रोपने से आम पैदा नहीं हो सकते और शूल फूलों में नहीं बदल सकते। मुंबई जाने वाली गाड़ी में बैठ कर हम देवी- देवताओं से कलकत्ता पहुँचने की कितनी भी प्रार्थनाएँ करें, पर गाड़ी हमें मुंबई ही ले जाएगी; किंतु हम मुंबई सकुशल पहुँच सकेंगे या नहीं, यह भी शत- प्रतिशत नहीं कहा जा सकता। व्यक्ति मुंबई का टिकट खरीद कर, ठीक समय पर ठीक गाड़ी में बैठता है, पर पहुँच जाता है अस्पताल अथवा स्वर्ग में। भाग्य की इस विड़म्बना को भी कौन अस्वीकार कर सकता है? इसीलिए देखा यह जाता है कि संसारके बड़े-बड़े कर्मवीर, साहसी विजेता और धुरंदर प्रशासक भी भाग्य के तूफ़ान में फँस जाने पर व्याकुल होकर कह उठते हैं।

देन चहै करतार जिन्हें सुख, सो तो रहीम टरै।
उद्धम पौरुषकीन्है बिना धन आवत आपहीं हाथ पसारै।।

अर्थात ईश्वर जिन्हें सुख देना चाहता है, उन्हें बिना परिश्रम किए ही धन प्राप्त हो जाता है।

रहीम - जैसा कर्मवीर, सेनापति, जिसके जीवन के तीस से भी अधिक वर्ष युद्धभूमि में बीते, जो अपने समय का प्रक्यत कूटनीतिज्ञ, युद्ध- विशारद, भूगर्भशास्त्री, ज्योतिषी, कवि और विचारक था, वह भी भाग्य के क्रूर- चक्र में फँस जाने पर कह उठता है- यदि होनी अथवा भाग्य अपने हाथ में होता तो राम स्वर्ण-मृग के पीछे न जाते और रावण द्वारा सीता का हरण भी न होता। इसी प्रकार यदि पुरुषार्थ करने पर ही संपत्ति प्राप्त होती, तो भीम जैसा बलशाली योद्धा राजा विराट के यहाँ रसोइए का काम क्यों करता?

**Sub questions**

**Question Number : 81 Question Id : 1679436702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'कर्म प्रधान विश्व करि राखा' का अर्थ है:

**Options :**

✗ जैसा कर्म वैसा कल

✗ जैसा कल वैसा कर्म

✓ यह दुनिया कर्म प्रधान बनाई है

✗ कर्म बिना कुछ नहीं

**Question Number : 82 Question Id : 1679436703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

बैठता है गाड़ी में पहुँचता है अस्पताल, यह विधान है:

**Options :**

✗ देवी देवतओं का

✗ कर्म की प्रधानता का

✗ पुरुषार्थ का

✓ भाग्य का

**Question Number : 83 Question Id : 1679436704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

देना चाहें करतार जिन्हें - पंक्ति में महत्व है:

**Options :**

✓ भाग्य का

✗ कर्म का

✗ साहस का

✗ विद्या का

**Question Number : 84 Question Id : 1679436705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

गद्यांश के अनुसार रहीम जी क्या **नहीं** थे?

**Options :**

✗ कर्मवीर

✓ भाग्यावीर

✗ भुद्वीर

✗ सेनानायक

**Question Number : 85 Question Id : 1679436706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

राम का स्वर्णमृग के पीछे जाना:

**Options :**

✗ स्वर्णलोलुपता के कारण

✗ सीता की आज्ञा के कारण

✗ निर्भयता के कारण

✓ भाग्य प्रधानता के कारण

**Sub-Section Number:** 2
**Sub-Section Id:** 167943387
**Question Shuffling Allowed :** Yes

**Question Number : 86 Question Id : 1679436707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

निम्नलिखित में से कौन सा शब्द 'तत्सम' है?

**Options :**

✔ प्रिय

✖ मोती

✖ सूरज

✖ नींद

**Question Number : 87 Question Id : 1679436708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'तद्भव' शब्द छांटिए:

**Options :**

✖ विवाह

✔ पूत

✖ चन्द्रमा

✖ चक्र

**Question Number : 88 Question Id : 1679436709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'नीलाम्बर' शब्द में कौन सा समास है?

**Options :**

✔ कर्मधारय

✖ तत्पुरुष

✖ बहुब्रीहि

✖ अव्ययीभाव

**Note: For this question, discrepancy is found in question/answer. So,this question is ignored for all candidates.**

**Question Number : 89 Question Id : 1679436710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'दिगन्त' शब्द में सन्धि है:

**Options :**

✖ यण्संधि

✔ व्यंजन संधि

✖ विसर्ग संधि

✖ अयादी संधि

**Question Number : 90 Question Id : 1679436711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

आँख का पर्यायवाची शब्द कौन सा है?

**Options :**

✔ लोचन

✖ मोचन

✖ विमोचन

✖ आकुंचन

**Question Number : 91 Question Id : 1679436712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'घृणा' शब्द का विलोम है:

**Options :**

✖ वैर

✔ प्रीत

✖ शत्रुता

✖ स्नेहिल

**Question Number : 92 Question Id : 1679436713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'जो कभी तृप्त न होता हो' के लिए एक शब्द होगा:

**Options :**

✗ संतृप्त

✓ अतृप्त

✗ तर्पण

✗ तृप्ति

**Question Number : 93 Question Id : 1679436714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

निम्नलिखित में से कौन सा शब्द पुंलिंग हैं?

**Options :**

✗ लाश

✗ तलाश

✗ मालिश

✓ होश

**Question Number : 94 Question Id : 1679436715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'दौड़' शब्द है:

**Options :**

✗ विशेषण

✓ भाव वाचक संज्ञा

✗ सर्वनाम

✗ क्रिया विशेषण

**Question Number : 95 Question Id : 1679436716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

निम्नलिखित में से अशुद्ध वाक्य कौन सा है?

**Options :**

✔ दयानंद जी में धार्मिक प्रवृति बढ़ गया था।

✖ पृथ्वी पर अंधकार ही अंधकार हो जाएगी।

✖ उसका बचपन गरीबी में बीता।

✖ नीलियाँ साड़ियाँ ही सुंदर लगी।

**Note: For this question, discrepancy is found in question/answer. So,this question is ignored for all candidates.**

**Question Number : 96 Question Id : 1679436717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

कौन से वाक्य में सकर्मक क्रिया है?

**Options :**

✖ वह सो रही है।

✖ तू भी क्यों शर्माता है?

✖ शीला बहुत तेज दौडती है।

✔ वह बहुत खाती है।

**Question Number : 97 Question Id : 1679436718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

सदा बहुवचन में ही प्रयुक्त होने वाला शब्द है:

**Options :**

✖ साधु

✖ बालक

✔ प्राण

✖ पाँसू

**Question Number : 98 Question Id : 1679436719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

मुनि शब्द का बहुवचन (अविभक्तिक) होगा:

**Options :**

✗ मुनियों

✗ मुनिएँ

✗ मुनियो

✓ मुनि

**Question Number : 99 Question Id : 1679436720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'आय के अनुसार ही खर्च किया जाना चाहिए' इस अर्थ को व्यक्त करने के लिए लोकोक्ति होती है:

**Options :**

✗ दुविधा में दोनों गए माया मिली न राम।

✓ तेते पाँव पसारिए जेती लंबी सौर।

✗ जाको राखै साइया मार सकै ना कोय।

✗ सहज पके से मीठा होय।

**Question Number : 100 Question Id : 1679436721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

'बुरी हालत करना' के लिए मुहावरा है:

**Options :**

✓ मिट्टी ख़राब करना।

✗ मिट्टी के मोल बिकना।

✗ मुँह पर हवाईया उड़ना।

✗ मुँह पर उत्तर देना।

Subject Related

| | |
|---|---|
| **Group Number :** | 6 |
| **Group Id :** | 167943122 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

| | |
|---|---|
| **Section Id :** | 167943181 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943388 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 101 Question Id : 1679436722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The dimension of Planck's constant is same as that of:

**Options :**

✖ Angular velocity

✔ Angular momentum

✖ Linear momentum

✖ Rotational kinetic energy

**Question Number : 102 Question Id : 1679436723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

(farad × ohm) is equivalent to:

**Options :**

✔ sec

✖ $sec^{-1}$

✖ $sec^{2}$

✖ $sec^{-2}$

**Question Number : 103 Question Id : 1679436724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In a mathematical treatment the expression of a function of velocity, u, appears as $e^{-bu^2}$. The dimension of b is:

**Options :**

✖ $L^2T^{-2}$

✖ $ML^2T^{-2}$

✔ $L^{-2}T^2$

✖ $MLT^{-1}$

**Question Number : 104 Question Id : 1679436725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

$kgm^2s^{-3}A^{-1}$ is equivalent to:

**Options :**

✖ Henry

✖ Watt

✖ Ampere

✔ volt

**Question Number : 105 Question Id : 1679436726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In an experiment with a mirror and scale galvanometer, the scale used has its smallest division equal to 1mm. for a current the direct and reverse readings were respectively 14.4 cm and 14.5 cm, the reading should be recorded as:

**Options :**

✖ 14.4 cm

✔ 14.5 cm

✖ 14.45 cm

✖ $(14.4 \times 14.5)^{\frac{1}{2}}$ cm

**Question Number : 106 Question Id : 1679436727 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The refractive index of glass with respect to air was being determined using the paper, rectangular glass slab and pin method by applying the formula:

$\mu = \frac{þ_{air}}{þ_{glass}}$, where the symbols have their usual meanings. For a particular reading the data were $þ_{air} = 6\text{cm}$, $þ_{glass} = 4$ cm. These were measured by a scale whose smallest division was 1 mm. Find the maximum possible percentage proportional error for the above measurement

**Options :**

✔ 4.17

✖ 2.83

✖ 0.83

✖ 0.17

**Question Number : 107 Question Id : 1679436728 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

1 watt expressed in cal/sec is equal to:

**Options :**

✖ 0.042

✔ 0.239

✖ 14.34

✖ 860.42

**Question Number : 108 Question Id : 1679436729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

$t$ °C is equivalent to $(t + 273.15)$ kelvin, that is $T$K. Then in Fahrenheit scale $T$K will be equivalent to:

**Options :**

✖ $1.8(t+273)$

✖ $\frac{5}{9}\left(t+\frac{32}{9}\right)$

✔ $1.8(t+290.93)$

✖ $\frac{5}{9}(t+459.67)$

**Question Number : 109 Question Id : 1679436730 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two inertial frames of reference defined by space and time co-ordinates $(x,y,z,t)$ ; $(x',y',z',t')$ are such that the primed system moves with a uniform velocity with respect to the unprimed system. The velocity of a body measured by the two systems are $u$ and $u'$ respectively. Given below are four sets of equation, linking the $x,y,z$ components of $u$ and $u'$ ($v$ is directed along $x,x'$ - axes)

(p) $u'_x = u_x - v,\ u'_y = u_y - v,\ u'_z = u_z - v$

(q) $u'_x = u_x - v,\ u'_y = u_y,\ u'_z = u_z$

(r) $u'_x = u_x + v,\ u'_y = u_y + v,\ u'_z = u_z + v$

(s) $u'_x = u_x + v,\ u'_y = u_y,\ u'_z = u_z$

Choose the correct set of equations.

**Options :**

✖ (p)

✔ (q)

✖ (r)

✖ (s)

**Question Number : 110 Question Id : 1679436731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The displacement ( $x$ ) vs. time ( $t$ ) of a particle follows the condition:

$x^2 = pt^2 + 2qt + r$

Where $p$ , $q$ and $r$ are constants. It is found that the acceleration of the particle varies at $x^n$ , then $n$ is equal to?

**Options :**

✖ $-1$

✖ $-2$

✔ $-3$

✖ $-4$

**Question Number : 111 Question Id : 1679436732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle moves along a curved path, given by $y = ax^2$ and the $x$ component of its velocity is a constant equal to 'c'. Its acceleration is equal to:

**Options :**

✖ $\frac{1}{2}ac^2$

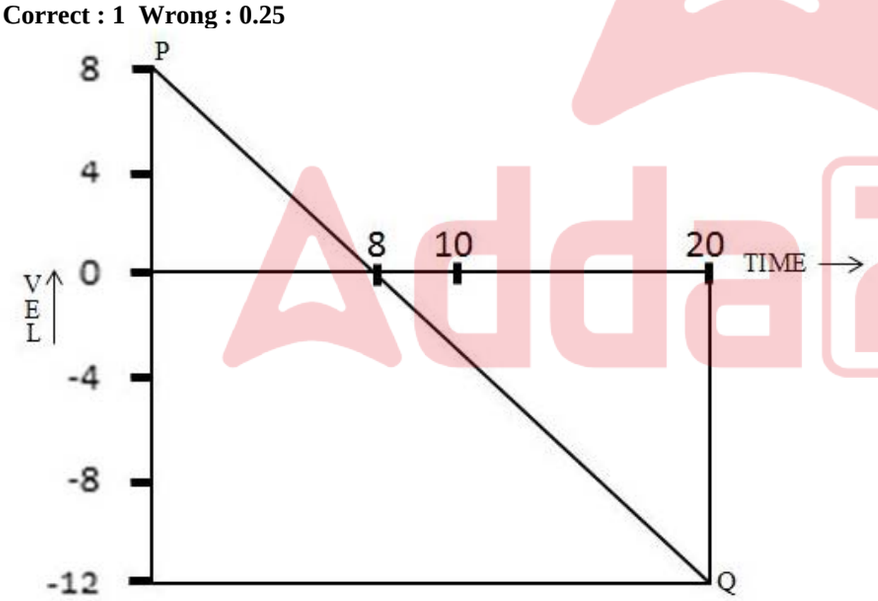
✖ $ac^2$

✔ $2ac^2$

✖ $4ac^2$

**Question Number : 112 Question Id : 1679436733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**




The velocity vs. time graph, PQ of a particle is shown in the figure for the time interval $t = 0$ sec to $t = 20$ sec. find the displacement of the particle during this period in the length unit chosen for the above graph.

