# DSSSB JULY 2018

# PGT PHYSICS FEMALE

Section : **Mental Ability**

**Q.1** 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?

Question ID : **1679436625**

Ans
1. Pen ✗
2. Eraser ✓
3. School ✗
4. Bag ✗

**Q.2** 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?

Question ID : **1679436633**

Ans
1. 3 * 4 > 2 – 9 % 3 < 3 ✗
2. 5 > 2 % 2 # 10 < 4 * 8 ✓
3. 5 * 3 < 7 S 8 % 4 * 1 ✗
4. 3 * 2 < 4 S 16 > 2 % 4 ✗

**Q.3** निम्नलिखित में से विषम शब्द-युग्म का चयन करें।

Question ID : **1679436621**

Ans
1. कोण : रेडियन ✓
2. तेल : बीज ✗
3. कागज : लुगदी ✗
4. रबड़ : लेटेक्स ✗

**Q.4** अंग्रेजी वर्णमाला के बिल्कुल बाईं ओर से आठवें वर्ण के तुरंत पहले कौन सा वर्ण आता है?

Question ID : **1679436624**

Ans
1. G ✓
2. I ✗
3. J ✗
4. H ✗

**Q.5** 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?

Question ID : **1679436617**

Ans
1. 35 metres ✓
2. 33 metres ✗
3. 45 metres ✗
4. 47 metres ✗

**Q.6** 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.

Question ID : **1679436629**

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

**Ans**
✔ 1. KM20
✘ 2. KN24
✘ 3. KL20
✘ 4. KM22

**Q.7** जैसे हाथी का संबंध चिंघाड़ने से है, वैसे ही बिल्ली का संबंध _____ से है।

Question ID : **1679436619**

**Ans**
✘ 1. चीख़
✘ 2. काव-काव
✔ 3. म्याऊ
✘ 4. बिलौटा

**Q.8** Given is a statement and two assumptions. Select the correct comment about the assumptions from the given options.

Question ID : **1679436620**

**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.

**Ans**
✘ 1.
Only assumption II is implicit in the statement.
✔ 2.
Only assumption I is implicit in the statement.
✘ 3.
Neither assumption I nor II is implicit in the statement.
✘ 4.
Either assumption I or II is implicit in the statement.

**Q.9** 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?

Question ID : **1679436632**

**Ans**
✘ 1.
You believe, "How am I bothered with such petty issues? At least the task is being done by others; so it is fine!"
✘ 2.
You will punish them for not contributing by keeping them out of the team.
✘ 3.
You will give them complementary tasks in which both have to work together.
✔ 4.
You will make an explicit effort to help them shake hands.

**Q.10** From the options, select the pair that is similar to the following pair.

Question ID : **1679436627**

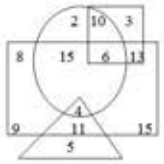
Badminton : Court

**Ans**
✘ 1. Boxing : Arena
✔ 2. Cricket : Pitch
✘ 3. Skating : Court

✗ 4. Cricket : Ground

**Q.11** 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'

Question ID : **1679436622**




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

**Ans**
✗ 1. 10
✓ 2. 3
✗ 3. 4
✗ 4. 13

**Q.12** 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.

Question ID : **1679436636**

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

**Ans**
✓ 1. 29
✗ 2. 21
✗ 3. 27
✗ 4. 23

**Q.13** Kamala is the mother-in-law of Ami, 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?

Question ID : **1679436626**

**Ans**
✗ 1. Brother-in-law
✓ 2. Son
✗ 3. Brother
✗ 4. Husband

**Q.14** दी गई जानकारी को ध्यान से पढ़ें और निम्नलिखित प्रश्न का उत्तर दें।
आनंद, विक्रम, मनीष और बरानी को एक पंक्ति में बिठाना है। मनीष और बरानी एक साथ नहीं हो सकते हैं। इसके अलावा, विक्रम तीसरे स्थान पर नहीं हो सकता।
निम्नलिखित में से कौन सा विकल्प निश्चित रूप से गलत होना चाहिए?

Question ID : **1679436618**

**Ans**
✗ 1. आनंद चौथे स्थान पर बैठा है
✗ 2. आनंद दूसरे स्थान पर बैठा है
✗ 3. आनंद तीसरे स्थान पर बैठा है
✓ 4. आनंद पहले स्थान पर बैठा है

**Q.15**

Question ID : **1679436623**

दिए गए विकल्पों में से, नीचे दिये गए जोड़े के समान जोड़े को चुनें।

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

Ans

✗ 1. $8:\frac{8}{82}$

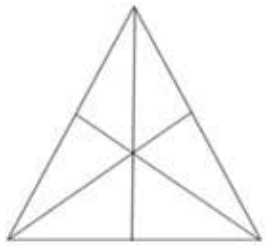
✗ 2. $15:\frac{14}{224}$

✓ 3. $11:\frac{11}{120}$

✗ 4. $6:\frac{6}{36}$

**Q.16** How many triangles are there in the following figure?

Question ID : **1679436628**



Ans

✓ 1. 16

✗ 2. 12

✗ 3. 9

✗ 4. 20

**Q.17** निम्नलिखित कथनों को पढ़ें और उस विकल्प का चयन करें जो इन कथनों का उपयुक्त वर्णन करता है।

Question ID : **1679436634**

I. बैंक कर्मचारियों ने हड़ताल वापस ले लिया, जिसे वे निजीकरण के विरोध में देख रहे थे।

II. बैंक कर्मचारी अपनी नौकरी के लिए संभावित खतरे की आशंका को लेकर हड़ताल पर चले गए थे।

Ans

✓ 1.

कथन I और II दोनों अलग-अलग कारणों के परिणाम हैं।

✗ 2.

कथन II कारण है और I इसका परिणाम है।

✗ 3.

कथन I कारण है और II इसका परिणाम है।

✗ 4.

कथन I और II दोनों अलग-अलग कारण हैं।

**Q.18** In a queue, Monika is 10th from the front, Kavya is 25th 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?

Question ID : **1679436630**

Ans

✓ 1. 18th

✗ 2. 19th

✗ 3. 15th

✗ 4. 22th

**Q.19** Read the given statements and decide which of the given conclusions logically follows from the statements.

Question ID : **1679436635**

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

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

Ans
✗ 1. Either conclusion I or II follows.
✗ 2. Only conclusion II follows.
✗ 3. Only conclusion I follows.
✓ 4. Neither conclusion I nor II follows.

**Q.20** निम्नलिखित अभिकथन और तर्क के रूप में दो कथन दिए गए हैं। इन्हें पढ़कर योग्य विकल्प का चयन कीजिए।

Question ID : **1679436631**

**अभिकथन (A):**
भारत में पुरुषों की तुलना में महिलाओं की आयु अपेक्षाकृत अधिक होती है।

**तर्क (R):**
महिलाओं को बेहतर आहार मिलता है।

Ans
✓ 1. A और R दोनों असत्य हैं।
✗ 2. A और R दोनों सत्य हैं और R, A का योग्य स्पष्टीकरण है।
✗ 3. A सत्य है लेकिन R असत्य है।
✗ 4. A असत्य है लेकिन R सत्य है।

Section : **General Awareness**

**Q.1** ए. टी. कीर्नी द्वारा जारी एफ.डी.आई. कॉन्फिडेंस इंडेक्स 2018 में भारत का पद क्या था?

Question ID : **1679436655**

Ans
✗ 1. 24 वाँ
✓ 2. 11वाँ
✗ 3. 7 वाँ
✗ 4. 18 वाँ

**Q.2** 'India Cements' has been associated with which franchise in the Indian Premier League cricket tournament?

Question ID : **1679436650**

Ans
✗ 1. Royal Challengers Bangalore
✗ 2. Mumbai Indians
✓ 3. Chennai Super Kings
✗ 4. Kolkata Knight Riders

**Q.3** निम्नलिखित में से किसने भारत के सबसे युवा स्वर्ण पदक विजेता बनकर 2018 राष्ट्रमंडल खेलों में इतिहास बनाया?

Question ID : **1679436651**

Ans
✗ 1. दीपक लाथेर
✗ 2. कविता देवी
✓ 3. अनिश भानवाला
✗ 4. एन. राम गौतम

**Q.4** धूपगढ़ पहाड़ी किस राज्य में स्थित है?

Question ID : **1679436640**

Ans
✗ 1. जम्मू और कश्मीर
✓ 2. मध्य प्रदेश
✗ 3. राजस्थान
✗ 4. आंध्र प्रदेश

Q.5 धुम्हल निम्नलिखित में से किस राज्य का एक प्रसिद्ध लोक नृत्य है?
Question ID : **1679436648**

Ans
✓ 1. जम्मू और कश्मीर
✗ 2. मध्य प्रदेश
✗ 3. उत्तराखंड
✗ 4. छत्तीसगढ़

Q.6 In which year was the Insurance Regulatory and Development Authority (IRDA) constituted as an autonomous body?
Question ID : **1679436653**

Ans
✗ 1. 2005
✓ 2. 2000
✗ 3. 1991
✗ 4. 1988

Q.7 In which state is the Jawaharlal Nehru Sea Port located?
Question ID : **1679436641**

Ans
✗ 1. Kerala
✓ 2. Maharashtra
✗ 3. Gujarat
✗ 4. Odisha

Q.8 The first Emperor of Mughal dynasty was:
Question ID : **1679436638**

Ans
✗ 1. Muhammad Shah
✓ 2. Babur
✗ 3. Humayun
✗ 4. Ahmad Shah

Q.9 With which musical instrument is the famous musician T. K. Murthy associated?
Question ID : **1679436647**

Ans
✓ 1. Mridangam
✗ 2. Sarangi
✗ 3. Sitar
✗ 4. Jaltarangam

Q.10 In which of the following years did Subhas Chandra Bose inaugurate the Azad Hind Sarkar (Government of Free India) in Singapore?
Question ID : **1679436637**

Ans
✗ 1. 1942
✓ 2. 1943
✗ 3. 1944

✗ 4. 1941

Q.11 चिकनकारी कढ़ाई के लिए कौन सा शहर प्रसिद्ध है? Question ID : **1679436649**

Ans
✗ 1. नागपुर
✗ 2. रायपुर
✓ 3. लखनऊ
✗ 4. जयपुर

Q.12 हमें गर्मियों में सूती वस्त्र पहनना चाहिए क्योंकि यह _____ में मदद करता है जो हमारे शरीर को आरामदायक बनाता है। Question ID : **1679436652**

Ans
✓ 1. वाष्पीकरण प्रक्रिया
✗ 2. अभिकेन्द्रीय प्रक्रिया
✗ 3. संघनन प्रक्रिया
✗ 4. ऊष्मायन प्रक्रिया

Q.13 Where was the 23rd meeting of the Western Zonal Council held? Question ID : **1679436656**

Ans
✓ 1. Gandhinagar
✗ 2. Pune
✗ 3. Ahmedabad
✗ 4. Bhuj

Q.14 When was the Foreign Exchange Management Act (FEMA) enacted? Question ID : **1679436645**

Ans
✓ 1. 1999
✗ 2. 1982
✗ 3. 1947
✗ 4. 1963

Q.15 The Finance Minister of India is appointed by: Question ID : **1679436643**

Ans
✓ 1. the President
✗ 2. the Prime Minister
✗ 3. the Vice-President
✗ 4. the Attorney-General

Q.16 _____ के पास भारत के संविधान के अनुच्छेद 123 के तहत अध्यादेश जारी करने की शक्ति है। Question ID : **1679436642**

Ans
✓ 1. राष्ट्रपति
✗ 2. प्रधानमंत्री
✗ 3. महान्यायवादी
✗ 4. राज्यपाल

Q.17 The Harappan site Kalibangan is situated in the Indian state of: Question ID : **1679436639**

Ans

✗ 1. Gujarat

✗ 2. Bihar

✓ 3. Rajasthan

✗ 4. Madhya Pradesh

**Q.18** What is the rank occupied by India among the economies of the world in terms of export volume?

Question ID : **1679436646**

Ans

✗ 1. 22nd

✗ 2. 14th

✗ 3. 16th

✓ 4. 19th

**Q.19** निम्नलिखित में से कौन सा **गलत** है?

Question ID : **1679436644**

Ans

✗ 1.

