



भारतीय विमानपत्तन प्राधिकरण  
(मिनी रत्न - श्रेणी - 1 सार्वजनिक क्षेत्र का उद्गम)  
**AIRPORTS AUTHORITY OF INDIA**  
(Schedule - 'A' Mini Ratna - Category - 1 Public Sector Enterprise)

Participant ID	
Participant Name	
Test Center Name	
Test Date	30/11/2018
Test Time	8:30 AM - 10:30 AM
Subject	JUNIOR EXECUTIVE (ATC)

Section : General Knowledge

Q.1 Substances like phosphorus burns in air at room temperature. This type of combustion in which a material suddenly bursts into flames, without application of any apparent cause, is called \_\_\_\_\_

- Ans
- 1. Explosive combustion
  - 2. Spontaneous combustion
  - 3. Running combustion
  - 4. Rapid combustion

Question ID : 509647785  
Status : Answered  
Chosen Option : 2

Q.2 Which of the following nations won the Cricket World Cup 2015?

- Ans
- 1. India
  - 2. England
  - 3. Australia
  - 4. West Indies

Question ID : 509647783  
Status : Answered  
Chosen Option : 1

Q.3 The Elephanta caves are dedicated to which deity?

- Ans
- 1. Shiva
  - 2. Tirthankar Mahavir
  - 3. Vishnu
  - 4. Buddha

Question ID : 509647789  
Status : Marked For Review  
Chosen Option : 4

Q.4 In which of the following states is the Simlipal bio-reserve located?

- Ans
- 1. Himachal Pradesh
  - 2. Punjab
  - 3. Uttarakhand
  - 4. Odisha

Question ID : 509647790  
Status : Answered  
Chosen Option : 3

Q.5 Name a book maintained internationally by an organization which keeps a record of all the endangered animals and plants. India also maintains it for plants and animals found in India.

- Ans
- 1. Primitive Books
  - 2. Vintage Book
  - 3. Extinct book
  - 4. Red Data Book

Question ID : 509647784  
Status : Answered  
Chosen Option : 4

Q.6 As of August 2018, who among the following is the Chairman of SEBI?

- Ans
- 1. Sanjeev Kaushik
  - 2. U. K. Sinha
  - 3. C. B. Bhav
  - 4. Ajay Tyagi

Question ID : 509647782  
Status : Answered  
Chosen Option : 4

Q.7 \_\_\_\_\_ is/was the Speaker of the \_\_\_\_\_ Lok Sabha.

- Ans
- 1. Somnath Chatterjee; 12<sup>th</sup>
  - 2. Somnath Chatterjee; 16<sup>th</sup>
  - 3. Sumitra Mahajan; 14<sup>th</sup>
  - 4. Sumitra Mahajan; 16<sup>th</sup>

Question ID : 509647787  
Status : Answered  
Chosen Option : 4

Q.8 Which of the following Articles of the Constitution of India deals with establishment and constitution of Supreme Court?

- Ans
- 1. Article 117
  - 2. Article 114
  - 3. Article 124

 4. Article 106

Question ID : 509647786  
Status : **Marked For Review**  
Chosen Option : 2

Q.9 Which of the following styles of painting belongs to Maharashtra?

- Ans  1. Miniature  
 2. Madhubani  
 3. Kalam  
 4. Warli

Question ID : 509647788  
Status : **Answered**  
Chosen Option : 4

Q.1 What was the rank of India in World Press Freedom Index 2018?

- Ans  1. 38  
 2. 138  
 3. 101  
 4. 1

Question ID : 509647781  
Status : **Answered**  
Chosen Option : 2

Section : **General Intelligence**

Q.1 Ravi's father Mahesh has a brother Mukesh who has a daughter Chavi. Vinayak is Chavi's brother. How is Vinayak related to Mahesh's mother?

- Ans  1. Nephew  
 2. Son  
 3. Grandson  
 4. Grandnephew

Question ID : 509647794  
Status : **Answered**  
Chosen Option : 3

Q.2 Select the option that is related to the third number in the same way as the second number is related to the first number.

169 : 14 :: 64 : ?

- Ans  1. 9  
 2. 8  
 3. 7  
 4. 13

Question ID : 509647800  
Status : **Answered**

Chosen Option : 1

**Q.3** Select the option that will correctly come in the place of question mark to complete the below number series.  
6, 11, 19, 30, ?, 61, 81

- Ans
- 1. 43
  - 2. 42
  - 3. 40
  - 4. 44

Question ID : 509647793  
Status : Answered  
Chosen Option : 4

**Q.4** In the following number sequence, how many such 8s are there, each of which is exactly divisible by its immediate preceding number but not divisible by its immediately succeeding number?

2 8 7 5 3 4 8 6 2 8 4 5 8 4 3 2 8 9

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

Question ID : 509647802  
Status : Answered  
Chosen Option : 2

**Q.5** Select the option that is related to the third term in the same way as the second term is related to the first term.

KJPO : PQKL :: LINO : ?

- Ans
- 1. ONIL
  - 2. ORML
  - 3. YVZI
  - 4. ORLM

Question ID : 509647795  
Status : Answered  
Chosen Option : 2

**Q.6** Select the word that CANNOT be formed by using the letters of the given word.

COURAGEOUS

- Ans
- 1. SOURCE
  - 2. AROUSE
  - 3. COURSES
  - 4. USAGE

Question ID : 509647798  
Status : Answered  
Chosen Option : 3

**Q.7** Among given word pairs, three bear a certain common relationship. Choose the pair in which the words are differently related.