**Options :**

✖ 98

✔ 104

✖ 128

✖ 144

**Question Number : 113 Question Id : 1679436734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle moves in three dimension such that its position vs. time equations ($x$ , $y, z$ in metres and $t$ in seconds) are:

$x = t^2 + t + 2$ , $y = t^2 - t + 1$ , $z = 2sin\pi t$

Find the expression of the acceleration vector at $t = 1$ sec.

**Options :**

✖ $4(\hat{i} - 9\hat{j})\ ms^{-2}$

✖ $(2\hat{i} + 3\hat{j} + \hat{k})\ ms^{-2}$

✖ $(2\hat{i} - \hat{j} + 2\hat{k})\ ms^{-2}$

✔ $2(\hat{i} + \hat{j})\ ms^{-2}$

**Question Number : 114 Question Id : 1679436735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The velocity of a particle in $ms^{-1}$ is $(2\hat{i} - 3\hat{j} + 4\hat{k})$. What is the component of this velocity along the direction of the vector $(\hat{i} + \hat{j} + \hat{k})$?

**Options :**

✖ $3\sqrt{3}\ ms^{-1}$

✖ $2\sqrt{3}\ ms^{-1}$

✔ $\sqrt{3}\ ms^{-1}$

✖ $\frac{\sqrt{3}}{3}\ ms^{-1}$

**Question Number : 115 Question Id : 1679436736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A man rows a certain distance directly across a river and downstream in time $a$ sec and $b$ sec respectively. If the man can row in still water at the rate of 10 $ms^{-1}$ and the river flows at the rate of 4 $ms^{-1}$. Find the ratio $a : b$.

**Options :**

✔ $\sqrt{\frac{7}{3}}$

✖ $\frac{1}{2}\sqrt{7}$

✖ $\frac{1}{2}\sqrt{5}$

✖ $\sqrt{\frac{5}{3}}$

**Question Number : 116 Question Id : 1679436737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body is projected at an angle $30^\circ$ to the horizontal, so as just to clear two walls of equal height 5m at a distance 10m from each other. The total range of the body in meters is?

**Options :**

✖ 20

✖ $10\sqrt{3}$

✔ $10\cot 15^\circ$

✖ $20\cot 15^\circ$

**Question Number : 117 Question Id : 1679436738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A glass plate can just support a weight of 54 kg. The plate with a body on it is raised with gradually increasing acceleration. It is found that the plate breaks when the acceleration is 8 $ms^{-2}$. Find the mass of the body in kg (take $g = 10\ ms^{-2}$).

**Options :**

✖ 120

✖ 90

✖ 60

✔ 30

**Question Number : 118 Question Id : 1679436739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A projectile of mass 40 kg is shot vertically upwards with a velocity 80 m/s. After 5sec it explodes into two equal parts, and one of them travels vertically up with a velocity 100m/s. What is the velocity of the other fragment (in magnitude and direction) at this instant? ( take g = 10 m/ $s^2$ )

**Options :**

✗ 40 m/s upward

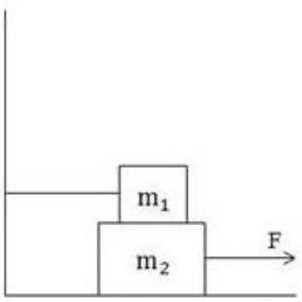
✓ 40 m/s downward

✗ 20 m/s upward

✗ 20 m/s downward

**Question Number : 119 Question Id : 1679436740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**




With reference to the figure shown, the force required to pull out the block having mass ' $m_2$ ' with an acceleration '$a$' (coefficient of friction between the surfaces concerned = μ) is?

**Options :**

✗ $(2m_2 + m_1)\mu g + m_2 a$

✗ $(m_2 + m_1)\mu g + m_2 a$

✓ $(2m_1 + m_2)\mu g + m_2 a$

✗ $(2m_1 + m_2)\mu g + (m_1 + m_2)a$

**Question Number : 120 Question Id : 1679436741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body of mass of 10 kg is placed on a smooth inclined plane. It is supported separately by a force acting horizontally, and then by a force acting parallel to the plane. If the normal reactions in these cases are $N_1$ and $N_2$ respectively, then (g = 10m/ $s^2$ )

**Options :**

✓ $N_1 N_2 = 10^4$ newton$^2$

✖ $N_1N_2 = 2 \times 10^4$ newton$^2$

✖ $N_1N_2 = 5 \times 10^3$ newton$^2$

✖ $N_1N_2 = 4 \times 10^3$ newton$^2$

Subject Related

| | |
|---|---|
| **Group Number :** | 7 |
| **Group Id :** | 167943123 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

| | |
|---|---|
| **Section Id :** | 167943182 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943389 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 121 Question Id : 1679436742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass 10 gm on a smooth horizontal table is fastened to one end of a fine string which passes through a small hole in the table. It supports at its other end a particle of mass 20gm. Find the velocity with which the particle on the table be projected horizontally so as to describe a circle of radius 5cm. (take g = 10m/ $s^2$ )

**Options :**

✖ 0.5 m/s

✔ 1 m/s

✖ 1.25 m/s

✖ 1.5 m/s

**Question Number : 122 Question Id : 1679436743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two blocks of mass as $m_1$ and $m_2$ connected to each other by a massless inextensible string length $l$ and these are placed along a diameter of a turn table. There is no friction between $m_2$ and the surface of the table whereas the friction between $m_1$ and the surface of the table is μ. The table is rotating with an angular velocity ω about a vertical axis passing through the centre of the turn table. The masses $m_1$ and $m_2$ are lying at distances $r_1$ and $r_2$ respectively from the centre of the turn-table. If the masses are observed to be at rest with respect to an observer on the turn table. Calculate the frictional force on $m_1$.

**Options :**

✖ $m_1(r_1 - r_2)\omega^2$

✖ $m_2(r_1 - r_2)\omega^2$

✔ $(m_1r_1 - m_2r_2)\omega^2$

✖ $(m_1r_1 + m_2r_2)\omega^2$

**Question Number : 123 Question Id : 1679436744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which among the following as/are a no-work force(s)?

(p) Force experienced by a charged particle moving in a uniform magnetic field.
(q) Normal reaction when a man is walking on a smooth road
(r) Tension in the string of a simple pendulum
(s) Viscous drag on a body moving through a fluid medium

**Options :**

✖ Only (q)

✖ Only (p) and (r)

✔ (p), (q) and (r)

✖ Only (s)

**Question Number : 124 Question Id : 1679436745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass 10 gm moves under the influence of a force field.
$\vec{F} = 2(\sin t\,\hat{i} + \cos t\,\hat{j})$ in newton's. If the particle is initially at rest at the origin of co-ordinates, then the work on the particles upto $t = \pi$sec is?

**Options :**

✔ 800 joules

✖ 1000 joules

✖ 1200 joules

✖ 1600 joules

**Question Number : 125 Question Id : 1679436746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass $m$ is moving under the influence of a consecutive force field given by $\vec{F} = -kr^3\hat{r}$. Then, pick up the correct alternative from the following:

**Options :**

✖ $\frac{1}{2}m\left(\frac{dr}{dt}\right)^2 + \frac{1}{3}kr^2 = $ a constant

✔ $\frac{1}{2}m\left(\frac{dr}{dt}\right)^2 + \frac{1}{4}kr^4 = $ a constant

✖ $\frac{1}{2}m\left(\frac{dr}{dt}\right)^2 + \frac{1}{5}kr^5 = $ a constant

✖ $\frac{1}{2}m\left(\frac{dr}{dt}\right)^2 = $ a constant

**Question Number : 126 Question Id : 1679436747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

If a bucket weighing 1kg is lowered at a constant acceleration $2.5\text{m/s}^2$ by a string (assumed to be massless) by a distance of 4m, the work done by the string will be ( take $g = 10\text{m/s}^2$ ).

**Options :**

✖ 10 J

✔ $-30$ J

✖ $-\frac{160}{3}$ J

✖ $\frac{160}{3}$ J

**Question Number : 127 Question Id : 1679436748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A car of mass m accelerates on a smooth horizontal road under the action of a driving force. In the process its speed increases from $v_1$ to $\left(\frac{6x}{m} + {v_1}^3\right)^{\frac{1}{3}}$ within a distance $x$ and the engine develops a constant power output $p$. if all the quantities are in SI units, the value of $P$ in watt is equal to?

**Options :**

✔ 2

✖ 2.5

✖ 3

✖ 4

**Question Number : 128 Question Id : 1679436749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A ball strikes another ball, having four times its mass, which is moving with one-third of its velocity in the same direction. If the impact reduces the first ball to rest, the coefficient of restitution is:

**Options :**

✖ $\frac{3}{4}$

✖ $\frac{3}{8}$

✖ $\frac{5}{8}$

✔ $\frac{7}{8}$

**Question Number : 129 Question Id : 1679436750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A block of mass 2kg sliding on a smooth horizontal surface with a uniform speed 1m $s^{-1}$ is brought to rest by a spring in its path, which gets compressed by 2m in the process. What is the spring constant is newton per meter?

**Options :**

✗ $\frac{1}{2}$

✓ 1

✗ $\sqrt{2}$

✗ $\frac{\sqrt{3}}{2}$

**Question Number : 130 Question Id : 1679436751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two bodies move under their mutual action and reaction only. No external force is acting on the system. Based on the above examine the statements given below:

(p) The centre of mass of the system moves with an increasing velocity.

(q) The centre of mass of the system moves with a decreasing velocity.

(r) The centre of mass moves with a uniform velocity.

(s) It is possible to detect a frame of reference in which the centre of mass is at rest.

**Options :**

✗ Only (p) is true

✗ Only (q) is true

✗ Only (r) is true

✓ Both (r) and (s) are true

**Question Number : 131 Question Id : 1679436752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Seven particles of equal mass are placed at the angular points of a regular octagon. The C.M. of the system is found to be at a distance n OA from O, the centre of the octagon, where A is the unoccupied angular point. Then 'n' is equal to?

**Options :**

✗ $\frac{1}{6}$

✓ $\frac{1}{7}$

✗ $\frac{1}{8}$

✖ $\frac{1}{14}$

**Question Number : 132 Question Id : 1679436753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Determine the moment of inertia of a uniform rod of length L and mass M about an axis passing through its C.M. and perpendicular to the rod.

**Options :**

✖ $\frac{1}{3}ML^2$

✖ $\frac{1}{6}ML^2$

✔ $\frac{1}{12}ML^2$

✖ $\frac{1}{24}ML^2$

**Question Number : 133 Question Id : 1679436754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A rod AB of length 6 m slides in the $xy$-plane with its end A on the $y$-axis which is vertical. When the rod makes an angle $45°$ with the vertical, the linear acceleration of A is $1\ ms^{-2}$ down the y-axis. What is its angular acceleration at this instant in radians $sec^{-2}$?

**Options :**

✖ $\left\{\frac{\sqrt{2}}{6}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in clockwise sense

✔ $\left\{\frac{\sqrt{2}}{6}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in anticlockwise sense

✖ $\left\{\frac{\sqrt{2}}{3}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in clockwise sense

✖ $\left\{\frac{\sqrt{2}}{3}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in anticlockwise sense

**Question Number : 134 Question Id : 1679436755 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A dice of mass '$m$', which has a radius 'a' can rotate freely about a horizontal axis through 0. The distance of 0 from the centre of the dice is $r$ ($r < a$). If the dice is released in this position it acquires an angular acceleration arising out of the torque due to the weight of the dice. Find the value of '$r$' for which this angular acceleration is maximum.

**Options :**

✖ $\frac{a}{2}$

✖ $\frac{a}{4}$

✔ $\frac{a}{\sqrt{2}}$

✖ $\frac{a}{2\sqrt{2}}$

**Question Number : 135 Question Id : 1679436756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A gymnast stands on a freely rotating platform holding heavy weights in his hands. With his arms stretched parallel to the platform, his rotational speed is 1 rev per sec, whereas when he draws them down along his body, his rotational speed increases to 3 rev per sec. The ratio of his moment of inertia in the two cases is:

**Options :**

✖ 9 : 1

✖ $\sqrt{3}$ : 1

✖ 9 : 2

✔ 3 : 1

**Question Number : 136 Question Id : 1679436757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two particles of masses 2 m and 3 m move under the influence of their mutual action and reaction only, no external force is acting on the system. They execute uniform circular motion about their common centre of mass, the distance between them being '*R*'. If the total angular momentum of the system is L, then their angular velocities are:

**Options :**

✖ $\frac{L}{2\,mR^2}$

✖ $\frac{L}{6\,mR^2}$

$\frac{5L}{6\,mR^2}$

$\frac{L}{3\,mR^2}$

**Question Number : 137 Question Id : 1679436758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A ball is projected vertically upwards from a point A to reach its greatest height B. It again returns to the point B. In course of the above journey is passes through two points P and Q twice (Q is above P). Now, which among the following options is true?

**Options :**

Time of rise from P to Q is greater than Time of fall from Q to P

Time of rise from P to Q is equal to the Time of fall from Q to P

Time of rise from P to Q is less than Time of fall from Q to P

(Time of rise from P to Q) plus (Time of fall from Q to P) is equal to Half of the total time of flight.