एक ही व्यक्ति को दो राज्यों के लिए गवर्नर नियुक्त किया जा सकता है।

✗ 2.

एक राज्य के राज्यपाल को राष्ट्रपति द्वारा नियुक्त किया जाता है।

✗ 3.

एक राज्य के राज्यपाल राष्ट्रपति को अपना इस्तीफा सौंपता है।

✓ 4.

30 साल की उम्र का व्यक्ति राज्य का राज्यपाल बन सकता है।

**Q.20** What was India's electricity generation growth rate in March 2018?

Question ID : **1679436654**

Ans

✓ 1. 4.5%

✗ 2. 3.3%

✗ 3. 5.7%

✗ 4. 2.8%

Section : **Arithmetic Ability**

**Q.1** 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?

Question ID : **1679436665**

Ans

✗ 1. ₹ 32,762

✗ 2. ₹ 32,762.50

✓ 3. ₹ 31,762.50

✗ 4. ₹ 31,672

**Q.2** 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?

Question ID : **1679436669**

Ans

✓ 1. 48 km/h

✗ 2. 36 km/h

✗ 3. 32 km/h

✗ 4. 50 km/h

**Q.3** 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?

Question ID : **1679436657**

**Ans**
✗ 1. 24
✗ 2. 21
✗ 3. 12
✓ 4. 14

**Q.4** When 34294, 31467 and 26841 are divided by the greatest number $x$, the remainder in each case is $y$. What is the value of $(x + y)$?

Question ID : **1679436668**

**Ans**
✓ 1. 370
✗ 2. 363
✗ 3. 359
✗ 4. 357

**Q.5** 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:

Question ID : **1679436661**

**Ans**
✗ 1. 2
✓ 2. 1
✗ 3. 5
✗ 4. 3

**Q.6** 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:

Question ID : **1679436660**

**Ans**
✓ 1. $\frac{1}{4}$
✗ 2. $\frac{3}{4}$
✗ 3. $\frac{3}{2}$
✗ 4. $\frac{1}{2}$

**Q.7** 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:

Question ID : **1679436659**

**Ans**
✗ 1. $\frac{2}{3}$
✓ 2. $\frac{1}{5}$
✗ 3. $\frac{1}{3}$
✗ 4. $\frac{2}{5}$

**Q.8** एक कंपनी के 40% कर्मचारी पुरुष हैं और उनमें से 75% प्रति माह ₹ 1,800 से अधिक कमाते हैं। यदि कंपनी के सभी कर्मचारियों का 45% प्रति माह ₹ 1,800 से अधिक कमाता है, तो ₹ 1,800 या उससे कम कमाने वाली महिला कर्मचारियों का प्रतिशत कितना है?

Question ID : **1679436663**

**Ans**

✗ 1. 70

✓ 2. 75

✗ 3. 45

✗ 4. 50

**Q.9** The value of $\frac{0.00281 + 0.625}{0.1405} \div \frac{0.203 \times 0.292}{0.073 \times 1.45 \times 0.7} \times \frac{6.5 \times 0.077}{65.077 - 64.934}$ lies between:

Question ID : **1679436658**

**Ans**

✗ 1. 0.11 and 0.13

✗ 2. 0.09 and 0.11

✗ 3. 0.15 and 0.17

✓ 4. 0.13 and 0.15

**Q.10** 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?

Question ID : **1679436666**

**Ans**

✗ 1. $2\sqrt{3}:1$

✗ 2. $2:1$

✗ 3. $3:1$

✓ 4. $3\sqrt{3}:1$

**Q.11** 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:

Question ID : **1679436662**

**Ans**

✗ 1. 5 : 6

✗ 2. 18 : 11

✗ 3. 6 : 5

✓ 4. 11 : 18

**Q.12** 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?

Question ID : **1679436664**

**Ans**

✗ 1. $33\frac{1}{2}$

✗ 2. 20

✓ 3. $27\frac{1}{2}$

✗ 4. 17

**Q.13** 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:

Question ID : **1679436667**

**Ans**

✗ 1. $\frac{11}{250}$

✗ 2. $\frac{11}{700}$

✓ 3. $\frac{11}{750}$

✗ 4. $\frac{11}{600}$

**Q.14** 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?

Question ID : **1679436670**

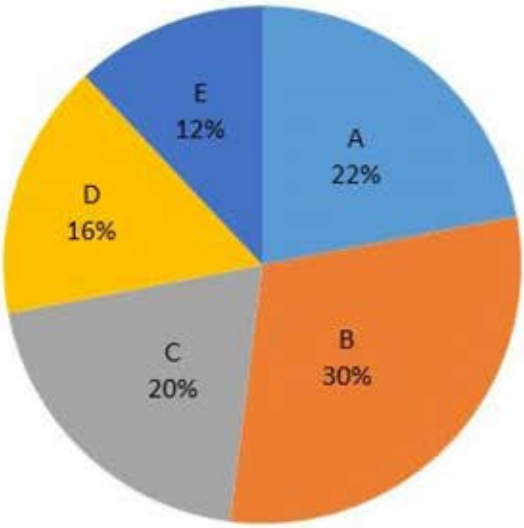
**Ans**

✗ 1. 14
✗ 2. 10
✗ 3. 8
✓ 4. 12

**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 |

**SubQuestion No : 15**

Q.15 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?

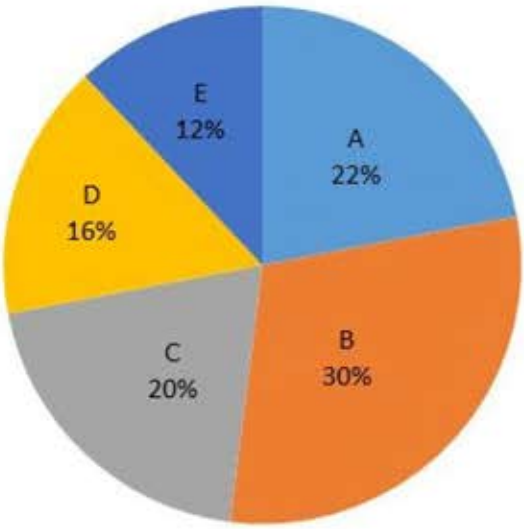
Question ID : **1679436672**

Ans
✓ 1. 25 : 32
✗ 2. 22 : 27
✗ 3. 27 : 22
✗ 4. 32 : 25

**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 |

**SubQuestion No : 16**

**Q.16** 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)?

Question ID : **1679436673**

**Ans**

✗ 1. 41

✓ 2. 44

✗ 3. 50

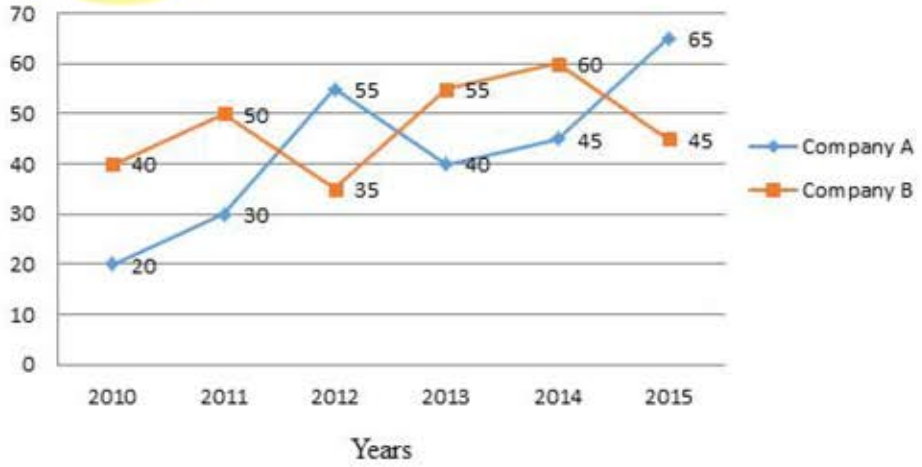
✗ 4. 48

**Comprehension:**

Study the following graph and answer the questions that follow:

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

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




**SubQuestion No : 17**

**Q.17**

Question ID : **1679436675**

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?

Ans
✗ 1. 13 : 15
✓ 2. 29 : 32
✗ 3. 28 : 31
✗ 4. 29 : 33

**Comprehension:**

Study the following graph and answer the questions that follow:

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

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


**SubQuestion No : 18**

Q.18 If the expenditure of company B in 2010 was ₹ 3.6 lakhs, then what was its profit (in lakhs) in that year?

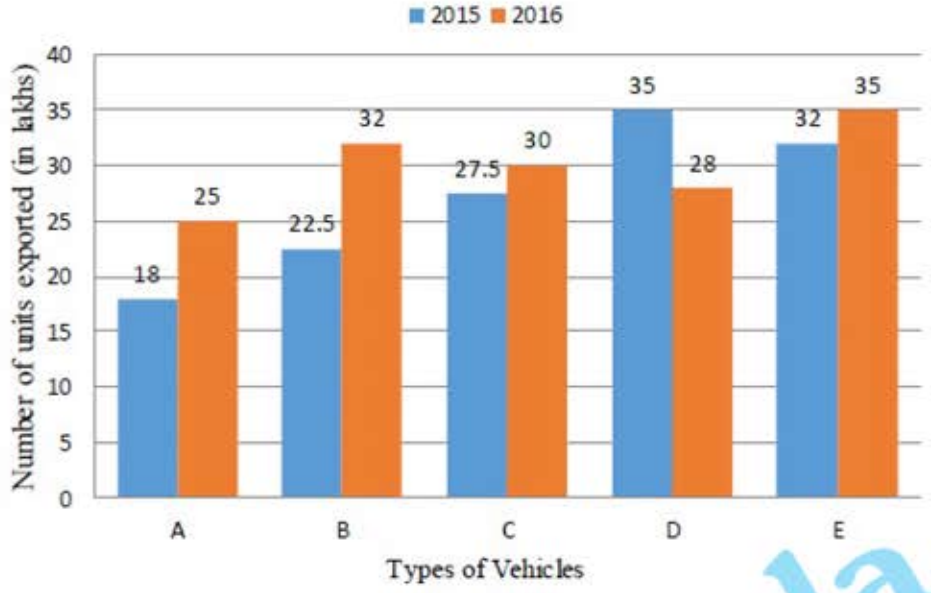
Question ID : **1679436676**

Ans
✗ 1. 1.25
✗ 2. 1.55
✗ 3. 1.24
✓ 4. 1.44

**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.




SubQuestion No : 19

Q.19 The percentage change (increase or decrease) in the number of vehicles exported from 2015 to 2016 was below 10% in case of vehicles:

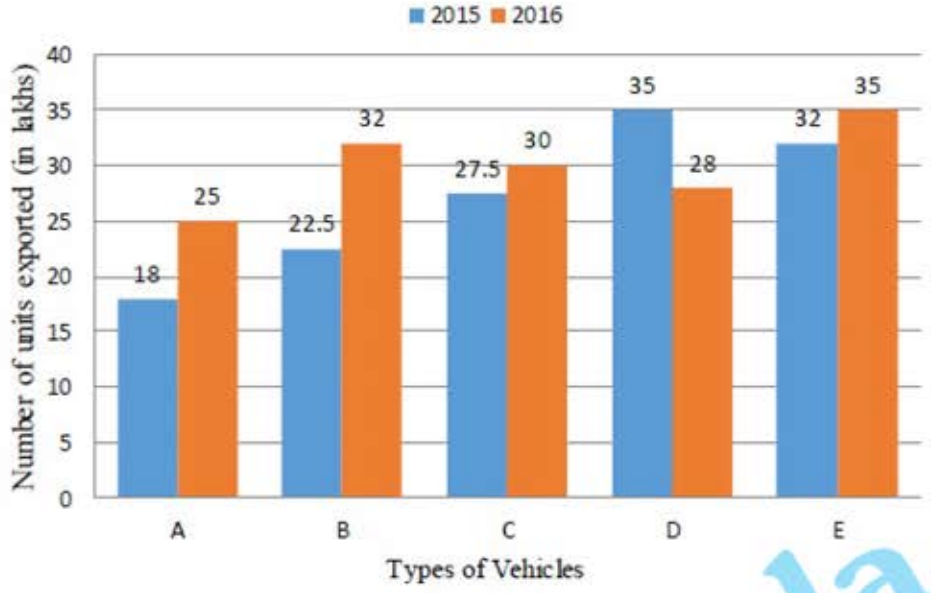
Question ID : **1679436678**

Ans
✔ 1. C and E
✘ 2. A and C
✘ 3. B and E
✘ 4. D and C

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.




SubQuestion No : 20

Q.20 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)?

Question ID : **1679436679**

Ans
✔ 1. 29.2
✘ 2. 27.4
✘ 3. 27.8
✘ 4. 28.6

Section : **General English**

Q.1 Fill in the blank with the appropriate word.

Question ID : **1679436685**

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

Ans
✘ 1. often
✘ 2. always
✔ 3. rarely
✘ 4. almost

Q.2 Fill in the blank with the appropriate idiomatic expression.

Question ID : **1679436693**

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

Ans
✔ 1. turned a deaf ear to

✗ 2. cut a sorry figure at

✗ 3. was at arm's length to

✗ 4. took to task

**Q.3** Choose the option that best combines the two given sentences.

Question ID : **1679436690**

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

**Ans**

✗ 1.
Caring for all human beings is the essence of all religions what you should not forget.

✗ 2.
You should not forget it that caring for all human beings is the essence of all religions.

✓ 3.
You should not forget that caring for all human beings is the essence of all religions.

✗ 4.
Caring for all human beings which is the essence of all religions you should not forget.

**Q.4** Choose the most appropriate option to complete the sentence.

Question ID : **1679436683**

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

**Ans**

✗ 1. some

✓ 2. the

✗ 3. a

✗ 4. any

**Q.5** Choose the correct antonym of:

Question ID : **1679436681**

jumbo

**Ans**

✗ 1. hilarious

✗ 2. grand

✓ 3. miniature

✗ 4. monstrous

**Q.6** 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.

Question ID : **1679436686**

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.

**Ans**

✗ 1. we use to

✗ 2. aspects of leadership

✗ 3. or relationship-building.

✓ 4. can be included

**Q.7** Fill in the blank with the appropriate phrase/phrasal verb.

Question ID : **1679436694**

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

**Ans**

✗ 1. wearing out

✗ 2. looking out

✓ 3. running out

✗ 4. running down

**Q.8** Fill in the blank with the appropriate word.

Question ID : **1679436684**

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

**Ans**
✗ 1. were
✗ 2. was
✓ 3. could
✗ 4. is

**Q.9** Choose the most appropriate indirect speech form for the following sentence.

Question ID : **1679436689**

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."

**Ans**
✗ 1.
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.

✓ 2.
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.

✗ 3.
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."

✗ 4.
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."

**Q.10** Choose the correct antonym of the underlined word to fill in the blank.

Question ID : **1679436682**

Aunt Beena is a <u>stingy</u> lady compared to my mother who is very _____.

**Ans**
✓ 1. liberal
✗ 2. protective
✗ 3. persuasive
✗ 4. caring

**Q.11** Choose the correct synonym of:

Question ID : **1679436680**

genuine

**Ans**
✗ 1. gentle
✗ 2. kind
✗ 3. fine
✓ 4. real

**Q.12** Choose the sentence that is correctly punctuated.

Question ID : **1679436691**

**Ans**
✗ 1.
"What a pleasant day, said Prabhu," "Lets go on a picnic to Surajkund."

✓ 2.
"What a pleasant day!" said Prabhu, "Let's go on a picnic to Surajkund."

✗ 3.
"What a pleasant day? "said Prabhu, "lets go on a picnic to Surajkund."

✗ 4.
What a pleasant day?" said Prabhu, "lets go on a picnic to Surajkund."

**Q.13**

Question ID : **1679436688**

Choose the passive voice form of the given sentence.

The gardener warned the children not to pluck flowers.

Ans
✗ 1.
The gardener warned the children not to pluck flowers.

✗ 2.
The children warned the gardener not to pluck flowers.

✓ 3.
The children were warned by the gardener not to pluck flowers.

✗ 4.
The gardener is warning the children not to pluck flowers.

Q.14 Choose the word that is correctly spelt.

Question ID : **1679436692**

Ans
✓ 1. Desperate
✗ 2. Aknowledge
✗ 3. Controvertial
✗ 4. Immagination

Q.15 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.

Question ID : **1679436687**

Ans
✗ 1. said that
✗ 2. be able to become
✓ 3. will try
✗ 4. of the college

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.



SubQuestion No : 16

Q.16 According to the passage, how have human beings been affected by the thought of self?

Question ID : **1679436696**

Ans

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

✘ 2. People are becoming doctors and engineers.

✘ 3. The brain is getting smarter.

✘ 4. Professions are getting narrowed.

**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.



**SubQuestion No : 17**

**Q.17** Complete the statement with the most appropriate option as per the given passage.

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

Question ID : **1679436699**

**Ans**

✔ 1. sky; cloud

✘ 2. sky; air

✘ 3. cloud; air

✘ 4. cloud; sky

**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.



SubQuestion No : 18

Q.18 Choose an option to fill in the blank in the following sentence.

Question ID : **1679436698**

"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.

Ans
✗ 1. intelligent
✗ 2. outgoing
✓ 3. fearless
✗ 4. mad

**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.



SubQuestion No : 19

Q.19 According to the passage, what can bring an end to man's obsession with the self?

Question ID : **1679436700**

Ans

✔ 1. Understanding the mind to realise the innermost self.

✘ 2. Having an audio-video of the working of the mind.

✘ 3. Becoming like the beautiful blue sky.

✘ 4. Floating in the air all through the day.

**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.



**SubQuestion No : 20**

**Q.20** Choose the INCORRECT option to complete the meaning of the sentence as per the given passage.

Our mind is always _____.

Question ID : **1679436697**

**Ans**

✗ 1. planning the future

✗ 2. reflecting on experience

✗ 3. talking to itself

✓ 4. looking inwards

Section : **General Hindi**

**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 हैं। पुरुषार्थ अथवा कर्म यदि नहीं हैं तो भाग्य कहा 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।

उद्यम 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 साता का हरण भा न हाता। इसा प्रकार याद पुरुषाथ करने पर ही संपत्ति प्राप्त होती, तो भीम जैसा बलशाली योद्धा राजा विराट के यहाँ रसोइए का काम क्यों करता?

SubQuestion No : 1

Q.1 गद्यांश के अनुसार रहीम जी क्या **नहीं** थे?

Question ID : **1679436705**

Ans
✗ 1. कर्मवीर
✗ 2. सेनानायक
✗ 3. भुद्वीर
✓ 4. भाग्यावीर

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।

उद्यम 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?

SubQuestion No : 2

Q.2 देना चाहें करतार जिन्हें - पंक्ति में महत्व है:

Question ID : **1679436704**

Ans

✗ 1. कर्म का

✓ 2. भाग्य का

✗ 3. विद्या का

✗ 4. साहस का

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?

SubQuestion No : 3

Q.3 राम का स्वर्णमृग के पीछे जाना:

Question ID : **1679436706**

Ans ✔ 1. भाग्य प्रधानता के कारण

✗ 2. सीता की आज्ञा के कारण

✗ 3. निर्भयता के कारण

✗ 4. स्वर्णलोलुपता के कारण

**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।
उद्यम 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?

SubQuestion No : 4

Q.4 'कर्म प्रधान विश्व करि राखा' का अर्थ है:

Question ID : **1679436702**

Ans
✗ 1. जैसा कल वैसा कर्म
✓ 2. यह दुनिया कर्म प्रधान बनाई है
✗ 3. कर्म बिना कुछ नहीं
✗ 4. जैसा कर्म वैसा कल

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।
उद्यम 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?

SubQuestion No : 5

Q.5 बैठता है गाड़ी में पहुँचता है अस्पताल, यह विधान है: Question ID : **1679436703**

Ans
✗ 1. देवी देवतओं का
✗ 2. पुरुषार्थ का
✓ 3. भाग्य का
✗ 4. कर्म की प्रधानता का

Q.6 सदा बहुवचन में ही प्रयुक्त होने वाला शब्द है: Question ID : **1679436718**

Ans
✗ 1. बालक
✓ 2. प्राण
✗ 3. पाँसू
✗ 4. साधु

Q.7 निम्नलिखित में से कौन सा शब्द पुंलिंग हैं?

Question ID : **1679436714**

Ans
✗ 1. मालिश
✓ 2. होश
✗ 3. तलाश
✗ 4. लाश

Q.8 'बुरी हालत करना' के लिए मुहावरा है:

Question ID : **1679436721**

Ans
✓ 1. मिट्टी ख़राब करना।
✗ 2. मुँह पर हवाईया उड़ना।
✗ 3. मुँह पर उत्तर देना।
✗ 4. मिट्टी के मोल बिकना।

Q.9 'आय के अनुसार ही खर्च किया जाना चाहिए' इस अर्थ को व्यक्त करने के लिए लोकोक्ति होती है:

Question ID : **1679436720**

Ans
✗ 1. सहज पके से मीठा होय।
✗ 2. दुविधा में दोनों गए माया मिली न राम।
✓ 3. तेते पाँव पसारिए जेती लंबी सौर।
✗ 4. जाको राखै साइया मार सकै ना कोय।

Q.10 मुनि शब्द का बहुवचन (अविभक्तिक) होगा:

Question ID : **1679436719**

Ans
✓ 1. मुनि
✗ 2. मुनियों
✗ 3. मुनिएँ
✗ 4. मुनियो

Q.11 निम्नलिखित में से कौन सा शब्द 'तत्सम' है?

Question ID : **1679436707**

Ans
✗ 1. नींद
✗ 2. मोती
✓ 3. प्रिय

✗ 4. सूरज

Q.12 'दिगन्त' शब्द में सन्धि है: Question ID : **1679436710**

Ans
✗ 1. विसर्ग संधि
✗ 2. अयादी संधि
✔ 3. व्यंजन संधि
✗ 4. यण्संधि

Q.13 निम्नलिखित में से अशुद्ध वाक्य कौन सा है? Question ID : **1679436716**

Ans
✔ 1. पृथ्वी पर अंधकार ही अंधकार हो जाएगी।
✗ 2. दयानंद जी में धार्मिक प्रवृति बढ़ गया था।
✗ 3. नीलियाँ साड़ियाँ ही सुंदर लगी।
✗ 4. उसका बचपन गरीबी में बीता।

Q.14 कौन से वाक्य में सकर्मक क्रिया है? Question ID : **1679436717**

Ans
✔ 1. वह बहुत खाती है।
✗ 2. वह सो रही है।
✗ 3. तू भी क्यों शर्माता है?
✗ 4. शीला बहुत तेज दौडती है।