**Note: For this question, discrepancy is found in question/answer. So,this question is ignored for all candidates.**

**Question Number : 138 Question Id : 1679436759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A chord is drawn from one end of the vertical diameter to any point of a vertical circle. The inclination of the chord to the vertical is ' $\alpha$ '. The time taken by a particle to slide down the chord is:

**Options :**

Proportional to $\cos\alpha$

Independent of $\alpha$

Proportional to $\cot\alpha$

Proportional to $\sqrt{\cot\alpha}$

**Question Number : 139 Question Id : 1679436760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which among the Kepler's laws of planetary motion would still remain valid had the gravitational force not followed the inverse square variation?

**Options :**

✗ Only First law

✗ Only Third law

✗ First and Third law

✓ Only Second law

**Question Number : 140 Question Id : 1679436761 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A spherical shell (i.e. hollow sphere) is made in a steel sphere of radius '$R$' such that the shell passes through the centre of the original steel sphere. The mass of the steel sphere was '$M$'. It is found that the force of attraction exerted by this partly hollow sphere on a particle of mass '$m$' which lies at a distance '$x$' from the centre of the steel sphere on the straight line joining the centres of the sphere and the hollow is $\frac{GMm}{x^2}\left(1-\frac{1}{8y^2}\right)$. Then $y$ is equal to:

**Options :**

✓ $\left(1-\frac{R}{2x}\right)$

✗ $\left(1+\frac{R}{2x}\right)$

✗ $\left(1-\frac{R}{x}\right)$

✗ $\left(1+\frac{R}{x}\right)$



Subject Related

| | |
|---|---|
| **Group Number :** | 8 |
| **Group Id :** | 167943124 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

| | |
|---|---|
| **Section Id :** | 167943183 |
| **Section Number :** | 1 |

| | |
|---|---|
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943390 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 141 Question Id : 1679436762 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The polar equation of the orbit of a particle moving under a central force is given by $r = e^{-\theta}$. The force is:

**Options :**

✗ repulsive and varies as $r^{-4}$

✗ attractive and varies as $r^{-4}$

✗ repulsive and varies as $r^{-3}$

✓ attractive and varies as $r^{-3}$

**Question Number : 142 Question Id : 1679436763 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Find the force of attraction between a thin uniform rod of length 20 cm on a mass 1 kg located outside the rod on the same line as the rod and at a distance 10 cm from an end. The mass of the rod is 2 kg.

**Options :**

✗ $\frac{G}{2} \times 10^2$ N

✓ $\frac{2G}{3} \times 10^2$ N

✗ $\frac{G}{3} \times 10^2$ N

✗ $\frac{3G}{4} \times 10^2$ N

**Question Number : 143 Question Id : 1679436764 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

There is a small hole on one side of a carton (25 cm × 10 cm × 4 cm) at a point 1 cm below the top. Juice of density 2 $gcm^{-3}$ is leaking out through the hole at a constant rate of 10 g/min. What will be the pressure of the juice at the bottom of the carton 5 min after the juice started leaking through the hole? ($g = 10\ ms^{-2}$)

**Options :**

✔ $780\ N/m^2$

✖ $390\ N/m^2$

✖ $260\ N/m^2$

✖ $650\ N/m^2$

**Question Number : 144 Question Id : 1679436765 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The radii of the small and large piston of a hydraulics press are respectively 6 cm and 72 cm. It is worked by a hand lever whose arms ratio is 4 : 27. If a force $F$ newton's is applied on the handle of the lever, what is the force developed by the large piston in newton's?

**Options :**

✖ 81 F

✖ 144 F

✔ 972 F

✖ $\frac{64}{3}$ F

**Question Number : 145 Question Id : 1679436766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The elastic limit of a typical rock is '$E$' in newtons/metre$^2$, the Bulk Modulus and mean density of the rock are $B$ and $\rho$ respectively in newton/metre$^2$ and kg/m$^3$. Estimate the maximum height of a mountain in earth.

**Options :**

✔ $\frac{E}{\rho g}$

✖ $\frac{(E-B)}{\rho g}$

✖ $\frac{B}{\rho g}$

✖ $\frac{3E}{2\rho g}$

**Question Number : 146 Question Id : 1679436767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two spherical drops of water of the same size attain terminal velocities of magnitude $0.1\ ms^{-1}$. In the process of falling they coalesce to form a single drop. What will be the new terminal velocity?

**Options :**

✖ $\frac{1}{10}2^{1/3}\ ms^{-1}$

✔ $\frac{1}{10}2^{2/3}\ ms^{-1}$

✖ $\frac{1}{5}2^{2/3}\ ms^{-1}$

✖ $\frac{1}{20}2^{1/3}\ ms^{-1}$

**Question Number : 147 Question Id : 1679436768 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Calculate the force required to separate two glass plates of area 0.02 sq metre with a film of water $8 \times 10^{-5}$ metre thick between them. Surface tension of water $= 0.07\ Nm^{-1}$.

**Options :**

✖ 28 N

✖ 30 N

✔ 35 N

✖ 40 N

**Question Number : 148 Question Id : 1679436769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The base of a steel saucepan has a diameter of 24 cm at 20 °C. What will be the increase in area of the base of the saucepan when it is filled with boiling water? It is given that coefficient of linear expansion of steel $= 1.2 \times 10^{-5}\ °C^{-1}$.

**Options :**

✖ $12^3 \times 8\pi \times 10^{-6}\ cm^2$

✖ $12^3 \times 16\pi \times 10^{-6}\ cm^2$

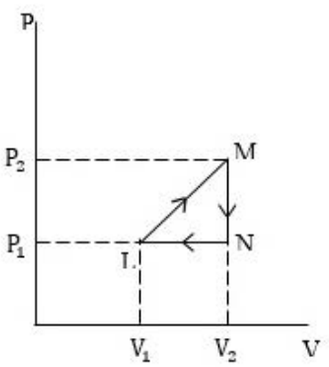
✖ $12^3 \times 8\pi \times 10^{-5}\ cm^2$

✔ $12^3 \times 16\pi \times 10^{-5}\ cm^2$

**Question Number : 149 Question Id : 1679436770 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A thermodynamic process undergone by a perfect gas is depicted in the $P$-$V$ diagram as $\angle MNL$. It is given that $V_2 = 2V_1$, $P_2 = 2P_1$. Obtain $T_M$, $T_N$ in terms of $T_L$ (symbols have their usual meanings)




**Options :**

✖ $2T_L, T_L$

✔ $4T_L, 2T_L$

✖ $3T_L, (1.5)T_L$

✖ $T_L, 2T_L$

**Question Number : 150 Question Id : 1679436771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which among the following processes can never be reversible?

**Options :**

✖ Electrolysis

✖ Isothermal compression

✔ Free expansion

✖ Extension of a spring under a load

**Question Number : 151 Question Id : 1679436772 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A cylinder of length $2l$ contains a gas $1l$ is divided into two equal parts by a piston of mass '$m$'. If the piston is displaced to the left through a distance '$x$' and let go, then find the frequency of the oscillation of the piston if the process takes place isothermally. The volume of the cylinder is $V$, its cross-sectional area $\alpha$ . Assume that '$x$' is very small, so that the terms involving $x^2$ and higher powers can be neglected. The original pressure applied by the piston is '$P$'.

**Options :**

✖ $\frac{1}{2\pi}\sqrt{\frac{2P\alpha}{ml}}$

✔ $\frac{1}{2\pi}\sqrt{\frac{P\alpha}{ml}}$

✖ $\frac{1}{2\pi}\sqrt{\frac{PV}{m\alpha}}$

✖ $\frac{1}{2\pi}\sqrt{\frac{2PV}{m\alpha}}$



**Question Number : 152 Question Id : 1679436773 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A thermodynamic system undergoes a change from a state '1' to state '2' described by the co-ordinates $(P_1V_1T_1)$ and $(P_2V_2T_2)$ respectively, where the symbols have their usual meanings. The equation of state of the system is known. Now, on the basis of above examine which one of the following can be calculated?

(p) the amount of heat added to the system
(q) the change in the internal energy of the system
(r) the total heat content of the system
(s) the work done on the system

**Options :**

✖ (q)

✔ (p)

✖ (r)

✖ (s)

**Question Number : 153 Question Id : 1679436774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The ratio of specific heats at constant pressure and constant volume of a diatomic gas is $\Upsilon_1$ and that for a mono atomic gas is $\Upsilon_2$. Then $\Upsilon_1 : \Upsilon_2$ is:

**Options :**

✖ 4 : 5

✖ 5 : 3

✔ 21 : 25

✖ 24 : 25

**Question Number : 154 Question Id : 1679436775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Argon gas at atmospheric pressure and at 27 °C is kept confined in a vessel of volume $1\ m^3$. The effective diameter of argon atom is 3 A.U. Determine the mean free path (apx).
(1 atom pressure $= 10^5\ N/m^2$, $k_B \cong \sqrt{2} \times 10^{-23} J/K$)

**Options :**

✖ $\frac{10^{-6}}{\pi} m$

✖ $\frac{10^{-6}}{2\pi} m$

✖ $\frac{10^{-6}}{4\pi} m$

✔ $\frac{10^{-6}}{3\pi} m$

**Question Number : 155 Question Id : 1679436776 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The efficiency of a reversible engine is 20% on reducing the temperature of the sink by 20 °C, the efficiency increases by 25%. Find the original temperature of the source in degree centigrade.

**Options :**

✖ 77

✖ 107

✔ 127

✖ 147

**Question Number : 156 Question Id : 1679436777 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The displacement vs. time equation of an S.H.M. is $x = \left\{5\cos\left(\frac{\pi t}{8}\right) + 12\ sin\ \left(\frac{\pi t}{8}\right)\right\}$, where '$x$' is in cm, and '$t$' in sec. Find its amplitude.

**Options :**

✖ $17\cos\frac{\pi}{8}$ cm

✖ 8.5 cm

✖ 17 cm

✔ 13 cm

**Question Number : 157 Question Id : 1679436778 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass '$m$' is subject to two forces, $F_x = -m\omega^2 x$; $F_y = -m\omega^2 y$ is two mutually perpendicular directions. It obeys the initial condition: $x = \frac{dy}{dt} = 0$. Had the forces acted individually, each would have led to $SHM_s$ of unequal amplitudes. (The symbols have their usual meanings). What would be trajectory of the resultant motion of the particle?

**Options :**

✔ Ellipse

✖ Circle

✖ Hyperbola

✖ Parabola

**Question Number : 158 Question Id : 1679436779 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass 10 g is executing S.H.M. of amplitude 2 cm. When the particle passes through its mean position, its energy is $2 \times 10^{-4}$ J. Obtain the equation of motion of the particle if its epoch is 30°. It is given that at the initial instant, its position is increasing with time. Express position ($x$) in metres and time ($t$) in sec.

**Options :**

✗ $x = (0.01)\sin\left(10t + \frac{\pi}{3}\right)$

✓ $x = (0.02)\sin\left(10t + \frac{\pi}{6}\right)$

✗ $x = (0.02)\sin\left(20t + \frac{\pi}{3}\right)$

✗ $x = (0.01)\sin\left(20t + \frac{\pi}{6}\right)$

**Question Number : 159 Question Id : 1679436780 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body of mass 0.2 kg is suspended from a spring of force constant 1 $Nm^{-1}$. A damping force acts on the system such that the resistive force is 6 $N$ corresponding to an instantaneous velocity 10 $ms^{-1}$. If the system is now subject to a periodic force, $F = 10\cos t$, then what would be the phase difference between the forced oscillation and the original vibration?

**Options :**

✓ $\tan^{-1}\frac{3}{4}$

✗ $\tan^{-1}\frac{2}{3}$

✗ $\tan^{-1}\frac{1}{2}$

✗ $\tan^{-1}\frac{4}{3}$

**Question Number : 160 Question Id : 1679436781 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

When the temperature of air increases from 30 °C to $t$ °C, the velocity of sound in air (assumed to behave like a perfect gas) increases by 1.64% (apx). Find '$t$' (nearest to whole number).

**Options :**

✗ 35

✔ 40

✖ 45

✖ 48

Subject Related

| | |
|---|---|
| **Group Number :** | 9 |
| **Group Id :** | 167943125 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

| | |
|---|---|
| **Section Id :** | 167943184 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943391 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 161 Question Id : 1679436782 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A train is approaching a massive hill with a speed of 55 km/hr. It sounds a whistle of frequency 570 Hz when it is at some distance from the hill. A wind with a speed of 45 km/hr is blowing in the direction of motion of train. Find the frequency of the whistle as heard by an observer on the hill. (velocity of sound in air = 1150 km/hr)

**Options :**

✖ 595 Hz

✔ 597.5 Hz

✖ 585 Hz

✖ 580.5 Hz

**Question Number : 162 Question Id : 1679436783 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two wires are fixed on a sonometer. The length of the wires are in the ratio 48 : 25, their diameters are in the ratio 3 : 1. The densities of the materials of the wires are in the ratio 1 : 9. If the tensions in the wire are in the ratio 4 : 1, then find the frequency of beats produced if the note of the lower pitch is 240 Hz.

**Options :**

✔ 10 Hz

✖ 12 Hz

✖ 15 Hz

✖ 5 Hz

**Question Number : 163 Question Id : 1679436784 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

$\frac{\text{ohm}}{\text{henry}} = ?$

**Options :**

✖ s

✔ $s^{-1}$

✖ $s^{-2}$

✖ $s^{2}$

**Question Number : 164 Question Id : 1679436785 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Given below is the equation of radioactive decay and the expression for centrifugal force on a particle of mass 'm' moving with uniform angular velocity 'w' in a circle of radius 'r'.

$N = N_o e^{-\lambda t}, F = mw^2 r$

(symbols have their usual meanings)

$\lambda$ in the first equation has the same dimension as that of what on the right hand side of the second equation?