Q.15 'नीलाम्बर' शब्द में कौन सा समास है? Question ID : **1679436709**

Ans
✔ 1. कर्मधारय
✗ 2. तत्पुरुष
✗ 3. अव्ययीभाव
✗ 4. बहुब्रीहि

Q.16 'दौड़' शब्द है: Question ID : **1679436715**

Ans
✗ 1. क्रिया विशेषण
✗ 2. सर्वनाम
✗ 3. विशेषण
✔ 4. भाव वाचक संज्ञा

Q.17 'घृणा' शब्द का विलोभ है: Question ID : **1679436712**

Ans

✔ 1. प्रीत

✘ 2. स्नेहिल

✘ 3. वैर

✘ 4. शत्रुता

Q.18 'तद्भव' शब्द छांटिए: Question ID : **1679436708**

Ans
✘ 1. विवाह

✘ 2. चक्र

✔ 3. पूत

✘ 4. चन्द्रमा

Q.19 आँख का पर्यायवाची शब्द कौन सा है? Question ID : **1679436711**

Ans
✔ 1. लोचन

✘ 2. विमोचन

✘ 3. मोचन

✘ 4. आकुंचन

Q.20 'जो कभी तृप्त न होता हो' के लिए एक शब्द होगा: Question ID : **1679436713**

Ans
✘ 1. तर्पण

✘ 2. तृप्ति

✘ 3. संतृप्त

✔ 4. अतृप्त



Section : **Subject Related**

Q.1 1 watt expressed in cal/sec is equal to: Question ID : **1679436728**

Ans
✔ 1. 0.239

✘ 2. 860.42

✘ 3. 0.042

✘ 4. 14.34

Q.2 $t$ °C is equivalent to ( $t$ + 273.15) kelvin, that is $T$K. Then in Fahrenheit scale $T$K will be equivalent to: Question ID : **1679436729**

Ans
✘ 1. $\frac{5}{9}(t + 459.67)$

✔ 2. $1.8(t + 290.93)$

✘ 3. $\frac{5}{9}\left(t + \frac{32}{9}\right)$

✗ 4. $1.8(t+273)$

**Q.3** In a mathematical treatment the expression of a function of velocity, u, appears as $e^{-bu^2}$. The dimension of b is:

Question ID : **1679436724**

**Ans**

✗ 1. $L^2T^{-2}$

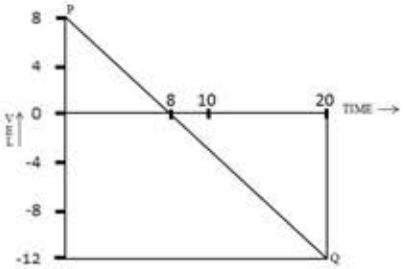
✗ 2. $MLT^{-1}$

✓ 3. $L^{-2}T^2$

✗ 4. $ML^2T^{-2}$

**Q.4**

Question ID : **1679436733**




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.

**Ans**

✗ 1. 128

✓ 2. 104

✗ 3. 98

✗ 4. 144

**Q.5** 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 $g = 10\ ms^{-2}$).

Question ID : **1679436738**

**Ans**

✗ 1. 120

✗ 2. 90

✓ 3. 30

✗ 4. 60

**Q.6** $kgm^2s^{-3}A^{-1}$ is equivalent to:

Question ID : **1679436725**

**Ans**

✗ 1. Henry

✗ 2. Ampere

✗ 3. Watt

✓ 4. volt

**Q.7** 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 $(\hat{i}+\hat{j}+\hat{k})$?

Question ID : **1679436735**

**Ans**

✗ 1. $\frac{\sqrt{3}}{3}\ ms^{-1}$

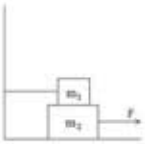
✓ 2. $\sqrt{3}\ ms^{-1}$

✗ 3. $3\sqrt{3}\ ms^{-1}$

✗ 4. $2\sqrt{3}\ ms^{-1}$

**Q.8**

Question ID : **1679436740**




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 = $\mu$) is?

Ans
✔ 1. $(2m_1 + m_2)\mu g + m_2 a$
✘ 2. $(2m_1 + m_2)\mu g + (m_1 + m_2)a$
✘ 3. $(m_2 + m_1)\mu g + m_2 a$
✘ 4. $(2m_2 + m_1)\mu g + m_2 a$

**Q.9** 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:

Question ID : **1679436726**

Ans
✔ 1. 14.5 cm
✘ 2. 14.45 cm
✘ 3. 14.4 cm
✘ 4. $(14.4 \times 14.5)^{\frac{1}{2}}$ cm

**Q.10** 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:

Question ID : **1679436732**

Ans
✔ 1. $2ac^2$
✘ 2. $ac^2$
✘ 3. $\frac{1}{2}ac^2$
✘ 4. $4ac^2$

**Q.11** 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 $a : b$.

Question ID : **1679436736**

Ans
✘ 1. $\frac{1}{2}\sqrt{7}$
✔ 2. $\sqrt{\frac{7}{3}}$
✘ 3. $\sqrt{\frac{5}{3}}$
✘ 4. $\frac{1}{2}\sqrt{5}$

**Q.12** (farad × ohm) is equivalent to:

Question ID : **1679436723**

Ans
✘ 1. $sec^{-2}$
✔ 2. sec
✘ 3. $sec^2$
✘ 4. $sec^{-1}$

**Q.13** 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/ $s^2$ )

Question ID : **1679436739**

Ans
✘ 1. 20 m/s upward

✗ 2. 40 m/s upward

✓ 3. 40 m/s downward

✗ 4. 20 m/s downward

**Q.14** 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 $(g = 10 m/s^2)$

Question ID : **1679436741**

**Ans**

✗ 1. $N_1N_2 = 5 \times 10^3$ newton$^2$

✗ 2. $N_1N_2 = 2 \times 10^4$ newton$^2$

✓ 3. $N_1N_2 = 10^4$ newton$^2$

✗ 4. $N_1N_2 = 4 \times 10^3$ newton$^2$

**Q.15** 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.

Question ID : **1679436730**

**Ans**

✗ 1. (r)

✗ 2. (s)

✓ 3. (q)

✗ 4. (p)

**Q.16** 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?

Question ID : **1679436731**

**Ans**

✗ 1. $-2$

✗ 2. $-4$

✓ 3. $-3$

✗ 4. $-1$

**Q.17** The dimension of Planck's constant is same as that of:

Question ID : **1679436722**

**Ans**

✗ 1. Rotational kinetic energy

✓ 2. Angular momentum

✗ 3. Linear momentum

✗ 4. Angular velocity

**Q.18** एक पिंड क्षैतिज से 30° कोण पर प्रक्षेपित होता है, ताकि एक दूसरे से 10 m की दूरी पर स्थित 5 m की बराबर ऊंचाई वाली दो दीवारों को पार कर सके। पिंड मीटर में कुल कितनी दूरी चलता है?

Question ID : **1679436737**

**Ans**

✓ 1. 10 cot15°

✗ 2. 20 cot15°

✗ 3. 20

✗ 4. $10\sqrt{3}$

**Q.19**

Question ID : **1679436727**

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:

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

Ans
1. 0.17
2. 2.83
3. 0.83
4. 4.17 ✔

**Q.20** A particle moves in three dimension such that its position vs. time equations ( $x$ , $y$, $z$ in metres and $t$ in seconds) are:

$x = t^2 + t + 2$ , $y = t^2 - t + 1$ , $z = 2sinnt$

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

Question ID : **1679436734**

Ans
1. $(2\hat{i} - \hat{j} + 2\hat{k})\ ms^{-2}$
2. $4(\hat{i} - 9\hat{j})\ ms^{-2}$
3. $(2\hat{i} + 3\hat{j} + \hat{k})\ ms^{-2}$
4. $2(\hat{i} + \hat{j})\ ms^{-2}$ ✔

Section : **Subject Related**

**Q.1** 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.

Question ID : **1679436753**

Ans
1. $\frac{1}{3}ML^2$
2. $\frac{1}{12}ML^2$ ✔
3. $\frac{1}{6}ML^2$
4. $\frac{1}{24}ML^2$

**Q.2** 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.

Question ID : **1679436751**

Ans
1. Only (r) is true
2. Only (q) is true
3. Both (r) and (s) are true ✔
4. Only (p) is true

**Q.3** 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.

Question ID : **1679436755**

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

✗ 3. $\frac{a}{2\sqrt{2}}$

✓ 4. $\frac{a}{\sqrt{2}}$

**Q.4** 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?

Question ID : **1679436745**

**Ans**

✗ 1. 1000 joules

✗ 2. 1200 joules

✓ 3. 800 joules

✗ 4. 1600 joules

**Q.5** 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:

Question ID : **1679436756**

**Ans**

✗ 1. $9 : 1$

✗ 2. $\sqrt{3} : 1$

✓ 3. $3 : 1$

✗ 4. $9 : 2$

**Q.6** 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?

Question ID : **1679436752**

**Ans**

✓ 1. $\frac{1}{7}$

✗ 2. $\frac{1}{8}$

✗ 3. $\frac{1}{6}$

✗ 4. $\frac{1}{14}$

**Q.7** 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 $\mu$. The table is rotating with an angular velocity $\omega$ 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 $m_1$.

Question ID : **1679436743**

**Ans**

✓ 1. $(m_1r_1 - m_2r_2)\omega^2$

✗ 2. $m_1(r_1 - r_2)\omega^2$

✗ 3. $m_2(r_1 - r_2)\omega^2$

✗ 4. $(m_1r_1 + m_2r_2)\omega^2$

**Q.8** 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 $g = 10 m/s^2$)

Question ID : **1679436742**

**Ans**

✗ 1. 1.5 m/s

✓ 2. 1 m/s

✗ 3. 0.5 m/s

✗ 4. 1.25 m/s

**Q.9** 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 $\frac{GMm}{x^2}\left(1-\frac{1}{8y^3}\right)$. Then $y$ is equal to:

Question ID : **1679436761**

**Ans**

✗ 1. $\left(1+\frac{R}{x}\right)$

✗ 2. $\left(1-\frac{R}{x}\right)$

✓ 3. $\left(1-\frac{R}{2x}\right)$

✗ 4. $\left(1+\frac{R}{2x}\right)$

**Q.10** 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?

Question ID : **1679436758**

**Ans**

✗ 1.

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

✗ 2.

(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.

✓ 3.

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

✗ 4.

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

**Q.11** If a bucket weighing 1kg is lowered at a constant acceleration $2.5 m/s^2$ by a string (assumed to be massless) by a distance of 4m, the work done by the string will be ( take $g = 10 m/s^2$ ).

Question ID : **1679436747**

**Ans**

✗ 1. $\frac{160}{3}$ J

✗ 2. $-\frac{160}{3}$ J

✓ 3. $-30$ J

✗ 4. 10 J

**Q.12** 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 $\left(\frac{2x}{m}+v_1^2\right)^{\frac{1}{2}}$ 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?

Question ID : **1679436748**

**Ans**

✗ 1. 2.5

✓ 2. 2

✗ 3. 4

✗ 4. 3

**Q.13** 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:

Question ID : **1679436757**

**Ans**

✓ 1. $\frac{5L}{6\,mR^2}$

✗ 2. $\frac{L}{3\,mR^2}$

✗ 3. $\frac{L}{6\,mR^2}$

✗ 4. $\frac{L}{2\,mR^2}$

**Q.14** Which among the Kepler's laws of planetary motion would still remain valid had the gravitational force not followed the inverse square variation?

Question ID : **1679436760**

Ans
✗ 1. Only First law
✗ 2. Only Third law
✗ 3. First and Third law
✓ 4. Only Second law

**Q.15** Which among the following as/are a no-work force(s)?

Question ID : **1679436744**

(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

Ans
✗ 1. Only (p) and (r)
✗ 2. Only (q)
✓ 3. (p), (q) and (r)
✗ 4. Only (s)

**Q.16** 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 $sec^{-2}$?

Question ID : **1679436754**

Ans
✓ 1. $\left\{\frac{\sqrt{2}}{6}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in anticlockwise sense
✗ 2. $\left\{\frac{\sqrt{2}}{3}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in clockwise sense
✗ 3. $\left\{\frac{\sqrt{2}}{3}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in anticlockwise sense
✗ 4. $\left\{\frac{\sqrt{2}}{6}\left(1-\frac{\sqrt{2}}{6}\right)\right\}$ in clockwise sense

**Q.17** 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:

Question ID : **1679436759**

Ans
✗ 1. Proportional to $\cot\alpha$
✗ 2. Proportional to $\cos\alpha$
✓ 3. Independent of $\alpha$
✗ 4. Proportional to $\sqrt{\cot\alpha}$

**Q.18** 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:

Question ID : **1679436746**

Ans
✗ 1. $\frac{1}{2}m\left(\frac{dr}{dt}\right)^2 + \frac{1}{5}kr^5$ = a constant
✓ 2. $\frac{1}{2}m\left(\frac{dr}{dt}\right)^2 + \frac{1}{4}kr^4$ = a constant
✗ 3. $\frac{1}{2}m\left(\frac{dr}{dt}\right)^2 + \frac{1}{3}kr^2$ = a constant

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

**Q.19** 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:

Question ID : **1679436749**

**Ans**

✔ 1. $\frac{7}{8}$

✗ 2. $\frac{3}{4}$

✗ 3. $\frac{3}{8}$

✗ 4. $\frac{5}{8}$

**Q.20** A block of mass 2kg sliding on a smooth horizontal surface with a uniform speed $1 m s^{-1}$ 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?