**Options :**

✖ m

✖ $w^2$

✔ w

✖ r

**Question Number : 165 Question Id : 1679436786 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

$A^2s^4kg^{-1}m^{-2}$ is equivalent to:

**Options :**

✖ $(\text{farad})^{-1}$

✖ ohm

✖ mho

✔ farad

**Question Number : 166 Question Id : 1679436787 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

1 KWh expressed in eV is:

**Options :**

✔ $2.247 \times 10^{25}$

✖ $1.124 \times 10^{25}$

✖ $2.247 \times 10^{23}$

✖ $1.124 \times 10^{24}$

**Question Number : 167 Question Id : 1679436788 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In an experiment for the determination of focal length of a convex lens using $u - v$ method, that is applying the formula $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$, the four methods stated below were applied for calculating the final value of '$f$' from ten observations.

(p) Corresponding to each observation '$f$' was calculated numerically and their average was taken.

(q) Using the observed values of $u$ and $v$ a graph of $\frac{1}{u}$ vs $\frac{1}{v}$ was drawn and the value of $\frac{1}{f}$ was read from the intercepts on the two axes, and thus '$f$' was calculated.

(r) Using the observed value a graph of $u$ vs $v$ was drawn and $f$ was calculated by choosing $u - v$ values from a point on the graph.

(s) After completing the process of drawing $u$ vs $v$ graph as in case ($r$), the graph was made to intersect with the line, $u = v$. The point of intersection is $u = v = 2f$, from which f was obtained.

Which of the above methods would you prescribe as the best?

**Options :**

✖ (p)

✔ (q)

✖ (r)

✖ (s)

**Question Number : 168 Question Id : 1679436789 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The value of '$g$' is being obtained using a simple pendulum by applying the formula, $T = 2\pi\sqrt{\frac{l}{g}}$

'$l$' is measured using a metre scale having smallest division 1 mm, and '$T$' is measured using a stop watch whose smallest division is 0.001 sec. For a particular measurement $l = 1$ m and $T = 2$ sec, obtained by way of measuring the time for 10 oscillations as 20 sec. What is the maximum possible percentage error?

**Options :**

✔ 0.11

✖ 0.22

✖ 0.01

✖ 0.20

**Question Number : 169 Question Id : 1679436790 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

An open carriage is travelling at 20 m/s. A boy standing on the carriage throws a ball vertically upward with a velocity 10 m/s. The direction of motion of the carriage is along the x – axis, and the vertical dissection is along the y – axis. The frame of reference attached with a stationary observer is defined by (x, y, t) and that with the carriage is $(x', y', t')$. Where the symbols have their usual meanings. Wrote the displacement vs. time equations correcting $(x, y)$: $(x', y')$ with $(t, t')$. Take g = 10 m/s$^2$.

**Options :**

$x = 0, y = 10t - 5t^2$

✗ $x' = 20t, y' = 10t' - 5t'^2$

$x = 20t, y = 10t - 5t^2$

✓ $x' = 0, y' = 10t' - 5t'^2$

$x = 0, y = 10t$

✗ $x' = 0, y' = 10t'$

$x = 20t, y = 10t$

✗ $x' = 0, y' = 10t'$

**Question Number : 170 Question Id : 1679436791 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle moving in a straight line follows the equation:

$v^2 = 4x - x^2$

What is the range of motion?

**Options :**

✗ $0 < x < 4$

✗ $x \leqslant 0$

✗ $x \geqslant 4$

✓ $0 \leqslant x \leqslant 4$

**Question Number : 171 Question Id : 1679436792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle starts from rest and accelerates, where its acceleration vs. time equation is:
f = p – qt,
where p and q are positive constants. Find the distance travelled by the particle till the time it reaches its maximum velocity.

**Options :**

✖ $\frac{p^3}{q^2}$

✔ $\frac{p^3}{3q^2}$

✖ $\frac{p^3}{2q^2}$

✖ $\frac{3p^3}{2q^2}$

**Question Number : 172 Question Id : 1679436793 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Given below are four statements related to uniformly accelerated motion.

(p) The velocity vs. time graph is always a straight line passing through the origin

(q) The square of the velocity has a linear relation with the displacement.

(r) The velocity has a linear relation with the square of the displacement.

(s) The displacement during a period of time is the arithmetic mean between the initial and final velocities.

Which among the above statement(s) is/are true?

**Options :**

✖ (p) and (q)

✔ (r) and (s)

✖ (q) and (s)

✖ only (r)

**Question Number : 173 Question Id : 1679436794 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A steamer is going due East with a velocity $10\ ms^{-1}$, and wind is blowing from North. The smoke from the chimney points 30° West of South. Find the magnitude of the velocity of wind.

**Options :**

✔ $10\sqrt{3}\ ms^{-1}$

✖ $30\ ms^{-1}$

✖ $30\sqrt{3}\,ms^{-1}$

✖ $\frac{10\sqrt{3}}{3}\,ms^{-1}$

**Question Number : 174 Question Id : 1679436795 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle is executing uniform angular motion with an angular velocity $\vec{w} = \left(2\hat{\imath} - \hat{\jmath} + 5\hat{k}\right)$ radians $sec^{-1}$. (-1, 2, 3) is a position of the particle in its path (co-ordinates are in metres). Find the linear velocity of the particle in $ms^{-1}$.

**Options :**

✖ $12\hat{\imath} + 10\hat{\jmath} - 3\hat{k}$

✔ $-13\hat{\imath} - 11\hat{\jmath} + 3\hat{k}$

✖ $-11\hat{\imath} + 13\hat{\jmath} - 4\hat{k}$

✖ $-12\hat{\imath} + 4\hat{\jmath} - 9\hat{k}$

**Question Number : 175 Question Id : 1679436796 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

$P$ and $Q$ are two points, such that they are respectively 8 m and 12 m above the ground level which is horizontal. $PQ = 5$ m. What is the minimum velocity with which a particle must be projected from the horizontal plane as that it passes through $P$ ad $Q$, ($g = 10\ ms^{-2}$)

**Options :**

✖ $4\sqrt{10}\,ms^{-1}$

✖ $4\sqrt{5}\,ms^{-1}$

✔ $5\sqrt{10}\,ms^{-1}$

✖ $5\sqrt{5}\,ms^{-1}$

**Question Number : 176 Question Id : 1679436797 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A point moves uniformly along a straight line. Its angular velocity about any point at a distance 'r' from it varies as:

**Options :**

✖ $\frac{1}{r}$

✔ $\frac{1}{r^2}$

✖ r

✖ $r^2$

**Question Number : 177 Question Id : 1679436798 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Given below are four sets of numbers which are proportional to the magnitudes of three forces acting simultaneously at a point.

(p) 2, 8, 9
(q) 3, 7, 9
(r) 3, 7, 10
(s) 3, 7, 11

In which case equilibrium is not possible?

**Options :**

✖ (p)

✖ (q)

✖ (r)

✔ (s)

**Question Number : 178 Question Id : 1679436799 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A flexoble heavy chain of length 10 m, is moving over a smooth fixed pulley. The two unequal portions of the chain are hanging vertically. The instant when the middle point of the chain is at a distance 3 m below the pulley. The acceleration with which it is moving is: ($g = 10\ m/s^2$)

**Options :**

✔ $6\ m/s^2$

✖ $3\ m/s^2$

✖ $2\ m/s^2$

✖ $4\ m/s^2$

**Question Number : 179 Question Id : 1679436800 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A heavy uniform rod is in equilibrium with one and resting against a smooth vertical wall, and the other against a smooth plane included to the wall at 45°. If 'α' is the inclination of the rod to the horizon, then tan α is equal to:

**Options :**

✖ $\frac{1}{3}$

✖ $\frac{1}{4}$

✔ $\frac{1}{2}$

✖ $\frac{1}{6}$

**Question Number : 180 Question Id : 1679436801 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass 10 g moves with a velocity 10 m/s along a straight line and collides with another particle of mass 20 g which is moving with a velocity 5 m/s along the same line. If after collision, the first particle is brought to rest, the velocity of the other particle after impact is:

**Options :**

✖ 2.5 m/s

✖ 4 m/s

✖ 5 m/s

✔ 10 m/s

Subject Related

| | |
|---|---|
| **Group Number :** | 10 |
| **Group Id :** | 167943126 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

| | |
|---|---|
| **Section Id :** | 167943185 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943392 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 181 Question Id : 1679436802 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body is kept on a rough inclined plane (coefficient of friction between the body and the plane $= \frac{1}{3}$) and it is just prevented from sliding down by the application of a force, $P_1$, up the plane. It is also just made to move up the plane by the application of a force $P_2$ up the plane. It is found that $P_2 : P_1 = 2:1$. The inclination of the plane to the horizontal is:

**Options :**

✗ $tan^{-1}(2-\sqrt{3})$

✓ $45°$

✗ $tan^{-1}\frac{1}{2}$

✗ $60°$

**Question Number : 182 Question Id : 1679436803 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body of mass '$m$' bounces on hard ground from a height '$h_1$' and after rebound rises to a height '$h_2$'. Find the impulse.

**Options :**

✓ $\{\sqrt{2g}\, m(\sqrt{h_1}+\sqrt{h_2})\}$ in the vertically upward direction

✗ $\{\sqrt{2g}\, m(\sqrt{h_1}-\sqrt{h_2})\}$ in the vertically downward direction

✖ $\{\sqrt{2g}\, m(\sqrt{h_1}+\sqrt{h_2})\}$ in the vertically downward direction

✖ $\{\sqrt{2g}\, m(\sqrt{h_1}-\sqrt{h_2})\}$ in the vertically upward direction

**Question Number : 183 Question Id : 1679436804 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which among the following is a (are) conservative forces(s)?

(p) Gravitational force between two masses
(q) Force between two static charges
(r) Force between two current carrying conductors
(s) Frictional force on a rough surface

**Options :**

✖ Only (p)

✔ Only (p) and (q)

✖ (p), (q) and (r)

✖ Only (s)

**Question Number : 184 Question Id : 1679436805 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A labourer throws bricks to another labourer vertically above him by $4m$, so that each brick reaches him at a speed of 4 $ms^{-1}$. What proportion of his energy would he be able to save if he throws the bricks, so that each of them just reaches him? ($g = 10ms^{-2}$)

**Options :**

✔ $\frac{1}{6}$

✖ $\frac{1}{8}$

✖ $\frac{1}{10}$

✖ $\frac{1}{12}$

**Question Number : 185 Question Id : 1679436806 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A two – dimensional conservative potential is given by,

$V(x,y) = x^2 - xy + y^2$ (in joules)

What is the work done in taking a particle in this field from (2, 1) to (3, 2)?

**Options :**

✖ 2 J

✖ 3 J

✔ 4 J

✖ 5 J

**Question Number : 186 Question Id : 1679436807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body of mass 2 kg is moving along a path, such that its position vector expressed as a function of time is given by,

$\vec{r} = \left(3t^2\,\hat{\imath} + t^4\,\hat{\jmath} - t^3\,\hat{h}\right)$

Where 'r' is in metres and 't' is in seconds. Find the work done on the body during t = 0 to t = 1 sec.

**Options :**

✖ 41 J

✖ 52 J

✔ 61 J

✖ 72 J

**Question Number : 187 Question Id : 1679436808 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A 50 g bullet is fired through a stack of fibre board sheets 10 cm thick. The velocity of the bullet at the point of approaching the stack is 500 $ms^{-1}$. What will be its velocity in $ms^{-1}$ at the exit point form the stack if the average resistance offered by the stack to the bullet is $4 \times 10^4 N$.

**Options :**

✖ 200

✔ 300

✖ 400

✖ 500

**Question Number : 188 Question Id : 1679436809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A ball directly strikes another ball at rest and is itself reduced to rest by the impact. If two-third of its initial kinetic energy is lost due to collision, find the coefficient of restitution.

**Options :**

✔ $\frac{1}{3}$

✖ $\frac{2}{3}$

✖ $\frac{1}{2}$

✖ $\frac{1}{4}$

**Question Number : 189 Question Id : 1679436810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A bomb explodes in mid-air. What will be the path described by each splinter?

**Options :**

✖ Straight line

✖ Rectangular hyperbola

✖ Ellipse

✔ Parabola

**Question Number : 190 Question Id : 1679436811 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A uniform wire 60 cm. long is bent into the shape of a triangle $ABC$, such that the sides $BC$, $CA$, $AB$ are in the ratio 4 : 5 : 6. Three particles of masses $x$, $y$, $z$ (in grams) are placed at $A$, $B$, $C$ and it is found that the centre of gravity remains unchanged Then, $x : y : z$ is equal to:

**Options :**

✖ 3 : 2 : 1

✖ 6 : 5 : 4

✔ 11 : 10 : 9

✖ 9 : 8 : 7

**Question Number : 191 Question Id : 1679436812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Find the moment of inertia of an annular cylinder of mass '$m$' and having inner and outer radii '$r_1$' and '$r_2$' respectively about the axis of the cylinder.

**Options :**

✖ $\frac{m}{4}(r_1^2 + r_2^2)$

✔ $\frac{m}{2}(r_1^2 + r_2^2)$

✖ $\frac{m}{4}(r_1^2 + r_2^2 + r_1 r_2)$

✖ $\frac{m}{6}(r_1^2 + r_2^2 + r_1 r_2)$

**Question Number : 192 Question Id : 1679436813 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A two dimensional co-ordinate system is so chosen that the $x$-axis is horizontal and $y$-axis points vertically downward. A particle of mass 10 $g$ is released to have a free fall from the point (4, 0) (the figures are in metres). Its torque at any time '$t$' about the origin of co-ordinates is:

**Options :**

✔ $0.4\,\hat{k}\,\text{Nm}$

✖ $-0.4\,\hat{k}\,\text{Nm}$

✖ Not independent of $t$

✖ Nil

**Question Number : 193 Question Id : 1679436814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

For which among the following is the SI unit $\text{Nsm}^{-2}$ ?

**Options :**

✖ Surface tension

✔ Coefficient of Viscosity

✖ Viscous drag

✖ Tensile stress

**Question Number : 194 Question Id : 1679436815 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the differential equation $mix + kx = 0$, where the symbols have their usual meanings, the dimension of $\frac{k}{m}$ is:

**Options :**

✖ $LT^{-2}$

✖ $L^{-1}T$

✖ $T^2$

✔ $T^{-2}$

**Question Number : 195 Question Id : 1679436816 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Kg $m^2 s^{-2} A^{-2}$ is equivalent to:

**Options :**

✔ Henry

✖ Fardo

✖ Ohm

✖ Watt

**Question Number : 196 Question Id : 1679436817 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

With the objective of minimizing personal error in measurement of diameter of a wire by a screw gauge of least count 0.001 cm, the measurement was taken thrice and the readings were 0.313 cm, 0.313 cm and 0.314 cm. what should be recorded as the average?

**Options :**

✖ 0.31333 cm

✖ 0.313333 cm

✖ 0.3133 cm

✔ 0.313 cm

**Question Number : 197 Question Id : 1679436818 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

1 Mev expressed in HP-hr is equal to:

**Options :**

✖ $2.984 \times 10^{-20}$

✖ $2.984 \times 10^{-10}$

✔ $5.967 \times 10^{-20}$

✖ $5.967 \times 10^{-10}$

**Question Number : 198 Question Id : 1679436819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The formula used for the measurement of Young's Modules ($Y$) of the material of a beam by the method of flexure is obtained using the formula.

$$y = \frac{mgl^3}{4bd^3\delta}$$

Where $m$ = the load applied to the beam whose value is supplied

$l$ = length of the beam, measured by a metre scale having smallest division, 1 mm

$b$ = breath of the beam measured by a slide callipers having Vernier Constant, 0.01 cm.

$d$ = the depth of the beam measured by a screw gauge having least count equal to 0.01 mm

$\delta$ = the depreassion of the beam measured with the help of a travelling microscope, heaving Vernier Constant equal to 0.01 mm

Find the maximum possible percentage error for of measurement, when it is given that the corresponding data are $l = 1$m, $b = 2$ cm, $d = 0.5$ cm, $\delta = 2$ mm

**Options :**

✖ 1.8%

✔ 1.9%

✖ 2.0%

✖ 2.1%

**Question Number : 199 Question Id : 1679436820 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the case of an one-dimensional motion, the relation between to velocity ($v$) and position ($x$) is given by.

$$v = 2\sqrt{a(x\cos x - \sin x)},$$

Where ' $a$ ' is a constant. Find its accelenation

**Options :**

✗ $2ax\sin x$

✗ $2ax\cos x$

✓ $-2ax\sin x$

✗ $-2ax\cos x$

**Question Number : 200 Question Id : 1679436821 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A train moving with a velocity 40 km/hr passes through a station at 9 AM. After 1.5 min a lightning bolt strikes the railway tracks 2 km from the station in the same direction as that of the motion of the train. Find the co-ordinates of the lightning flash as measured by an observer at the station.

**Options :**

✓ $x = 2$ km, $t = 9$ h 1m 30s

✗ $x = 2$ km, $t = 9$ h 30s

✗ $x = 2$ km, $t = 9$ h/m

✗ $x = 1$ km, $t = 9$ h

Subject Related

| | |
|---|---|
| **Group Number :** | 11 |
| **Group Id :** | 167943127 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

**Section Id :** 167943186

| | |
|---|---|
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943393 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 201 Question Id : 1679436822 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle is moving along a straight line. It starts from rest and moves with a uniform acceleration 'a', fill if attains a vel 'v' and then travels with uniform retardation 'b' till it again comes to rest. The total time of travel is 't'. then,

**Options :**

✗ $\frac{1}{a}+\frac{1}{b}=\frac{2t}{v}$

✓ $\frac{1}{a}+\frac{1}{b}=\frac{t}{v}$

✗ $\frac{1}{a}+\frac{1}{b}=\frac{v}{2t}$

✗ $\frac{1}{a}-\frac{1}{b}=\frac{t}{v}$

**Question Number : 202 Question Id : 1679436823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

For a two dimensional motion, the $x$ and y component of velocoies of the particle 1 are given by.

$$\frac{dx}{dt}=6\pi\sin 2\pi t, \qquad \frac{dy}{dt}=3\pi\cos 2\pi t$$

It is also given that $x = 6$, $y = 0$ at $t = 0$. The equationl of the path of the particle is:

**Options :**

✗ $x^2+4y^2=9$

✗ $x^2+4(y-3)^2=36$

✓ $(x-9)^2+4y^2=9$

✖ $(x-9)^2+6y^2=36$

**Question Number : 203 Question Id : 1679436824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two boats cross a river 400 m wide. The speed of each boat in still water is $2.5\ ms^{-1}$ and the speed of the stream is $1.5\ ms^{-1}$. One boat crosses the river along the shortest path and the time taken is $p$ sec, whereas the other crosses in shortest time and the time taken is $q$ sec. then $(p-q)$ is equal to:

**Options :**

✖ Zero

✖ 10

✖ 20

✔ 40

**Question Number : 204 Question Id : 1679436825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

On a rainy day when a boy is running at a speed of $4ms^{-1}$, rain strikes him vertically at a speed of $4\ ms^{-1}$. For what speed of the boy will rain strike him at an angle of $45°$?

**Options :**

✖ 2 m/s

✖ 6 m/s

✔ 8 m/s

✖ $8\sqrt{2}m/s$

**Question Number : 205 Question Id : 1679436826 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

For the same velocity of projection a projectile has got equal ranges for two angles of projection corresponding to which greatest height attained are 12 m and 27 m. what is the value of range?

**Options :**

✖ 36 m

✔ 72 m

✖ $54\sqrt{2}$ m

✖ $48\sqrt{2}$ m

**Question Number : 206 Question Id : 1679436827 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

$ABCD$ is a quadrilateral. Forces represented in magnitude and direction by $\overrightarrow{AB}$, $\overrightarrow{AD}$, $\overrightarrow{BC}$, $\overrightarrow{DC}$ act simultaneously. The direction of the resultant force:

**Options :**

✖ is along AC

✖ is along BD

✖ bisects AC

✔ bisects BD

**Question Number : 207 Question Id : 1679436828 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A picture frame of rectangular shape weighing 5 kg is hung from a wall by a cord 5 cm long, fastened to two rings 3 cm. apart on the top edge of the frame. Find the tension in the cord. ($g = 10$ ms$^{-2}$)

**Options :**

✖ $6\frac{1}{8}$ N

✖ $24\frac{1}{8}$ N

✔ $34\frac{1}{4}$ N

✖ $37\frac{1}{8}$ N

**Question Number : 208 Question Id : 1679436829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body of mass '$m$' rests on an inclined plane of inclination '$\propto$' in limiting equilibrium by way of application of a force $P$ at an angle $\theta$ with the inclined plane. The coefficient of friction between the body and the plane is $\mu$. Then $P$ is equal to:

**Options :**

✔ $mg.\frac{\mu\cos\propto+\sin\propto}{\cos\theta+\mu\sin\theta}$

✖ $mg.\frac{\mu\cos\propto+\sin\propto}{\sin\theta+\mu\cos\theta}$

✖ $mg.\frac{\cos\propto+\mu\sin\propto}{\mu\cos\theta+sin\theta}$

✖ $mg.\frac{\mu\cos\propto+\sin\propto}{\mu\cos\theta+sin\theta}$

**Question Number : 209 Question Id : 1679436830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A body of mass 'm' has been falling from rest under the action of gratuity for t seconds. Find the vertical force required to be applied in order to bring it to rest within another distance 'a'. ('m' is in kg and 'a' is in metres)

**Options :**

✖ $mg^2\ \frac{t^2}{2a}$

✖ $mg^2\ \frac{t^2}{4a}$

✖ $\mathrm{Mg}\left(1+\frac{gt^2}{4a}\right)$

✔ $\mathrm{Mg}\left(1+\frac{gt^2}{2a}\right)$

**Question Number : 210 Question Id : 1679436831 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A load W is raised by a rope, from rest to rest, through a height 10m. The least time in which the ascent can be made is $\sqrt{\frac{5}{2}}sec$. It is known that the greatest tension which the rope earn safely bear is nW. 'n' is equal to:

**Options :**

✖ 2

✖ 3

✔ 5

✖ 10

**Question Number : 211 Question Id : 1679436832 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A bomb explodes in air into three parts. Two of them having masses 100 g. each move at an angle 120° with each other having equal velocolis 100 m/s each. The third splimter moves in a direction opposite to the bisector of the angle between the directions of motion of the first two parts with a velocity of magnitude 25 m/s. what is the maas of the third splinter in gms.

**Options :**

✗ 200 g

✓ 400 g

✗ 250 g

✗ 500 g

**Question Number : 212 Question Id : 1679436833 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A string OPQR is such that OP = PQ = QR. Masses equal to 10 g are fastened at P, Q, R and these are made to rotate on a smooth horizontal table. If the string always remains strainght and taut, them the tension in the portions OP, PQ, PR are as:

**Options :**

✗ 1 : 2 : 3

✗ 3 : 2 : 1

✓ 6 : 5 : 3

✗ 3 : 5 : 6

**Question Number : 213 Question Id : 1679436834 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which among the following is/are the characteristics of a conservative force field?
(p) The force can be derived from a potential by taking its negative space gradient.
(q) the work done by the force round a closed path is zero.
(r) the total mechanical energy is a constant of time.
(s) for the motion of a particle in the field, the gain in kinetic energy is equal to the loss in potential energy.

**Options :**

✗ Only (p)

✗ Only (p) and (q)

✗ Only (p), (q) and (r)

✔ (p), (q), (r) and (s)

**Question Number : 214 Question Id : 1679436835 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass 10 g moves under the influence of a force field, $\vec{F} = 2\,(\sin t\,\hat{i} + \cos t\,\hat{j})$ in newtons. If the particle is initially at rest at the origin of co-ordinates, then the instantaneous power in watts applied to the particle is:

**Options :**

✖ 100 sin t

✔ 400 sin t

✖ 200 cost

✖ 0

**Question Number : 215 Question Id : 1679436836 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A conservative force field is given by, $\vec{F} = (x + 2y + 4z)\hat{i} + (2x - 3y - z)\hat{j} + (4x - y + 2z)\hat{k}$ obtain the scalar potential function from which it has been derived.

**Options :**

✔ $-\frac{x^2}{2} + \frac{3}{2}y^2 - z^2 - 2xy + yz - 4zx$

✖ $-x^2 + 3y^2 - \frac{z^2}{2} - 2xy + yz - 4zx$

✖ $-\frac{x^2}{2} + 3y^2 - \frac{z^2}{2} - xy + yz - 2zx$

✖ $-x^2 - 3y^2 - \frac{z^2}{2} + xy - yz + 2zx$

**Question Number : 216 Question Id : 1679436837 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle is under the influence of a central potential, giver by $V = \frac{R_o}{r} u_o e^{\frac{-2r}{Ro}}$, where the symbols have their usual meanings. Find the equilibrium position of the particle.

**Options :**

✖ $R_0$

✖ $2R_0$

✔ $\frac{R_o}{2}$

✖ $\frac{R_o}{4}$

**Question Number : 217 Question Id : 1679436838 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A bullet of mass 50g moving with a velocity 'v' strike a block of mass 2kg. The block is free to move in the direction of the block. In the process there is a loss of kinetic energy of 4100J. find $u$ in metres per sec.

**Options :**

✖ 205

✔ 410

✖ $410\sqrt{2}$

✖ 820

**Question Number : 218 Question Id : 1679436839 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two balls of equal mass are moving in the same direction along the same straight time with velocities of magnitude in the ratio 2 : 1. They collide and in the process lose $x$% of their kinetic energy. If the coefficient of restitution is $\frac{2}{3}$, find $x$:

**Options :**

✖ $5\frac{1}{4}$

✖ $5\frac{2}{9}$

✔ $5\frac{5}{9}$

✖ $6\frac{1}{4}$

**Question Number : 219 Question Id : 1679436840 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A ball moving an a smooth horizontal plane in a straight line with a velocity 100 $cms^{-1}$ hito an identical ball which is at rest. The collision is perfectly elastic and the two balls move along two straight paths after the collision. The velocity of the first ball gets reduced to 60 $cms^{-1}$ find the angle between the direction of the ball after the collection.

**Options :**

✖ $30^\circ$

✖ $45^\circ$

✖ $60^\circ$

✔ $90^\circ$

**Question Number : 220 Question Id : 1679436841 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Find the centre of mass of three equal rods each of length '$2a$' forming the consecutive sides of $a$ square.

**Options :**

✖ It is at the centre of the middle rod.

✔ It is at a distance $\frac{a}{6}$ from the centre of the square on the line through the centre perpendicular to the middle rod.

✖ It is at a distance of $\frac{a}{2}$ from the centre of the square on the line through the centre perpendicular to the middle rod.

✖ It is at a distance of $\frac{a}{3}$ from the centre of the square on the line through the centre perpendicular to the middle rod.

Subject Related

| | |
|---|---|
| **Group Number :** | 12 |
| **Group Id :** | 167943128 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

| | |
|---|---|
| **Section Id :** | 167943187 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |

| | |
|---|---|
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943394 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 221 Question Id : 1679436842 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

An electric motor starts from rest and on application of a torque on the shaft, that is about the axis of rotation of the motor, it acquires an angular acceleration, $\propto = 2t - t^2$ during the first 2 seconds of its start, after which it becomes zero. What will be the total angular displacement (in terms of number of revolution) of the shaft in 5 sec?