Question ID : **1679436750**

**Ans**

✔ 1. 1

✗ 2. $\sqrt{2}$

✗ 3. $\frac{1}{2}$

✗ 4. $\frac{\sqrt{3}}{2}$

Section : **Subject Related**

**Q.1** 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.

Question ID : **1679436766**

**Ans**

✔ 1. $\frac{E}{\rho g}$

✗ 2. $\frac{(E-B)}{\rho g}$

✗ 3. $\frac{3E}{2\rho g}$

✗ 4. $\frac{B}{\rho g}$

**Q.2** 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.

Question ID : **1679436776**

**Ans**

✗ 1. 147

✗ 2. 77

✔ 3. 127

✗ 4. 107

**Q.3** 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?

Question ID : **1679436765**

**Ans**

✗ 1. 144 F

✔ 2. 972 F

✘ 3. 81 F

✘ 4. $\frac{64}{3}$ F

**Q.4** 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? ($g = 10\ ms^{-2}$)

Question ID : **1679436764**

**Ans**

✘ 1. $260\ N/m^2$

✘ 2. $390\ N/m^2$

✔ 3. $780\ N/m^2$

✘ 4. $650\ N/m^2$

**Q.5** 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?

Question ID : **1679436767**

**Ans**

✘ 1. $\frac{1}{10}2^{1/3}\ ms^{-1}$

✘ 2. $\frac{1}{20}2^{1/3}\ ms^{-1}$

✘ 3. $\frac{1}{5}2^{2/3}\ ms^{-1}$

✔ 4. $\frac{1}{10}2^{2/3}\ ms^{-1}$

**Q.6** 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?

Question ID : **1679436773**

(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

**Ans**

✔ 1. (p)

✘ 2. (s)

✘ 3. (r)

✘ 4. (q)

**Q.7** 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).

Question ID : **1679436781**

**Ans**

✘ 1. 45

✘ 2. 35

✘ 3. 48

✔ 4. 40

**Q.8** Calculate the force required to separate two glass plates of area 0.02 sq metre with a film of water $8 \times 10^{-3}$ metre thick between them. Surface tension of water = 0.07 $Nm^{-1}$.

Question ID : **1679436768**

**Ans**

✘ 1. 28 N

✔ 2. 35 N

✘ 3. 40 N

✘ 4. 30 N

**Q.9** 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 $30^{\circ}$. It is given that at the initial instant, its position is increasing with time. Express position ($x$) in metres and time ($t$) in sec.

Question ID : **1679436779**

**Ans**

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

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

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

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

**Q.10** Which among the following processes can never be reversible?

Question ID : **1679436771**

**Ans**

✗ 1. Electrolysis

✓ 2. Free expansion

✗ 3. Extension of a spring under a load

✗ 4. Isothermal compression

**Q.11** 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 $P$, 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 '$P$'.

Question ID : **1679436772**

**Ans**

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

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

✓ 3. $\frac{1}{2\pi}\sqrt{\frac{P\alpha}{ml}}$

✗ 4. $\frac{1}{2\pi}\sqrt{\frac{PV}{m\alpha}}$

**Q.12** 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.

Question ID : **1679436763**

**Ans**

✓ 1. $\frac{2G}{3} \times 10^2$ N

✗ 2. $\frac{3G}{4} \times 10^2$ N

✗ 3. $\frac{G}{2} \times 10^2$ N

✗ 4. $\frac{G}{3} \times 10^2$ N

**Q.13** 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.

Question ID : **1679436777**

Ans
1. $17\cos\frac{\pi}{8}$ cm
2. 8.5 cm
3. 13 cm ✔
4. 17 cm

**Q.14** 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?

Question ID : **1679436778**

Ans
1. Parabola
2. Circle
3. Ellipse ✔
4. Hyperbola

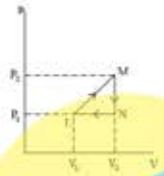
**Q.15** The ratio of specific heats at constant pressure and constant volume of a diatomic gas is $\gamma_1$ and that for a mono atomic gas is $\gamma_2$. Then $\gamma_1 : \gamma_2$ is:

Question ID : **1679436774**

Ans
1. 5 : 3
2. 24 : 25
3. 21 : 25 ✔
4. 4 : 5

**Q.16** A thermodynamic process undergone by a perfect gas is depicted in the P-V diagram as ∠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)

Question ID : **1679436770**




Ans
1. $3T_L, (1.5)T_L$
2. $T_L, 2T_L$
3. $2T_L, T_L$
4. $4T_L, 2T_L$ ✔

**Q.17** 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/m², $k_B \cong \sqrt{2} \times 10^{-23}$ J/K)

Question ID : **1679436775**

Ans
1. $\frac{10^{-6}}{\pi}$ m
2. $\frac{10^{-6}}{4\pi}$ m
3. $\frac{10^{-6}}{3\pi}$ m ✔
4. $\frac{10^{-6}}{2\pi}$ m

**Q.18** The polar equation of the orbit of a particle moving under a central force is given by $r = e^{-\theta}$. The force is:

Question ID : **1679436762**

Ans
✗ 1. attractive and varies as $r^{-4}$
✗ 2. repulsive and varies as $r^{-4}$
✗ 3. repulsive and varies as $r^{-3}$
✓ 4. attractive and varies as $r^{-3}$

**Q.19** 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 = $1.2 \times 10^{-5}\ {}^{\circ}C^{-1}$.

Question ID : **1679436769**

Ans
✗ 1. $12^3 \times 8\pi \times 10^{-6}\ cm^2$
✓ 2. $12^3 \times 16\pi \times 10^{-5}\ cm^2$
✗ 3. $12^3 \times 8\pi \times 10^{-5}\ cm^2$
✗ 4. $12^3 \times 16\pi \times 10^{-6}\ cm^2$

**Q.20** 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?

Question ID : **1679436780**

Ans
✓ 1. $\tan^{-1}\frac{3}{4}$
✗ 2. $\tan^{-1}\frac{2}{3}$
✗ 3. $\tan^{-1}\frac{4}{3}$
✗ 4. $\tan^{-1}\frac{1}{2}$

Section : **Subject Related**

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

Question ID : **1679436786**

Ans
✗ 1. ohm
✗ 2. mho
✗ 3. $(\text{farad})^{-1}$
✓ 4. farad

**Q.2** 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$^2$.

Question ID : **1679436790**

Ans
✓ 1. $x = 20t, y = 10t - 5t^2$
$x' = 0, y' = 10t' - 5t'^2$
✗ 2. $x = 0, y = 10t$
$x' = 0, y' = 10t'$
✗ 3. $x = 20t, y = 10t$
$x' = 0, y' = 10t'$

✗ 4. $x = 0, y = 10t - 5t^2$
$x' = 20t, y' = 10t' - 5t'^2$

**Q.3** 1 KWh expressed in eV is:

Question ID : **1679436787**

**Ans**
✗ 1. $2.247 \times 10^{23}$
✗ 2. $1.124 \times 10^{24}$
✓ 3. $2.247 \times 10^{25}$
✗ 4. $1.124 \times 10^{25}$

**Q.4** 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:

Question ID : **1679436800**

**Ans**
✗ 1. $\frac{1}{3}$
✗ 2. $\frac{1}{6}$
✗ 3. $\frac{1}{4}$
✓ 4. $\frac{1}{2}$

**Q.5** 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.

Question ID : **1679436788**

(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?

**Ans**
✗ 1. (s)
✓ 2. (q)
✗ 3. (r)
✗ 4. (p)

**Q.6** A particle is executing uniform angular motion with an angular velocity $\vec{\omega} = (2\hat{i} - \hat{j} + 5\hat{k})$ 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 $ms^{-1}$.

Question ID : **1679436795**

**Ans**
✗ 1. $-12\hat{i} + 4\hat{j} - 9\hat{k}$
✓ 2. $-13\hat{i} - 11\hat{j} + 3\hat{k}$
✗ 3. $-11\hat{i} + 13\hat{j} - 4\hat{k}$
✗ 4. $12\hat{i} + 10\hat{j} - 3\hat{k}$

**Q.7** 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.

Question ID : **1679436794**

**Ans**
✗ 1. $30\sqrt{3}\ ms^{-1}$
✗ 2. $\frac{10\sqrt{3}}{3}\ ms^{-1}$

✗ 3. $30\ ms^{-1}$

✓ 4. $10\sqrt{3}\ ms^{-1}$

**Q.8** $P$ 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 $Q$, ($g = 10\ ms^{-2}$)

Question ID : **1679436796**

Ans

✗ 1. $4\sqrt{10}\ ms^{-1}$

✗ 2. $5\sqrt{5}\ ms^{-1}$

✗ 3. $4\sqrt{5}\ ms^{-1}$

✓ 4. $5\sqrt{10}\ ms^{-1}$

**Q.9** Given below are four statements related to uniformly accelerated motion.

Question ID : **1679436793**

(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?

Ans

✗ 1. only (r)

✗ 2. (q) and (s)

✓ 3. (r) and (s)

✗ 4. (p) and (q)

**Q.10** Given below are four sets of numbers which are proportional to the magnitudes of three forces acting simultaneously at a point.

Question ID : **1679436798**

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

In which case equilibrium is not possible?

Ans

✗ 1. (r)

✓ 2. (s)

✗ 3. (q)

✗ 4. (p)

**Q.11** $\frac{\text{ohm}}{\text{henry}} = ?$

Question ID : **1679436784**

Ans

✓ 1. $s^{-1}$

✗ 2. $s^{2}$

✗ 3. $s^{-2}$

✗ 4. $s$

**Q.12** The value of 'g' is being obtained using a simple pendulum by applying the formula, $T = 2\pi\sqrt{\frac{l}{g}}$

Question ID : **1679436789**

'$l$' 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?

Ans

✗ 1. 0.20

✗ 2. 0.22

✓ 3. 0.11

✗ 4. 0.01

**Q.13** 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'.
$N = N_0 e^{-\lambda t}, F = mw^2 r$
(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?