**Options :**

✔ $\frac{8}{3\pi}$

✖ $\frac{16}{3\pi}$

✖ $\frac{4}{3\pi}$

✖ $\frac{4}{\pi}$

**Question Number : 222 Question Id : 1679436843 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of mass $m$ is at the point $(b, o)$ say $B$. The $y$-axis is chosen vertically downward and the particle is let fall from $B$ parallel to the $y$-axis, find the angular momentum of the particle about the origin 2 sec after the ball.

**Options :**

✔ $2\ mg\ b\ \hat{k}$

✖ $-2\ mg\ b\ \hat{k}$

✖ $\frac{1}{2}mg\ b\hat{k}$

✖ $-\frac{1}{2}mg\ b\hat{k}$

**Question Number : 223 Question Id : 1679436844 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two similar conducting balls of mass 'm' and charge 'q' hang from silk threads each of length 'l'. Their angles of inclination with the vertical is each equal to $\theta$, where $\theta$ is very small. In this situation the distance between the balls is 'a' then one of the ball is discharged. Thereafter the distance between thee balls become 'b'. Then 'b' in terms of 'a' will be given by:

**Options :**

✗ $\frac{a}{2}$

✗ $\frac{a}{4}$

✗ $\left(2^{\frac{-1}{3}}\right) a$

✓ $\left(2^{\frac{-2}{3}}\right) a$

**Question Number : 224 Question Id : 1679436845 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

An electric dipole of moment $\vec{p}$ is placed in a uniform electric field of $\vec{E}$, such that $\vec{p}$ makes an angle of 30° with $\vec{E}$. If the dipole has to be rotated through an angle 90° about an axis perpendicular to $\vec{p}$, what will be the work done?

**Options :**

✗ $\frac{\sqrt{3}-1}{2}$ pE

✓ $\frac{\sqrt{3}+1}{2}$ pE

✗ $\frac{\sqrt{3}}{2}$ pE

✗ $\frac{1}{2}$ pE

**Question Number : 225 Question Id : 1679436846 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A uniformly charged sphere of radius 25 cm has a total charge Q coulomb. Find the electric field intensity at the centre of sphere in newtons/coulomb?

**Options :**

✓ Zero

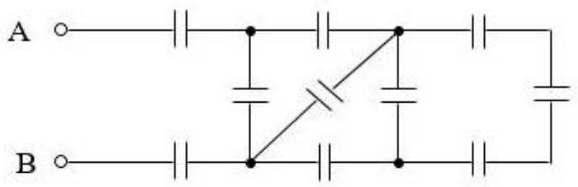
✖ $\frac{Q}{125\epsilon_0}$

✖ $\frac{Q}{50\epsilon_0}$

✖ $\frac{2Q}{5\epsilon_0}$

**Question Number : 226 Question Id : 1679436847 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**




All the capacitors shown in the above network have the same value of capacitance. The equivalent capacitance between A and B turns out to be $1\frac{21}{144}\ \mu F$. Find the capacitance of each capacitor.

**Options :**

✖ $1\ \mu F$

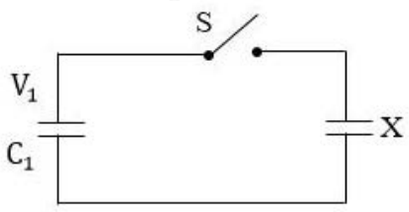
✖ $1.5\ \mu F$

✔ $3\ \mu F$

✖ $11\ \mu F$

**Question Number : 227 Question Id : 1679436848 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**




A capacitor of capacitance $C_1$ is charged to a potential difference $V_1$. The charging battery is then disconnected and $C_1$ is connected to a capacitor X of unknown capacitance. The potential difference across the combination is now $V_2$. Find the energy stored in the system after the switch S is closed.

**Options :**

✖ $\frac{1}{2}C_1(V_1+V_2)V_2$

✔ $\frac{1}{2}C_1V_1V_2$

✖ $\frac{1}{2}C_1(V_1+V_2)V_1$

✖ $\frac{1}{2}C_1(V_1-V_2)\frac{V_2^2}{V_1}$

**Question Number : 228 Question Id : 1679436849 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

An insulating disc of radius R, has a uniform surface charge density, σ. It rotates with an angular velocity ω. Find the total circulating current.

**Options :**

✔ $\frac{1}{2}\sigma\omega R^2$

✖ $\sigma\omega R^2$

✖ $\frac{1}{4}\sigma\omega R^2$

✖ $2\sigma\omega R^2$

**Question Number : 229 Question Id : 1679436850 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A conduction is in the form of a rod of length '*l*' and cross - sectional area 'A'. Its temperature coefficient of resistance is $\alpha_R$, the temperature coefficient of resistivity of its material is $\alpha_p$ and its coefficient of linear thermal expansion is α. Find the approximate relation between $\alpha_R, \alpha_p$ and α.

**Options :**

✖ $\alpha_p = \alpha_R - \alpha$

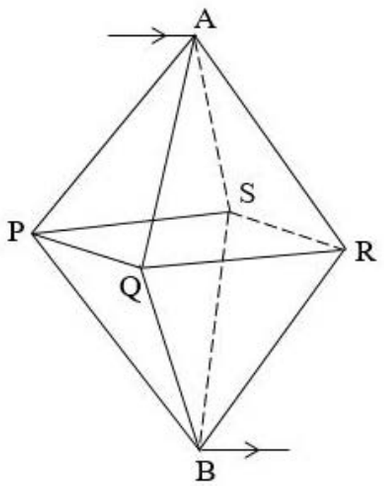
✖ $\alpha_p = \alpha_R - 2\alpha$

✔ $\alpha_R = \alpha_p - \alpha$

✖ $\alpha_R = \alpha_p - 2\alpha$

**Question Number : 230 Question Id : 1679436851 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**




A network of conductors is made in the shape of a regular octahedron by joining 12 equal conductors of same conductance (each equal to 2 mho) as shown in the figure. If the current enters through A and exits through B, then find the equivalent conductance of the network in mho.

**Options :**

✖ 1

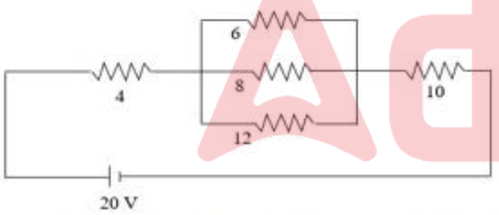
✔ 4

✖ 2

✖ 8

**Question Number : 231 Question Id : 1679436852 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**




In the circuit shown in the figure all the resistances are in ohms. Find the power dissipation through the 8 ohm resistance.

**Options :**

✖ $\frac{64}{25}$ watt

✖ $\frac{32}{125}$ watt

✔ $\frac{32}{25}$ watt

✖ $\frac{64}{125}$ watt

**Question Number : 232 Question Id : 1679436853 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A galvanometer of resistance 15 Ω gives full scale deflection when a current 0.02 amp passes through it. It is to be converted into an ammeter reading 15A in its full scale. For this purpose you have been provided with an only shunt resistance, 0.04 ohm. How will the conversion desired be achieved?

**Options :**

✖ By connecting a resistance 0.01 Ω in parallel to the shunt and connecting the combination in parallel with the galvanometer.

✔ By connecting a resistance 14.96 Ω in series with the galvanometer and combining the available shunt with the said series combination.

✖ By connecting a resistance 0.02 Ω in parallel to the shunt and connecting the combination in parallel with the galvanometer.

✖ By connecting a resistance 14.58 Ω in series with the galvanometer and combining the available shunt with the said series combination.

**Question Number : 233 Question Id : 1679436854 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Calculate the kinetic energy attained by a charged particle of mass '$m$' and charge '$q$' after moving through a distance '$b$' along an electric field $\vec{E}$.

**Options :**

✖ $\frac{1}{2}\ qEb$

✖ $2\ qEb$

✔ $qEb$

✖ $\sqrt{2}\ qEb$

**Question Number : 234 Question Id : 1679436855 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A charge $-\frac{q}{2}$ is placed at the origin of co-ordinates and another charge $+\frac{q}{3}$ is placed at $(a, 0)$. How far from the origin is the resultant intensity due to the two charges is zero?

**Options :**

✔ $(3+\sqrt{6})\,a$

✖ $(3-\sqrt{6})\,a$

✖ $(3+2\sqrt{6})\,a$

✖ $(3-2\sqrt{2})\,a$

**Question Number : 235 Question Id : 1679436856 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two dipoles having charges $(-q,+q)$ and each of length $2a$ are placed on the x-axis, such that the distance between their centres 'b' and the co-ordinates of the charges of the left dipoles are as follow: $-q\ (0,0)$ and $+q(2a,0)$. Find the force of attraction extended on the left dipole by the right dipole.

**Options :**

✖ $\left(\frac{q^2}{2\pi\epsilon_0}\right)\left[\frac{(b^2-4a^2)}{(b^2+4a^2)^2}-\frac{1}{b^2}\right]$

✔ $\left(\frac{q^2}{2\pi\epsilon_0}\right)\left[\frac{(b^2+4a^2)}{(b^2-4a^2)^2}-\frac{1}{b^2}\right]$

✖ $\left(\frac{q^2}{4\pi\epsilon_0}\right)\left[\frac{(b^2-4a^2)}{(b^2+4a^2)^2}+\frac{1}{b^2}\right]$

✖ $\left(\frac{q^2}{4\pi\epsilon_0}\right)\left[\frac{(b^2+4a^2)}{(b^2-4a^2)^2}+\frac{1}{b^2}\right]$

**Question Number : 236 Question Id : 1679436857 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A uniformly charged sphere of radius 25 cm has a total charge of a Q coulombs. Find the electric field intensity at a point 5 cm from the centre of the sphere.

**Options :**

✖ $\frac{2Q}{5\pi\epsilon_0}\ newtons/coulomb$

✔ $\frac{4Q}{5\pi\epsilon_0}\ newtons/coulomb$

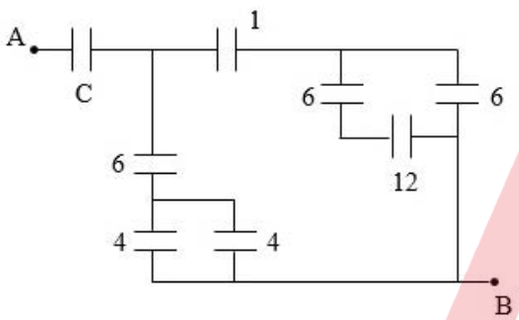
✖ $\frac{2Q}{125\pi\epsilon_0}\ newtons/coulomb$

✖ $\frac{Q}{125\pi\epsilon_0}\ newtons/coulomb$

**Question Number : 237 Question Id : 1679436858 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the circuit shown what should be the value of the capacitance of the capacitor 'C', So that the equivalent capacitance between the points A and B is $1\mu F$. All the capacitance values indicated are in μF ?




**Options :**

✖ $\frac{24}{17}\ \mu F$

✖ $\frac{167}{105}\ \mu F$

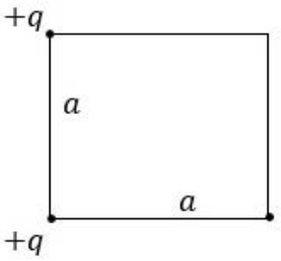
✔ $\frac{334}{257}\ \mu F$

✖ $\frac{156}{125}\ \mu F$

**Question Number : 238 Question Id : 1679436859 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Three charges are located at the three corners of a square (each side = $a$) as shown in the figure. How much energy is required to bring another charge $+q$ , from far away and place it at the vacant corne?




**Options :**

✔ $\left(\frac{1}{4\pi\epsilon_0}\frac{q^2}{\sqrt{2}a}\right)$

✖ $\left(\frac{1}{4\pi\epsilon_0}\frac{3q^2}{\sqrt{2}a}\right)$

✖ $\left(\frac{1}{4\pi\epsilon_0}\frac{3q^2}{a}\right)$

✖ $\left(\frac{1}{\pi\epsilon_0}\frac{q^2}{a}\right)$

**Note: For this question, discrepancy is found in question/answer. So,this question is ignored for all candidates.**

**Question Number : 239 Question Id : 1679436860 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A resistor has been provided in the form of a spherical shell, formed of two concentric metallic spheres of radii $R_1$ and $R_2$ $(R_2 > R_1)$ and the interim space being filled with $a$ material of resistivity $\delta$ . Find its resistance.

**Options :**

✖ $\frac{(R_2 - R_1)\delta}{2\pi R_1 R_2}$

✔ $\frac{(R_2 - R_1)\delta}{4\pi R_1 R_2}$

✖ $\frac{\delta(R_2{}^2 - R_1{}^2)^{\frac{1}{2}}}{4\pi R_1 R_2}$

$$\frac{\delta(R_2^{\,2} - R_1^{\,2})^{\frac{1}{2}}}{2\pi R_1 R_2}$$

**Question Number : 240 Question Id : 1679436861 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A carbon resistor has the colour code as per the sequence: BROWN – ORANGE – BLUE – RED – GREEN. Its resistance is:

**Options :**

$2.58 \times 10^3\ ohm$ with a tolerance of $\pm 0.5\%$

$36.8\ ohm$ with a tolerance of $\pm 5\%$

✔ $1.36 \times 10^4\ ohm$ with a tolerance of $\pm 0.5\%$

$4.52 \times 10^5\ ohm$ with a tolerance of $\pm 10\%$

Subject Related

| | |
|---|---|
| **Group Number :** | 13 |
| **Group Id :** | 167943129 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

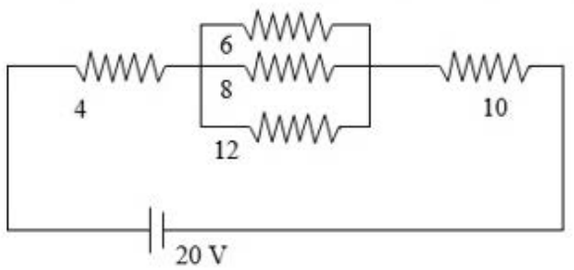
| | |
|---|---|
| **Section Id :** | 167943188 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943395 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 241 Question Id : 1679436862 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the circuit shown, all the resistances are in ohms. Find the power dissipation through the 6 ohm resistance.