Question ID : **1679436785**

Ans
✔ 1. w
✘ 2. m
✘ 3. $w^2$
✘ 4. r

**Q.14** A particle moving in a straight line follows the equation:
$v^2 = 4x - x^2$
What is the range of motion?

Question ID : **1679436791**

Ans
✘ 1. $x \geqslant 4$
✘ 2. $x \leqslant 0$
✔ 3. $0 \leqslant x \leqslant 4$
✘ 4. $0 < x < 4$

**Q.15** A point moves uniformly along a straight line. Its angular velocity about any point at a distance 'r' from it varies as:

Question ID : **1679436797**

Ans
✘ 1. r
✘ 2. $\frac{1}{r}$
✔ 3. $\frac{1}{r^2}$
✘ 4. $r^2$

**Q.16** A flexible 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: ($g = 10\ m/s^2$)

Question ID : **1679436799**

Ans
✘ 1. $2\ m/s^2$
✘ 2. $3\ m/s^2$
✘ 3. $4\ m/s^2$
✔ 4. $6\ m/s^2$

**Q.17** 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.

Question ID : **1679436792**

Ans
✘ 1. $\frac{p^3}{q^2}$
✔ 2. $\frac{p^3}{3q^2}$
✘ 3. $\frac{p^3}{2q^2}$
✘ 4. $\frac{3p^3}{2q^2}$

**Q.18** 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:

Question ID : **1679436801**

Ans
✗ 1. 2.5 m/s
✗ 2. 5 m/s
✗ 3. 4 m/s
✓ 4. 10 m/s

**Q.19** 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)

Question ID : **1679436782**

Ans
✓ 1. 597.5 Hz
✗ 2. 585 Hz
✗ 3. 595 Hz
✗ 4. 580.5 Hz

**Q.20** 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.

Question ID : **1679436783**

Ans
✗ 1. 12 Hz
✗ 2. 15 Hz
✓ 3. 10 Hz
✗ 4. 5 Hz

Section : **Subject Related**

**Q.1** 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 $4 \times 10^4 N$.

Question ID : **1679436808**

Ans
✗ 1. 500
✓ 2. 300
✗ 3. 200
✗ 4. 400

**Q.2** In the differential equation $m\ddot{x} + kx = 0$, where the symbols have their usual meanings, the dimension of $\frac{k}{m}$ is:

Question ID : **1679436815**

Ans
✗ 1. $T^2$
✓ 2. $T^{-2}$
✗ 3. $L^{-1}T$
✗ 4. $LT^{-2}$

**Q.3** 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.

Question ID : **1679436809**

Ans
✗ 1. $\frac{1}{4}$
✓ 2. $\frac{1}{3}$
✗ 3. $\frac{2}{3}$
✗ 4. $\frac{1}{2}$

**Q.4**

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.

Question ID : **1679436812**

Ans
✗ 1. $\frac{m}{4}(r_1{}^2 + r_2{}^2)$
✗ 2. $\frac{m}{6}(r_1{}^2 + r_2{}^2 + r_1 r_2)$
✓ 3. $\frac{m}{2}(r_1{}^2 + r_2{}^2)$
✗ 4. $\frac{m}{4}(r_1{}^2 + r_2{}^2 + r_1 r_2)$

**Q.5** 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:

Question ID : **1679436802**

Ans
✗ 1. $60°$
✗ 2. $tan^{-1}(2 - \sqrt{3})$
✓ 3. $45°$
✗ 4. $tan^{-1}\frac{1}{2}$

**Q.6** 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

Question ID : **1679436819**

Ans
✗ 1. 2.0%
✗ 2. 2.1%
✗ 3. 1.8%
✓ 4. 1.9%

**Q.7** 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)?

Question ID : **1679436806**

Ans
✗ 1. 3 J
✗ 2. 5 J
✓ 3. 4 J
✗ 4. 2 J

**Q.8** 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

Question ID : **1679436820**

Ans
✗ 1. $-2ax\cos x$
✗ 2. $2ax\cos x$
✓ 3. $-2ax\sin x$
✗ 4. $2ax\sin x$

**Q.9** 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? ($g = 10ms^{-2}$)

Question ID : **1679436805**

Ans

✔ 1. $\frac{1}{6}$

✘ 2. $\frac{1}{8}$

✘ 3. $\frac{1}{10}$

✘ 4. $\frac{1}{12}$

**Q.10** Kg $m^2 s^{-2} A^{-2}$ is equivalent to:

Question ID : **1679436816**

**Ans**

✘ 1. Watt

✔ 2. Henry

✘ 3. Ohm

✘ 4. Fardo

**Q.11** 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.

Question ID : **1679436821**

**Ans**

✘ 1. $x = 1$ km, $t = 9$ h

✘ 2. $x = 2$ km, $t = 9$ h 30s

✔ 3. $x = 2$ km, $t = 9$ h 1m 30s

✘ 4. $x = 2$ km, $t = 9$ h/m

**Q.12** A bomb explodes in mid-air. What will be the path described by each splinter?

Question ID : **1679436810**

**Ans**

✘ 1. Ellipse

✔ 2. Parabola

✘ 3. Straight line

✘ 4. Rectangular hyperbola

**Q.13** For which among the following is the SI unit $Nsm^{-2}$ ?

Question ID : **1679436814**

**Ans**

✘ 1. Surface tension

✘ 2. Tensile stress

✘ 3. Viscous drag

✔ 4. Coefficient of Viscosity

**Q.14** 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.

Question ID : **1679436803**

**Ans**

✔ 1.

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

✘ 2.

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

✘ 3.

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

✗ 4.
$\{\sqrt{2g}\, m(\sqrt{h_1} - \sqrt{h_2})\}$ in the vertically upward direction

**Q.15** 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:

Question ID : **1679436811**

**Ans**
✗ 1. 3 : 2 : 1
✗ 2. 6 : 5 : 4
✗ 3. 9 : 8 : 7
✓ 4. 11 : 10 : 9

**Q.16** 1 Mev expressed in HP-hr is equal to:

Question ID : **1679436818**

**Ans**
✗ 1. $5.967 \times 10^{-10}$
✓ 2. $5.967 \times 10^{-20}$
✗ 3. $2.984 \times 10^{-10}$
✗ 4. $2.984 \times 10^{-20}$

**Q.17** 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;
$\vec{r} = (3t^2\,\hat{i} + t^4\,\hat{j} - t^3\,\hat{k})$
Where 'r' is in metres and 't' is in seconds. Find the work done on the body during t = 0 to t = 1 sec.

Question ID : **1679436807**

**Ans**
✗ 1. 52 J
✗ 2. 72 J
✗ 3. 41 J
✓ 4. 61 J

**Q.18** 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?

Question ID : **1679436817**

**Ans**
✗ 1. 0.313333 cm
✗ 2. 0.3133 cm
✗ 3. 0.31333 cm
✓ 4. 0.313 cm

**Q.19** 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:

Question ID : **1679436813**

**Ans**
✗ 1. Nil
✗ 2. Not independent of $t$
✗ 3. $-0.4\,\hat{k}$ Nm
✓ 4. $0.4\,\hat{k}$ Nm

**Q.20** Which among the following is a (are) conservative forces(s)?

Question ID : **1679436804**

(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

**Ans**
✗ 1. Only (p)
✗ 2. (p), (q) and (r)

✔ 3. Only (p) and (q)

✘ 4. Only (s)

Section : **Subject Related**

**Q.1** Find the centre of mass of three equal rods each of length '$2a$' forming the consecutive sides of $a$ square.

Question ID : **1679436841**

**Ans**

✘ 1.

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.

✘ 2.

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.

✘ 3. It is at the centre of the middle rod.

✔ 4.

It is at a distance $\frac{a}{4}$ from the centre of the square on the line through the centre perpendicular to the middle rod.

**Q.2** 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:

Question ID : **1679436829**

**Ans**

✘ 1. $mg.\dfrac{\mu\cos\propto+\sin\propto}{\sin\theta+\mu\cos\theta}$

✘ 2. $mg.\dfrac{\cos\propto+\mu\sin\propto}{\mu\cos\theta+\sin\theta}$

✘ 3. $mg.\dfrac{\mu\cos\propto+\sin\propto}{\mu\cos\theta+\sin\theta}$

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

**Q.3** 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:

Question ID : **1679436835**

**Ans**

✔ 1. 400 sin t

✘ 2. 100 sin t

✘ 3. 0

✘ 4. 200 cost

**Q.4** 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 straight and taut, them the tension in the portions OP, PQ, PR are as:

Question ID : **1679436833**

**Ans**

✘ 1. 3 : 5 : 6

✘ 2. 1 : 2 : 3

✘ 3. 3 : 2 : 1

✔ 4. 6 : 5 : 3

**Q.5** A body of mass 'm' has been falling from rest under the action of gravity 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)

Question ID : **1679436830**

**Ans**

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

✘ 2. $mg^2\ \frac{t^2}{4a}$

✗ 3. $Mg\left(1+\frac{gt^2}{4a}\right)$

✗ 4. $mg^2\ \frac{t^2}{2a}$

**Q.6** 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?

Question ID : **1679436826**

**Ans**

✗ 1. $48\sqrt{2}$ m

✓ 2. 72 m

✗ 3. 36 m

✗ 4. $54\sqrt{2}$ m

**Q.7** For a two dimensional motion, the $x$ and y component of velocoies of the particle l are given by.

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

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

Question ID : **1679436823**

**Ans**

✗ 1. $x^2 + 4(y-3)^2 = 36$

✗ 2. $x^2 + 4y^2 = 9$

✓ 3. $(x-9)^2 + 4y^2 = 9$

✗ 4. $(x-9)^2 + 6y^2 = 36$

**Q.8** 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:

Question ID : **1679436824**

**Ans**

✗ 1. 10

✓ 2. 40

✗ 3. 20

✗ 4. Zero

**Q.9** 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.

Question ID : **1679436837**

**Ans**

✗ 1. $\frac{R_o}{4}$

✗ 2. $2R_0$

✗ 3. $R_0$

✓ 4. $\frac{R_o}{2}$

**Q.10** 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:

Question ID : **1679436831**

**Ans**

✗ 1. 2

✗ 2. 3

✓ 3. 5

✗ 4. 10

**Q.11** 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.

Question ID : **1679436840**

**Ans**

✔ 1. 90 °

✘ 2. 45 °

✘ 3. 60 °

✘ 4. 30 °

**Q.12** 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 splinter 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 mass of the third splinter in gms.

Question ID : **1679436832**

**Ans**

✘ 1. 200 g

✘ 2. 500 g

✔ 3. 400 g

✘ 4. 250 g

**Q.13** 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.

Question ID : **1679436838**

**Ans**

✘ 1. $410\sqrt{2}$

✔ 2. 410

✘ 3. 205

✘ 4. 820

**Q.14** *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:

Question ID : **1679436827**

**Ans**

✔ 1. bisects BD

✘ 2. is along AC

✘ 3. bisects AC

✘ 4. is along BD

**Q.15** 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.

Question ID : **1679436836**

**Ans**

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

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

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

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

**Q.16** 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. ( $g = 10\ ms^{-2}$ )

Question ID : **1679436828**

**Ans**

✘ 1. $24\frac{1}{8}$ N

✘ 2. $6\frac{1}{8}$ N

✘ 3. $37\frac{1}{8}$ N

✔ 4. $34\frac{1}{4}$ N

**Q.17** On a rainy day when a boy is running at a speed of $4 ms^{-1}$, 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 $45^{\circ}$?

Question ID : **1679436825**

**Ans**
✗ 1. 2 m/s
✔ 2. 8 m/s
✗ 3. 6 m/s
✗ 4. $8\sqrt{2}$m/s

**Q.18** A particle is moving along a straight line. It starts from rest and moves with a uniform acceleration 'a', till 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,

Question ID : **1679436822**

**Ans**
✗ 1. $\frac{1}{a}-\frac{1}{b}=\frac{t}{v}$
✗ 2. $\frac{1}{a}+\frac{1}{b}=\frac{v}{2t}$
✔ 3. $\frac{1}{a}+\frac{1}{b}=\frac{t}{v}$
✗ 4. $\frac{1}{a}+\frac{1}{b}=\frac{2t}{v}$

**Q.19** 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:

Question ID : **1679436839**

**Ans**
✗ 1. $5\frac{2}{9}$
✗ 2. $6\frac{1}{4}$
✗ 3. $5\frac{1}{4}$
✔ 4. $5\frac{5}{9}$

**Q.20** 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.

Question ID : **1679436834**

**Ans**
✔ 1. (p), (q), (r) and (s)
✗ 2. Only (p), (q) and (r)
✗ 3. Only (p)
✗ 4. Only (p) and (q)

Section : **Subject Related**

**Q.1** A carbon resistor has the colour code as per the sequence: BROWN – ORANGE – BLUE – RED – GREEN. Its resistance is:

Question ID : **1679436861**

**Ans**
✗ 1.
$4.52\times10^{5}\ ohm$ with a tolerance of $\pm10\%$
✔ 2.

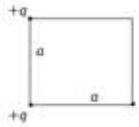
$1.36 \times 10^4$ *ohm* with a tolerance of $\pm 0.5\%$

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

✗ 4. 36.8 *ohm* with a tolerance of $\pm 5\%$

**Q.2** 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?

Question ID : **1679436859**




**Ans**

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

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

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

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

**Q.3** 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 $30^\circ$ with $\vec{E}$. If the dipole has to be rotated through an angle $90^\circ$ about an axis perpendicular to $\vec{p}$, what will be the work done?

Question ID : **1679436845**

**Ans**

✗ 1. $\frac{\sqrt{3}}{2}$ pE

✓ 2. $\frac{\sqrt{3}+1}{2}$ pE

✗ 3. $\frac{\sqrt{3}-1}{2}$ pE

✗ 4. $\frac{1}{2}$ pE

**Q.4** 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.

Question ID : **1679436860**

**Ans**

✗ 1. $\frac{(R_2 - R_1)\delta}{2\pi R_1 R_2}$

✓ 2. $\frac{(R_2 - R_1)\delta}{4\pi R_1 R_2}$

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

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

**Q.5** 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?

Question ID : **1679436842**

Ans

✗ 1. $\frac{16}{3\pi}$

✗ 2. $\frac{4}{\pi}$

✓ 3. $\frac{8}{3\pi}$

✗ 4. $\frac{4}{3\pi}$

**Q.6** 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.

Question ID : **1679436849**

Ans

✗ 1. $2\sigma\omega R^2$

✗ 2. $\frac{1}{4}\sigma\omega R^2$

✗ 3. $\sigma\omega R^2$

✓ 4. $\frac{1}{2}\sigma\omega R^2$

**Q.7** 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.

Question ID : **1679436850**

Ans

✗ 1. $\alpha_P = \alpha_R - 2\alpha$

✗ 2. $\alpha_R = \alpha_P - 2\alpha$

✗ 3. $\alpha_P = \alpha_R - \alpha$

✓ 4. $\alpha_R = \alpha_P - \alpha$

**Q.8** 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?

Question ID : **1679436846**

Ans

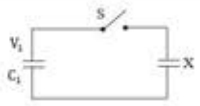
✗ 1. $\frac{2Q}{5\epsilon_0}$

✗ 2. $\frac{Q}{50\epsilon_0}$

✓ 3. Zero

✗ 4. $\frac{Q}{125\epsilon_0}$

**Q.9**




Question ID : **1679436848**

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.

Ans

✗ 1. $\frac{1}{2}C_1(V_1 + V_2)V_1$

✓ 2. $\frac{1}{2}C_1V_1V_2$

✗ 3. $\frac{1}{2}C_1(V_1 - V_2)\frac{V_2^2}{V_1}$

✗ 4. $\frac{1}{2}C_1(V_1 + V_2)V_2$

**Q.10** 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.

Question ID : **1679436843**

**Ans**

✔ 1. $2\ mg\ b\ \hat{k}$

✘ 2. $-2\ mg\ b\ \hat{k}$

✘ 3. $-\frac{1}{2} mg\ b\hat{k}$

✘ 4. $\frac{1}{2} mg\ b\hat{k}$

**Q.11** 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 $\vec{E}$.

Question ID : **1679436854**

**Ans**

✘ 1. $2\ qEb$

✘ 2. $\frac{1}{2}\ qEb$

✔ 3. $qEb$

✘ 4. $\sqrt{2}\ qEb$

**Q.12** 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?

Question ID : **1679436855**

**Ans**

✘ 1. $(3-\sqrt{6})\ a$

✘ 2. $(3-2\sqrt{2})\ a$

✘ 3. $(3+2\sqrt{6})\ a$

✔ 4. $(3+\sqrt{6})\ a$

**Q.13** 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?

Question ID : **1679436853**

**Ans**

✔ 1.

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

✘ 2.

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

✘ 3.

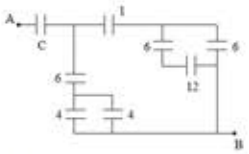
By connecting a resistance 0.01 Ω in parallel to the shunt and connecting the combination in parallel with the galvanometer.

✘ 4.

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

**Q.14** 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 1μF. All the capacitance values indicated are in μF ?

Question ID : **1679436858**




**Ans**

✘ 1. $\frac{156}{125}$ μF

✔ 2. $\frac{334}{257}\ \mu F$

✘ 3. $\frac{24}{17}\ \mu F$

✘ 4. $\frac{167}{105}\ \mu F$

**Q.15** 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:

Question ID : **1679436844**

**Ans**

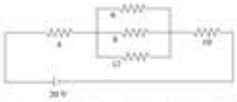
✔ 1. $\left(2^{\frac{-2}{3}}\right) a$

✘ 2. $\left(2^{\frac{-1}{3}}\right) a$

✘ 3. $\frac{a}{4}$

✘ 4. $\frac{a}{2}$

**Q.16**



Question ID : **1679436852**

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

**Ans**

✘ 1. $\frac{32}{125}$ watt

✘ 2. $\frac{64}{25}$ watt

✔ 3. $\frac{32}{25}$ watt

✘ 4. $\frac{64}{125}$ watt

**Q.17** 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.

Question ID : **1679436856**

**Ans**

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

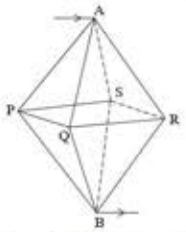
✘ 2. $\left(\frac{q^2}{4\pi\epsilon_0}\right)\left[\frac{(b^2+4a^2)}{(b^2-4a^2)^2}+\frac{1}{b^2}\right]$

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

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

**Q.18**

Question ID : **1679436851**




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.

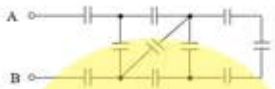
Ans
✔ 1. 4
✘ 2. 1
✘ 3. 8
✘ 4. 2

**Q.19** 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.

Question ID : **1679436857**

Ans
✘ 1. $\frac{2Q}{125\pi\epsilon_0}$ *newtons/coulomb*
✔ 2. $\frac{4Q}{5\pi\epsilon_0}$ *newtons/coulomb*
✘ 3. $\frac{2Q}{5\pi\epsilon_0}$ *newtons/coulomb*
✘ 4. $\frac{Q}{125\pi\epsilon_0}$ *newtons/coulomb*

**Q.20**




Question ID : **1679436847**

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 $1\frac{23}{144}$ μF. Find the capacitance of each capacitor.

Ans
✘ 1. 1 μF
✘ 2. 1.5 μF
✔ 3. 3 μF
✘ 4. 11 μF

Section : **Subject Related**

**Q.1** Four charges $q_1, q_1, -q_1, -q_1$, are placed at the four corners 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.

Question ID : **1679436866**

Ans
✘ 1. $\frac{1}{\pi\epsilon_0}\frac{q_1q_2}{a\sqrt{5}}(\sqrt{5}-1)$
✔ 2. 0
✘ 3. $\frac{1}{4\pi\epsilon_0}\frac{q_1q_2}{a\sqrt{5}}(\sqrt{5}-1)$
✘ 4. $\frac{1}{4\pi\epsilon_0}\frac{q_1q_2}{a}$

**Q.2**

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 their equivalent capacitances when connected in series and parallel is $35\ \pi F$. Find the value of G.

Question ID : **1679436868**

Ans
✔ 1. $\frac{26}{3}\pi F$
✘ 2. $\frac{39}{8}\pi F$
✘ 3. $\frac{52}{9}\pi F$
✘ 4. $\frac{13}{3}\pi F$

**Q.3** 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 mass of copper deposited is 40 gm in 20 minutes. Find the internal resistance of the voltmeter.

Question ID : **1679436877**

Ans
✘ 1. 1 ohm
✘ 2. 3 ohm
✘ 3. 2 ohm
✔ 4. 4 ohm

**Q.4** 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?

Question ID : **1679436876**

Ans
✘ 1. 4 ohm
✔ 2. 5 ohm
✘ 3. 6 ohm
✘ 4. 10 ohm

**Q.5** 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.

Question ID : **1679436863**

Ans
✘ 1. 1 mho
✔ 2. 4 mho
✘ 3. 8 mho
✘ 4. 2 mho

**Q.6** 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 intervect 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?

Question ID : **1679436879**

Ans
✘ 1. (p) & (q)
✘ 2. Only (r)
✔ 3. (p), (q) & (s)
✘ 4. Only (p)

**Q.7** Four statements have been given below about Peltier Effect, Examine them:

Question ID : **1679436864**

(*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.

Ans
✗ 1. $(p)$ and $(q)$ are true; $(r)$ and $(s)$ are false
✗ 2. $(q)$ and $(r)$ are true; $(p)$ and $(s)$ are false
✗ 3. $(p)$ and $(s)$ are true; $(q)$ and $(r)$ are false
✓ 4. $(p)$ and $(r)$ are true; $(q)$ and $(s)$ are false

**Q.8** A particle of charge $-q_1$ and mass '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 'm'.

Question ID : **1679436867**

Ans
✗ 1. $2\sqrt{2}\, a^{\frac{3}{2}}\left(\frac{\pi m \epsilon_0}{q_1 q_2}\right)^{\frac{1}{2}}$
✗ 2. $\sqrt{2}\, a^{\frac{3}{2}}\left(\frac{\pi m \epsilon_0}{q_1 q_2}\right)^{\frac{1}{2}}$
✓ 3. $2a^{\frac{3}{2}}\left(\frac{\pi m \epsilon_0}{q_1 q_2}\right)^{\frac{1}{2}}$
✗ 4. $a^{\frac{3}{2}}\left(\frac{\pi m \epsilon_0}{2 q_1 q_2}\right)^{\frac{1}{2}}$

**Q.9** 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.

Question ID : **1679436875**

Ans
✗ 1. 10 Ω
✗ 2. 30 Ω
✗ 3. 15 Ω
✓ 4. 20 Ω

**Q.10** In the circuit shown, all the resistances are in ohms. Find the power dissipation through the 6 ohm resistance.

Question ID : **1679436862**


Ans
✗ 1. $\frac{324}{125}$ watt
✗ 2. $\frac{192}{125}$ watt
✗ 3. $\frac{256}{225}$ watt
✓ 4. $\frac{384}{225}$ watt

**Q.11** 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 $\epsilon$. Find the potential at the centre of the sphere (relative to infinity)

Question ID : **1679436870**

Ans
✗ 1. $\frac{Q}{4\pi}\left(\frac{1}{\epsilon_0 R_1} + \frac{1}{\epsilon R_1} - \frac{1}{\epsilon R_2}\right)$
✓ 2. $\frac{Q}{4\pi}\left(\frac{1}{\epsilon_0 R_2} + \frac{1}{\epsilon R_1} - \frac{1}{\epsilon R_2}\right)$
✗ 3. $\frac{Q}{4\pi}\left(\frac{1}{\epsilon_0 R_2} - \frac{1}{\epsilon R_1} + \frac{1}{\epsilon R_2}\right)$

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

**Q.12** 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.

Question ID : **1679436871**

**Ans**

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

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

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

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

**Q.13** 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?

Question ID : **1679436874**

**Ans**

✓ 1. $12, \frac{12}{11}, 3, \frac{8}{3}, \frac{5}{3}, \frac{22}{3}, \frac{11}{2}, \frac{22}{5}$

✗ 2. $12, \frac{12}{11}, 3, \frac{8}{3}, \frac{5}{4}, \frac{11}{4}, \frac{11}{6}, \frac{22}{5}$