**Options :**

✗ $\frac{256}{225}$ watt

✗ $\frac{324}{125}$ watt

✗ $\frac{192}{125}$ watt

✓ $\frac{384}{225}$ watt

**Question Number : 242 Question Id : 1679436863 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A resistance network is prepared in the shape of a regular tetrahedron, the sides being four conductors each of conductance 2 mho. If current enters into the system from one of the four vertices and comes out from the opposite corner, find the effective conductance of the network.

**Options :**

✓ 4 mho

✗ 8 mho

✗ 2 mho

✗ 1 mho

**Question Number : 243 Question Id : 1679436864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Four statements have been given below about Peltier Effect, Examine them:

($p$) As a result of this effect heat is absorbed and evolved at the same time.
($q$) The effect occurs throughout the wrait.
($r$) If the direction of current is reversed, the hot junction becomes cold and the cold junction becomes hot.
($s$) The heat evolved and absorbed depends linearly on the resistance of the conductors.

**Options :**

✗ ($p$) and ($q$) are true; ($r$) and ($s$) are false

✓ ($p$) and ($r$) are true; ($q$) and ($s$) are false

✗ ($p$) and ($s$) are true; ($q$) and ($r$) are false

✗ ($q$) and ($r$) are true; ($p$) and ($s$) are false

**Question Number : 244 Question Id : 1679436865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A series circuit consists of a copper voltmeter (internal resistance = 4 ohm), a battery of negligible internal resistance and a resistance box. By adjusting the resistance box for 4 ohm, the mass of copper deposited at the cathode in 10 minutes is 30 gm. To what value should the resistance box be adjusted to have a deposit of 40 gms of copper in 20 minutes?

**Options :**

✗ 5 ohm

✗ 6 ohm

✓ 8 ohm

✗ 10 ohm

**Question Number : 245 Question Id : 1679436866 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Four charges $q_1, q_1, -q_1, -q_1$, are placed at the four comers A, B, C, D of a square, whose each side is 'a'. L is the midpoint of BC. Find the work done in carrying a charge $q_2$ from the centre of the square to L.

**Options :**

✗ $\frac{1}{\pi\epsilon_0}\frac{q_1 q_2}{a\sqrt{5}}\left(\sqrt{5}-1\right)$

✖ $\frac{1}{4\pi\epsilon_0}\frac{q_1q_2}{a\sqrt{5}}(\sqrt{5}-1)$

✖ $\frac{1}{4\pi\epsilon_0}\frac{q_1q_2}{a}$

✔ 0

**Question Number : 246 Question Id : 1679436867 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A particle of charge $-q_1$ and maas 'm' moves in a circular orbot of radius 'a' about a fixed charge $+q_2$. Express the frequency (n) revolution as a function of the radius and the charges and 'in'.

**Options :**

✖ $a^{\frac{3}{2}}\left(\frac{\pi m\epsilon_0}{2q_1q_2}\right)^{\frac{1}{2}}$

✔ $2a^{\frac{3}{2}}\left(\frac{\pi m\epsilon_0}{q_1q_2}\right)^{\frac{1}{2}}$

✖ $2\sqrt{2}\,a^{\frac{3}{2}}\left(\frac{\pi m\epsilon_0}{q_1q_2}\right)^{\frac{1}{2}}$

✖ $\sqrt{2}\,a^{\frac{3}{2}}\left(\frac{\pi m\epsilon_0}{q_1q_2}\right)^{\frac{1}{2}}$

**Question Number : 247 Question Id : 1679436868 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Three capacitors having capacitances $C_1, C_2, C_3$ are such that $C_1 : C_2 : C_3 = 2 : 3 : 4$. The difference between thein equivalent capacitances when connected in series and parallel is $35\,\pi F$. Find the value of G.

**Options :**

✖ $\frac{13}{3}\pi F$

✖ $\frac{39}{8}\pi F$

✔ $\frac{26}{3}\pi F$

✖ $\frac{52}{9}\pi F$

**Question Number : 248 Question Id : 1679436869 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A uniformly charged sphere of radius 25 cm has a total charge of a Columbs. Find the electric field intercity at a point 75 cm. from centre of the sphere in newtons/coulomb.

**Options :**

✔ $\frac{4Q}{9\pi\epsilon_0}$

✖ $\frac{4Q}{108\pi\epsilon_0}$

✖ $\frac{27Q}{16\pi\epsilon_0}$

✖ $\frac{25Q}{4\pi\epsilon_0}$

**Question Number : 249 Question Id : 1679436870 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A metal sphere of radius $R_1$ carries a charge Q. it is surrounded by a sphenical shall of thickness $(R_2 - R_1)$ of a linear dielectric material of permittively $\in$. Find the potential at the centre of the sphere (relative to infinity)

**Options :**

✖ $\frac{Q}{4\pi}\left(\frac{1}{\epsilon_0 R_1}+\frac{1}{\epsilon R_1}-\frac{1}{\epsilon R_2}\right)$

✖ $\frac{Q}{4\pi}\left(\frac{1}{\epsilon_0 R_2}+\frac{1}{\epsilon R_2}-\frac{1}{\epsilon R_2}\right)$

✔ $\frac{Q}{4\pi}\left(\frac{1}{\epsilon_0 R_2}+\frac{1}{\epsilon R_1}-\frac{1}{\epsilon R_2}\right)$

✖ $\frac{Q}{4\pi}\left(\frac{1}{\epsilon_0 R_2}-\frac{1}{\epsilon R_1}+\frac{1}{\epsilon R_2}\right)$

**Question Number : 250 Question Id : 1679436871 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A point charge $+q$ is placed at a distance $'a'_2$ from an earthed circular metal disc of radius $'a'_1$. Find the induced charge.

**Options :**

✖ $\left(\frac{2q}{\pi}\right)tan^{-1}\left(\frac{a_1}{a_2}\right)$

✔ $-\left(\frac{2q}{\pi}\right)tan^{-1}\left(\frac{a_1}{a_2}\right)$

✖ $\left(\frac{q}{\pi}\right)tan^{-1}\left(\frac{a_1}{a_2}\right)$

✖ $-\left(\frac{q}{\pi}\right)tan^{-1}\left(\frac{a_1}{a_2}\right)$

**Question Number : 251 Question Id : 1679436872 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A current of 5 amp flows through a wire of diameter 1 mm. if the concentration of charge carnies is $2 \times 10^{27} m^{-3}$. Find the average drift velocity of the electrons in cm/s $(e = 1.6 \times 10^{-19} C)$

**Options :**

✔ 2

✖ 3

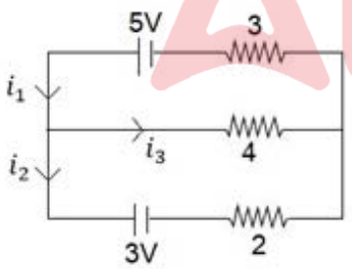
✖ 4

✖ 6

**Question Number : 252 Question Id : 1679436873 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the circuit shown all the resistances are in ohms. Find the values of $i_1, i_2, i_3$ in amperes.




**Options :**

✖ $\frac{11}{15}, \frac{14}{15}, \frac{7}{15}$

✔ $\frac{11}{13}, \frac{3}{13}, \frac{8}{13}$

✖ $\frac{13}{16}, \frac{5}{16}, \frac{1}{2}$

✖ $\frac{10}{13}, \frac{3}{13}, \frac{7}{13}$

**Question Number : 253 Question Id : 1679436874 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Given three resistances 2 Ω, 4 Ω and 6 Ω, suitable combinations of three cars produce all the resistances (in ohms) of which option given below?

**Options :**

✖ $12, \frac{12}{11}, 3, \frac{8}{5}, \frac{5}{4}, \frac{22}{3}, \frac{11}{4}, \frac{22}{5}$

✖ $12, \frac{12}{11}, 3, \frac{4}{3}, \frac{5}{3}, \frac{22}{3}, \frac{11}{6}, \frac{22}{5}$

✖ $12, \frac{12}{11}, 3, \frac{8}{3}, \frac{5}{4}, \frac{11}{4}, \frac{11}{6}, \frac{22}{5}$

✔ $12, \frac{12}{11}, 3, \frac{8}{3}, \frac{5}{3}, \frac{22}{3}, \frac{11}{2}, \frac{22}{5}$

**Question Number : 254 Question Id : 1679436875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A potentiometer wire has a total length of 1000 cm. it is driven by a cell of E.M.F 4V having a resistance 460 Ω in series. A source of potential difference, 10 mv gets balanced by a length of 60 cm. of the potential wire. Find the value of the resistance of the potentiometer wire.

**Options :**

✖ 10 Ω

✖ 15 Ω

✔ 20 Ω

✖ 30 Ω

**Question Number : 255 Question Id : 1679436876 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A resistance R is connected in parallel with a bulb (0.2 w, 1v) and the combination is connected in series with a 2 ohm resistor and 2V battery of internal resistance 0.5 ohm. If the bulb is to operate at the designed voltage, what must be the value of R?

**Options :**

✖ 4 ohm

✔ 5 ohm

✖ 6 ohm

✖ 10 ohm

**Question Number : 256 Question Id : 1679436877 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A series cicuit consists of a copper voltmeter, a battery of religiable box. By adjusting the resistance box for 4 ohm, the mass of copper deposited on the cathode is 30 gm in 10 minutes, and on adjusting if for 8 ohm, the maas of copper deposited is 40 gm in 20 minutes. Find the internal resistance of the voltmeter.

**Options :**

✖ 1 ohm

✖ 2 ohm

✖ 3 ohm

✔ 4 ohm

**Question Number : 257 Question Id : 1679436878 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two identically charged spheres are suspended by strings of equal length. At the equilibrium position the strings make an angle $\theta$ with each other. Now, the metal spheres are suspended in a liquid of density 0.6 gm/ce and dielectric constant 2. Find the density of the material of the spheres if the angle between the strings remain unchanged.

**Options :**

✖ 0.8 gm/ce

✔ 1.2 gm/ce

✖ 0.9 gm/ce

✖ 1.6 gm/ce

**Question Number : 258 Question Id : 1679436879 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Given below are four statements based on the concept of equipotentials.
(p) The equipotential surfaces for an infinitely long linear charge are cylindrical, The axes of the cylinders being co-axial with the line charge
(q) Electric field lines intersect the equipotentials normally.
(r) Two equipotential surfaces may intersect.
(s) For an electric dipole the equipotential surface is a plane that perpendicularly bisects the line joining the charges.
Which among the above is/are true?

**Options :**

✗ Only (p)

✗ (p) & (q)

✗ Only (r)

✓ (p), (q) & (s)

**Question Number : 259 Question Id : 1679436880 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A uniformly charged sphere of radius 25 cm has a total charge of Q coulombs. Find the electric field intensity at a point on the surface of the sphere in newtons/ coulomb.

**Options :**

✓ $\frac{Q}{4\pi E_0} \cdot \frac{1}{625}$

✗ $\frac{Q}{\pi E_0} \cdot \frac{1}{625}$

✗ $\frac{4Q}{25\pi E_0}$

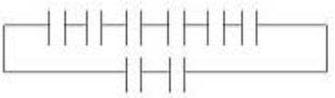
✗ $\frac{4Q}{125\pi E_0}$

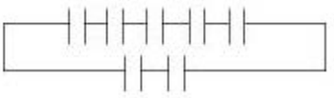
**Question Number : 260 Question Id : 1679436881 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Four arrangements of circuits with capacitors are shown below. Each capacitors has capacitance equal to 1 μF.

(p) 

(q) 

(r) 

(s) 

Which among the above arrangements will produce an equivalent capacitance 0.1 μF

**Options :**

✖ (p)

✖ (q)

✔ (r)

✖ (s)

Subject Related

| | |
|---|---|
| **Group Number :** | 14 |
| **Group Id :** | 167943130 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 0 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |
| **Group Marks:** | 20 |

Subject Related

| | |
|---|---|
| **Section Id :** | 167943189 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |

**Sub-Section Id:** 167943396
**Question Shuffling Allowed :** Yes

**Question Number : 261 Question Id : 1679436882 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A parallel plate capacitor has plates of area 'A' and a separation 'd'. The plates are charged to a potential difference 'V' after which the charger is removed. A dielectric slab of thickness 't' and dielctric constant E is then placed symmetrically between the plates. In this situation, What is the potential difference across the plates?

**Options :**

✗ $V_0\left[1-d\left(1-\frac{1}{E}\right)\right]$

✓ $\frac{V_0}{d}\left[d-t\left(1-\frac{1}{E}\right)\right]$

✗ $\frac{V_0}{d}\left[t-d\left(1-\frac{1}{E}\right)\right]$

✗ $\frac{V_0}{d}\left[d-\frac{t}{E}\right]$

**Question Number : 262 Question Id : 1679436883 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Two capacitors $C_1$ and $C_2$ $(C_1 > C_2)$ are connected in series with a supply of voltage V. The total electrical energy of the capacitors in this situation is $E_1$. Then they are connected in parallel to the same supply voltage, and then the electrical energy of the capacitors is $E_2$. Find $C_1$ in terms of $V, E_1, E_2$.