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

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

**Q.14** 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.

Question ID : **1679436869**

**Ans**

✗ 1. $\frac{25Q}{4\pi\epsilon_0}$

✗ 2. $\frac{27Q}{16\pi\epsilon_0}$

✓ 3. $\frac{4Q}{9\pi\epsilon_0}$

✗ 4. $\frac{4Q}{108\pi\epsilon_0}$

**Q.15** 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.

Question ID : **1679436880**

**Ans**

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

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

✗ 3. $\frac{4Q}{125\pi\, E_0}$

✗ 4. $\frac{4Q}{25\pi\, E_0}$

**Q.16**

Question ID : **1679436881**

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

(p) 

(q) 

(r) 

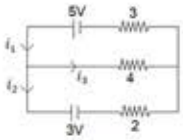
(s) 

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

Ans
✔ 1. (r)
✘ 2. (p)
✘ 3. (q)
✘ 4. (s)

**Q.17** In the circuit shown all the resistances are in ohms. Find the values of $i_1, i_2, i_3$ in amperes.

Question ID : **1679436873**




Ans
✘ 1. $\frac{10}{13}, \frac{3}{13}, \frac{7}{13}$
✘ 2. $\frac{13}{16}, \frac{5}{16}, \frac{1}{2}$
✘ 3. $\frac{11}{15}, \frac{14}{15}, \frac{7}{15}$
✔ 4. $\frac{11}{13}, \frac{3}{13}, \frac{8}{13}$

**Q.18** A current of 5 amp flows through a wire of diameter 1 mm. if the concentration of charge carries is $2 \times 10^{27} m^{-3}$. Find the average drift velocity of the electrons in cm/s ($e = 1.6 \times 10^{-19} C$)

Question ID : **1679436872**

Ans
✘ 1. 6
✘ 2. 4
✔ 3. 2
✘ 4. 3

**Q.19** 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?

Question ID : **1679436865**

Ans
✘ 1. 5 ohm
✘ 2. 6 ohm
✘ 3. 10 ohm
✔ 4. 8 ohm

**Q.20** Two identically charged spheres are suspended by strings of equal length. At the equilibrium position the strings make an angle θ 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.

Question ID : **1679436878**

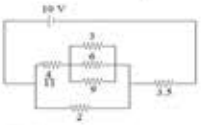
Ans
✘ 1. 0.9 gm/ce
✔ 2. 1.2 gm/ce
✘ 3. 1.6 gm/ce

✗ 4. 0.8 gm/ce

Section : **Subject Related**

**Q.1** 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.

Question ID : **1679436885**




**Ans**

✗ 1. 3 amp

✗ 2. 2.5 amp

✓ 3. 2 amp

✗ 4. 1 amp

**Q.2** 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 $C^{-1}$)

Question ID : **1679436889**

**Ans**

✗ 1. 0.4 V

✗ 2. 0.5 V

✗ 3. 0.6 V

✓ 4. 0.3 V

**Q.3** The current density in a conductor of circular cross - section of radius R varies with radius in accordance with the relation j = kr (π -r). Where the symbols have their usual meanings. Find the total current.

Question ID : **1679436884**

**Ans**

✗ 1. $\frac{\pi^2 K}{12} a^3$

✗ 2. $\frac{\pi^2 K}{6} a^3$

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

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

**Q.4** 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 $R$.

Question ID : **1679436890**

**Ans**

✗ 1. $\frac{Ba}{R}$

✓ 2. $\frac{Ba^2}{R}$

✗ 3. $\frac{B \cdot \pi a^2}{R}$

✗ 4. $\frac{Ba}{R^2}$

**Q.5** 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.

Question ID : **1679436894**

**Ans**

✗ 1. 1000V

✗ 2. 2500V

✗ 3. 200V

✓ 4. 100V

**Q.6** 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.

Question ID : **1679436899**

**Ans**

✗ 1. $\frac{NB\omega r^2}{2}$

✓ 2. $\frac{B\omega r^2}{2}$

✗ 3. $NB\omega r^2$

✗ 4. $NB\omega r$

**Q.7** 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?

Question ID : **1679436888**

**Ans**

✗ 1. Only (p)

✓ 2. Only (q)

✗ 3. (q) & (r)

✗ 4. (p) & (r)

**Q.8** 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?

Question ID : **1679436882**

**Ans**

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

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

✗ 3. $\frac{V_0}{d}[d - \frac{t}{E}]$

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

**Q.9** 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.

Question ID : **1679436893**

**Ans**

✗ 1. 16 mH

✗ 2. 6 mH

✓ 3. 4 mH

✗ 4. 32 mH

**Q.10** 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.

Question ID : **1679436895**

**Ans**

✗ 1. 150V

✗ 2. zero

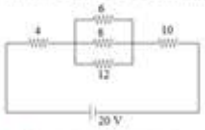
✓ 3. 50V

✗ 4. 70V

**Q.11**

Question ID : **1679436886**

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




Ans
✗ 1. 2.88 W
✓ 2. 5.76 W
✗ 3. 7.2 W
✗ 4. 1.44 W

**Q.12** 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.

Question ID : **1679436887**

Ans
✗ 1. 620 ohm
✗ 2. 440 ohm
✗ 3. 640 ohm
✓ 4. 460 ohm

**Q.13** 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.

Question ID : **1679436897**

Ans
✗ 1. 4V
✗ 2. 4mV
✗ 3. 40mV
✓ 4. 40V

**Q.14** 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 $\frac{4}{3}$.

Question ID : **1679436900**

Ans
✗ 1. 16 cm
✗ 2. 4.8 cm
✗ 3. 12 cm
✓ 4. 9 cm

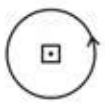
**Q.15** A rod of length $l$ is placed in a uniform magnetic field of induction B. The rod is moved with velocity V as shown. Find the e.m.f induced across the rod.

Question ID : **1679436891**


Ans
✓ 1. $BlV\sin\theta$
✗ 2. zero
✗ 3. $BlV\cos\theta$
✗ 4. $BlV$

**Q.16** 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.

Question ID : **1679436892**



Ans
✗ 1. $\frac{\mu_0 a^2}{2\pi R}$

✔ 2. $\frac{\mu_0 a^2}{2R}$

✘ 3. $\frac{\mu_0 a}{2R}$

✘ 4. $\frac{\mu_0 a}{R}$

**Q.17** 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.

Question ID : **1679436901**

**Ans**

✘ 1. $\frac{h}{u}$

✔ 2. $\frac{h}{\sqrt{u^2-1}}$

✘ 3. $\frac{h}{u^2}$

✘ 4. $\mu h$

**Q.18** 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 $V, E_1, E_2$.

Question ID : **1679436883**

**Ans**

✔ 1. $\frac{1}{V^2}(E_2 + \sqrt{E_2^2 - 4E_1 E_2})$

✘ 2. $\frac{1}{V^2}(E_1 + \sqrt{E_2^2 - 4E_1 E_2})$

✘ 3. $\frac{1}{V^2}(E_2 - \sqrt{E_2^2 - E_1 E_2})$

✘ 4. $\frac{1}{V^2}(E_2 + \sqrt{E_2^2 - E_1 E_2})$

**Q.19** 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.

Question ID : **1679436898**

**Ans**

✔ 1. $\frac{125}{\pi} HZ$

✘ 2. $\frac{250}{\pi} HZ$

✘ 3. $500\pi HZ$

✘ 4. $\frac{500}{\pi} HZ$

**Q.20** 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

Question ID : **1679436896**

**Ans**

✔ 1. 0.8

✘ 2. 0.5

✘ 3. 1

✘ 4. 0.6

Section : **Subject Related**

**Q.1**

Constructivist development model by Vygotsky signifies:

Question ID : **1679436904**

Ans
✗ 1. Working individually
✗ 2. Reading
✓ 3. Discussing with peers
✗ 4. Learning by doing

**Q.2** Education of girls is seen as "Education for social cohesion rather than Social progress" In which of the following documents?

Question ID : **1679436908**

Ans
✗ 1. NPE 1986
✗ 2. NPERC 1990
✗ 3. NCF 1975
✓ 4. NCFSE 2000

**Q.3** Which of the following is the epistemological basis for scientific knowledge, according to pragmatists?

Question ID : **1679436916**

Ans
✗ 1. Problem solving
✗ 2. Interpretations
✗ 3. Opinions
✓ 4. Experiments

**Q.4** Technology aided learning can substitute a teacher effectively when we use:

Question ID : **1679436910**

Ans
✗ 1. Programmed learning
✓ 2. Interactive e-lessons
✗ 3. PowerPoint presentations
✗ 4. Audio-visual aids

**Q.5** The objective of poems in languages is to learn:

Question ID : **1679436913**

Ans
✗ 1. Singing
✓ 2. Aesthetics and varied expression
✗ 3. Rhythm
✗ 4. Action

**Q.6** Concept formation is a result of:

Question ID : **1679436905**

Ans
✗ 1. Teaching
✗ 2. Drilling
✗ 3. Memorising
✓ 4. Perceptions

**Q.7** Which of the following is a key mathematical skill?

Question ID : **1679436907**

Ans
✓ 1. Computing
✗ 2. Illustrating

✗ 3. Drawing

✗ 4. Observing

**Q.8** Which element do debate and extempore speech help to develop?

Question ID : **1679436906**

Ans

✗ 1. Writing skill

✓ 2. Being articulate in speech

✗ 3. Emotional intelligence

✗ 4. Reading fluency

**Q.9** Inclusive Education policy is an initiative to support the larger objective of _____. Choose the right option

Question ID : **1679436903**

Ans

✗ 1. Minority education

✗ 2. Girl child education

✗ 3. Special needs education

✓ 4. Education for all

**Q.10** Which quality of a test reflects its desired outcome?

Question ID : **1679436917**

Ans

✗ 1. Functionality

✗ 2. Reliability

✓ 3. Validity

✗ 4. Feasibility

**Q.11** Science teachers can enhance their proficiency through reading by:

Question ID : **1679436911**

Ans

✓ 1. Substantiating lessons with latest scientific developments

✗ 2. Giving home assignments

✗ 3. Updating with latest scientific developments

✗ 4. Discussion with colleagues

**Q.12** Ramesh secured 15th rank. Which type of test was this evaluation based on?

Question ID : **1679436918**

Ans

✓ 1. Norm referenced

✗ 2. Standardized

✗ 3. Criterion referencing

✗ 4. Diagnostic

**Q.13** Special educators help teachers in:

Question ID : **1679436921**

Ans

✗ 1. Instructing

✓ 2. Remediation

✗ 3. Talking to students

✗ 4. Reporting

**Q.14** 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.

Question ID : **1679436902**

Ans
✗ 1. Physical development
✓ 2. Cognitive and physical development
✗ 3. Emotional development
✗ 4. Language development

**Q.15** In machine language, the presence of an electric pulse followed by the absence of another electric pulse is represented as:

Question ID : **1679436915**

Ans
✗ 1. (1)
✓ 2. (10)
✗ 3. (01)
✗ 4. (0)

**Q.16** What does the acronym HTML stand for?

Question ID : **1679436914**

Ans
✓ 1. Hypertext Markup Language
✗ 2. Hyper Transfer Marking Language
✗ 3. Hypertext Marking Logic
✗ 4. Hyper Text Multiple Language

**Q.17** A social science lesson takes responsibility of inculcating which of the following values?

Question ID : **1679436909**

Ans
✗ 1. Understanding population trends
✓ 2. Appreciation of land, culture and heritage
✗ 3. Knowledge about location of resources
✗ 4. Awareness about technology

**Q.18** Taking feedback from children after the lessons is:

Question ID : **1679436919**

Ans
✗ 1. Reporting
✓ 2. A Classroom Assessment Technique
✗ 3. Lesson planning
✗ 4. Assessment

**Q.19** Story telling comes from the art of:

Question ID : **1679436912**

Ans
✗ 1. Acting
✗ 2. Explaining
✓ 3. Narrating
✗ 4. Memory

**Q.20** 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?

Question ID : **1679436920**

Ans

✗ 1. Give him a holiday

✓ 2. Buddy system for mutual support

✗ 3. Ask him to stay back in class and complete an assignment

✗ 4. A movie show