**Options :**

✗ $\frac{1}{V^2}\left(E_1+\sqrt{E_2^2-4E_1E_2}\right)$

✗ $\frac{1}{V^2}\left(E_2+\sqrt{E_2^2-E_1E_2}\right)$

✗ $\frac{1}{V^2}\left(E_2-\sqrt{E_2^2-E_1E_2}\right)$

✓ $\frac{1}{V^2}\left(E_2+\sqrt{E_2^2-4E_1E_2}\right)$

**Question Number : 263 Question Id : 1679436884 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The current density in a conductor of circular cross - section of radius R varies with radius in accordance with the relation $j = kr(\pi - r)$. Where the symbols have their usual meanings. Find the total current.

**Options :**

✔ $2\pi K\left(\frac{\pi}{3}-\frac{1}{4}\right)a^3$

✖ $2\pi K\left(\frac{\pi}{4}-\frac{1}{3}\right)a^3$

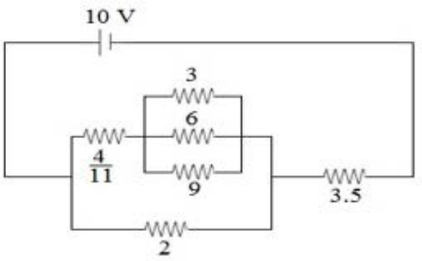
✖ $\frac{\pi^2 K}{6}a^3$

✖ $\frac{\pi^2 K}{12}a^3$

**Question Number : 264 Question Id : 1679436885 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the circuit shown in the figure, the internal resistance of the battery is 0.5 ohm. All the resistances shown are in ohms. Find the current in the battery.




**Options :**

✖ 1 amp

✔ 2 amp

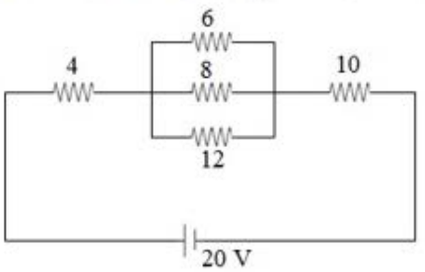
✖ 2.5 amp

✖ 3 amp

**Question Number : 265 Question Id : 1679436886 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In the circuit shown all the resistances are in ohms. Find the power dissipation through the 4 ohm resistance.




**Options :**

✖ 1.44 W

✖ 2.88 W

✔ 5.76 W

✖ 7.2 W

**Question Number : 266 Question Id : 1679436887 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A potentiometer wire has a total length of 1000 cm. It is driven by a cell of E.M.F 4V having a resistance R in series with it. A source of potential difference 10 mV gets balanced by a length of 60 cm of the potentiometer wire. Find the value of R if the resistance of the potentiometer wire is 20 ohm.

**Options :**

✖ 440 ohm

✔ 460 ohm

✖ 620 ohm

✖ 640 ohm

**Question Number : 267 Question Id : 1679436888 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Three statements are given below regarding joule heating effect-
(p) Heat is evolved as well as absorbed
(q) The effect takes place throughout the circuit
(r) On reversing the direction of current, cooling takes place instead of heating.
Which one(s) among is/ are true?

**Options :**

✖ Only (p)

✖ (q) & (r)

✖ (p) & (r)

✔ Only (q)

**Question Number : 268 Question Id : 1679436889 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A cell consists of two parallel copper electrodes in the form of plates 4.5 cm apart and area 0.75 sq m. Find the potential difference (correct up to one place of decimal) which gets established between the plates to provide a constant current to deposit 440 g of copper on the cathode in 1 hour (Take E.C.E of copper equal to $3 \times 10^{-7}$ kg $C^{-1}$)

**Options :**

✔ 0.3 V

✖ 0.4 V

✖ 0.5 V

✖ 0.6 V

**Question Number : 269 Question Id : 1679436890 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A square loop of side $a$ is placed in a uniform magnetic field of induction $B$ such that plane of the loop is perpendicular to the magnetic field. The loop is suddenly pulled out of the field. Find the charge that flows through the loop. Resistance of the loop is $R$.

**Options :**

✖ $\frac{Ba}{R}$

✖ $\frac{B \cdot \pi a^2}{R}$

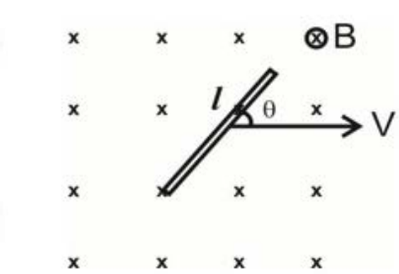
✔ $\frac{Ba^2}{R}$

✖ $\frac{Ba}{R^2}$

**Question Number : 270 Question Id : 1679436891 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A rod of length $l$ is placed in a uniform magnetic field of induction B. The rod is moved with velocity V as shown. Find the e.m.f induced across the rod.




**Options :**

✖ $BlV$

✖ $BlV\cos\theta$

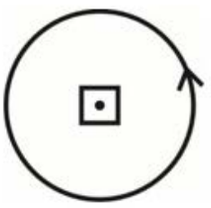
✔ $BlV\sin\theta$

✖ zero

**Question Number : 271 Question Id : 1679436892 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

At the centre of a circular loop of radius R a square loop of side $a$ $[a << R]$ is placed as shown. If current is passed through circular loop find their coefficient of mutual induction.



**Options :**

✖ $\frac{\mu_0 a^2}{2\pi R}$

✔ $\frac{\mu_0 a^2}{2R}$

✖ $\frac{\mu_0 a}{R}$

✖ $\frac{\mu_0 a}{2R}$

**Question Number : 272 Question Id : 1679436893 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The self inductances of two coils are 2 mH and 8 mH. And assume that their coefficient of corpling is 1 then find their coefficient of mutural inductance.

**Options :**

✖ 16 mH

✖ 6 mH

✔ 4 mH

✖ 32 mH

**Question Number : 273 Question Id : 1679436894 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In a transformer the number of terms in primary and secondary coils are 1000, and 200 respectively. A signal of 500V is applied to the primary coil. Find the voltage across the secondary coil.

**Options :**

✔ 100V

✖ 2500V

✖ 1000V

✖ 200V

**Question Number : 274 Question Id : 1679436895 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In an $L-C-R$ series circuit the voltage across the inductor, capacitor and Resistor are 80V, 40V, and 30V respectively. Find the voltage applied across the $L-C-R$ series combination.

**Options :**

✖ 150V

✖ 70V

✔ 50V

✖ zero

**Question Number : 275 Question Id : 1679436896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In an $L-C-R$ series circuit, induction and capacitive reactances are $50\Omega$ and $20\Omega$ respectively and resistance is $40\Omega$. Find the power factor of the circuit

**Options :**

✖ 0.6

✖ 0.5

✔ 0.8

✖ 1

**Question Number : 276 Question Id : 1679436897 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The self inductance of a coil is 20mH. In one milli second the current passing through it decreases from 2A to zero. Find the e.m.f. indued in the coil.

**Options :**

✔ 40V

✖ 40mV

✖ 4V

✖ 4mV

**Question Number : 277 Question Id : 1679436898 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

An inductor of inductance 2mH and a capacitor of capacitance 2mH and a capacitor of capacitance 8mF are connected in parallel. Find the frequency of L-C oscillations produced.

**Options :**

✖ $\frac{250}{\pi} HZ$

✔ $\frac{125}{\pi} HZ$

✖ $500\pi HZ$

✖ $\frac{500}{\pi} HZ$

**Question Number : 278 Question Id : 1679436899 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A cycle wheel has N spokes the radius of the cycle wheel is r. It is rotating with an angular frequency w. magnetic field of induction B is acting perpendicular to the plane of the wheel. Find the e.m.f induced between the axis and a point on rim.

**Options :**

✖ $NB\omega r$

✖ $NB\omega r^2$

✖ $\frac{NB\omega r^2}{2}$

✔ $\frac{B\omega r^2}{2}$

**Question Number : 279 Question Id : 1679436900 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A coin is placed at the bottom of a beaker and the beaker is filled with water to a height of 12 cm and observed from the surface of water. Find the apparent depth of coin. Refractive index of water is $\frac{4}{3}$.

**Options :**

✖ 16 cm

✖ 12 cm

✔ 9 cm

✖ 4.8 cm

**Question Number : 280 Question Id : 1679436901 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A point source is placed at the bottom of a beaker and filled with liquid of refractive index μ to a height h. Find the minimum radius of the disc to be placed on the surface of the liquid to stop the light emerging out of the liquid.

**Options :**

✖ $\frac{h}{u}$

✔ $\frac{h}{\sqrt{u^2-1}}$

✖ $\mu h$

✖ $\frac{h}{u^2}$

Subject Related

| | |
|---|---|
| **Group Number :** | 15 |
| **Group Id :** | 167943131 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 180 |
| **Revisit allowed for view? :** | No |
| **Revisit allowed for edit? :** | No |
| **Break time:** | 0 |

**Group Marks:** 20

Subject Related

| | |
|---|---|
| **Section Id :** | 167943190 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional:** | Mandatory |
| **Number of Questions:** | 20 |
| **Number of Questions to be attempted:** | 20 |
| **Section Marks:** | 20 |
| **Display Number Panel:** | Yes |
| **Group All Questions:** | No |

| | |
|---|---|
| **Sub-Section Number:** | 1 |
| **Sub-Section Id:** | 167943397 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 281 Question Id : 1679436902 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Leela at 11 months looked for help from her mother to pick up a doll from the top of a table but at the age of two she pulled a chair and climbed on it to reach the doll. What development had taken place?
Complete the sentence choosing the correct option.

**Options :**

✗ Language development

✗ Emotional development

✗ Physical development

✓ Cognitive and physical development

**Question Number : 282 Question Id : 1679436903 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Inclusive Education policy is an initiative to support the larger objective of _____.
Choose the right option

**Options :**

✓ Education for all

✗ Girl child education

✗ Special needs education

✖ Minority education

**Question Number : 283 Question Id : 1679436904 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Constructivist development model by Vygotsky signifies:

**Options :**

✖ Working individually

✖ Learning by doing

✔ Discussing with peers

✖ Reading

**Question Number : 284 Question Id : 1679436905 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Concept formation is a result of:

**Options :**

✔ Perceptions

✖ Memorising

✖ Drilling

✖ Teaching

**Question Number : 285 Question Id : 1679436906 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which element do debate and extempore speech help to develop?

**Options :**

✖ Reading fluency

✖ Emotional intelligence

✔ Being articulate in speech

✖ Writing skill

**Question Number : 286 Question Id : 1679436907 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which of the following is a key mathematical skill?

**Options :**

✖ Drawing

✖ Illustrating

✖ Observing

✔ Computing

**Question Number : 287 Question Id : 1679436908 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Education of girls is seen as "Education for social cohesion rather than Social progress" In which of the following documents?

**Options :**

✔ NCFSE 2000

✖ NPE 1986

✖ NCF 1975

✖ NPERC 1990

**Question Number : 288 Question Id : 1679436909 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

A social science lesson takes responsibility of inculcating which of the following values?

**Options :**

✔ Appreciation of land, culture and heritage

✖ Knowledge about location of resources

✖ Understanding population trends

✖ Awareness about technology

**Question Number : 289 Question Id : 1679436910 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Technology aided learning can substitute a teacher effectively when we use:

**Options :**

✗ Programmed learning

✓ Interactive e-lessons

✗ PowerPoint presentations

✗ Audio-visual aids

**Question Number : 290 Question Id : 1679436911 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Science teachers can enhance their proficiency through reading by:

**Options :**

✗ Updating with latest scientific developments

✓ Substantiating lessons with latest scientific developments

✗ Discussion with colleagues

✗ Giving home assignments

**Question Number : 291 Question Id : 1679436912 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Story telling comes from the art of:

**Options :**

✗ Acting

✓ Narrating

✗ Explaining

✗ Memory

**Question Number : 292 Question Id : 1679436913 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The objective of poems in languages is to learn:

**Options :**

✗ Singing

✗ Rhythm

✗ Action

✓ Aesthetics and varied expression

**Question Number : 293 Question Id : 1679436914 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

What does the acronym HTML stand for?

**Options :**

✗ Hypertext Marking Logic

✓ Hypertext Markup Language

✗ Hyper Text Multiple Language

✗ Hyper Transfer Marking Language

**Question Number : 294 Question Id : 1679436915 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

In machine language, the presence of an electric pulse followed by the absence of another electric pulse is represented as:

**Options :**

✗ (1)

✗ (0)

✓ (10)

✗ (01)

**Question Number : 295 Question Id : 1679436916 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which of the following is the epistemological basis for scientific knowledge, according to pragmatists?

**Options :**

✔ Experiments

✖ Opinions

✖ Interpretations

✖ Problem solving

**Question Number : 296 Question Id : 1679436917 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Which quality of a test reflects its desired outcome?

**Options :**

✔ Validity

✖ Feasibility

✖ Reliability

✖ Functionality

**Question Number : 297 Question Id : 1679436918 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Ramesh secured 15th rank. Which type of test was this evaluation based on?

**Options :**

✖ Criterion referencing

✖ Diagnostic

✔ Norm referenced

✖ Standardized

**Question Number : 298 Question Id : 1679436919 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Taking feedback from children after the lessons is:

**Options :**

✗ Assessment

✓ A Classroom Assessment Technique

✗ Reporting

✗ Lesson planning

**Question Number : 299 Question Id : 1679436920 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

The class scheduled to go on an educational tour to a fort. What could be the best alternate plan the teacher can have for Ashish who uses crutches to walk?

**Options :**

✗ A movie show

✓ Buddy system for mutual support

✗ Ask him to stay back in class and complete an assignment

✗ Give him a holiday

**Question Number : 300 Question Id : 1679436921 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct : 1 Wrong : 0.25**

Special educators help teachers in:

**Options :**

✗ Instructing

✓ Remediation

✗ Reporting

✗ Talking to students