- Ans
- 1. Colt : Horse
  - 2. Piglet : Pig
  - 3. Bitch : Dog
  - 4. Cub : Bear

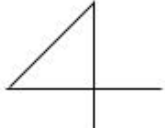
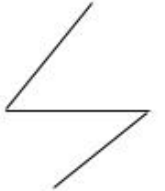
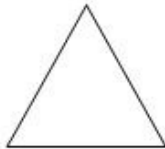
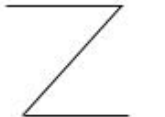
Question ID : 509647801  
Status : Answered  
Chosen Option : 3

Q.8 In a certain code, 'SURPRISE' is coded as T5SQS3T2. How will GRACE be coded in that language?

- Ans
- 1. HSBD2
  - 2. HS1D2
  - 3. H2S1D
  - 4. H5BD2

Question ID : 509647799  
Status : Answered  
Chosen Option : 2

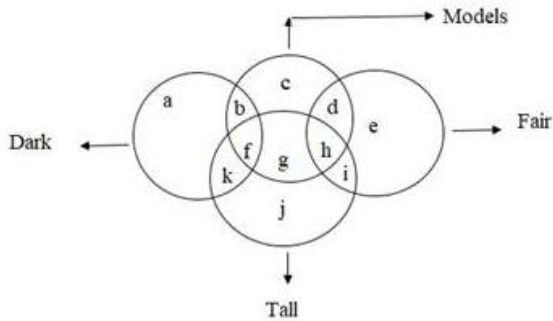
Q.9 Ajay's residence is 35 metre away from that of Sachin's towards South-west direction. Tarun's house is 35 metre away from Sachin's house towards West. Uday's house is 35 metre away from Ajay's house towards East. Which of the given options resembles the shape of the above description?

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

Question ID : 509647804  
Status : Answered  
Chosen Option : 4

Q.1  
0

In the given Venn diagram, which region represents Tall and Dark Models?



- Ans
- 1. b
  - 2. f
  - 3. k
  - 4. g

Question ID : 509647805  
 Status : Answered  
 Chosen Option : 2

Q.1 Which one set of letters, from the options below, when sequentially placed (left to right) at the gaps in the given letter series, shall complete it:

s \_ ut \_ vwu \_ wx \_ vw \_ y \_ ?

- Ans
- 1. tuvxyz
  - 2. tuvwxxy
  - 3. tuvxyz
  - 4. tuvwxz

Question ID : 509647797  
 Status : Answered  
 Chosen Option : 3

Q.1 'Chaotic' is related to 'Jumbled' in the same way 'Orderly' is related to:

- Ans
- 1. Confused
  - 2. Erratic
  - 3. Chaos
  - 4. Tabulated

Question ID : 509647791  
 Status : Answered  
 Chosen Option : 4

Q.1 If the given interchanges are made in signs and numbers, which one of the four equations would be correct?

Interchange : sign '+' and '+'; number '3' and '6'

- Ans
- 1.  $3+6+6=10$
  - 2.  $6+3+3=6$

3.  $6+3\div 4=2.5$

4.  $3+6\div 2=4$

Question ID : 509647803

Status : Answered

Chosen Option : 4

Q.1  
4 Select the number-pair that is different from the other three.

Ans  1. 15-841

2. 6-72

3. 12-576

4. 9-243

Question ID : 509647796

Status : Answered

Chosen Option : 1

Q.1  
5 Select the term that is different from the other three options.

Ans  1. KLQR

2. CDYZ

3. GIUV

4. FGVW

Question ID : 509647792

Status : Answered

Chosen Option : 3

Section : General Aptitude

Q.1 The number of students in sections A and B are 60 and 70 respectively. The average score in mathematics of students in A is 70 and that of students in A and B together is 63. What is the average score of students of section B in mathematics?

Ans  1. 57

2. 56.5

3. 50

4. 57.5

Question ID : 509647813

Status : Answered

Chosen Option : 1

Q.2 Two trains start at the same time, one from A to B and the other from B to A. After passing each other on their way, they take 50 min and 3 h 20 min respectively to reach their respective destinations. If the speed of the train starting from A is 72 km/h, then what is the speed (in km/h) of the other train?

Ans  1. 36

2.  $33\frac{1}{3}$

3. 54

4.  $66\frac{2}{3}$



Question ID : 509647815  
Status : **Marked For Review**  
Chosen Option : 1

**Q.3** A person sold an article for ₹ 1,500. Had he offered a discount of 10% on the selling price, he would have earned a profit of 8%. If he sells the article now at a profit of 12%, then the selling price will be:

- Ans
- 1. ₹ 1,460
  - 2. ₹ 1,380
  - 3. ₹ 1,372
  - 4. ₹ 1,400

Question ID : 509647812  
Status : **Answered**  
Chosen Option : 3

**Q.4** The compound interest accrued on a sum of ₹ 4400 at the end of 2 years is ₹ 1,119.36. What would be the simple interest on the same at the same rate for double the time?

- Ans
- 1. ₹ 2,211
  - 2. ₹ 2,121
  - 3. ₹ 2,122
  - 4. ₹ 2,112

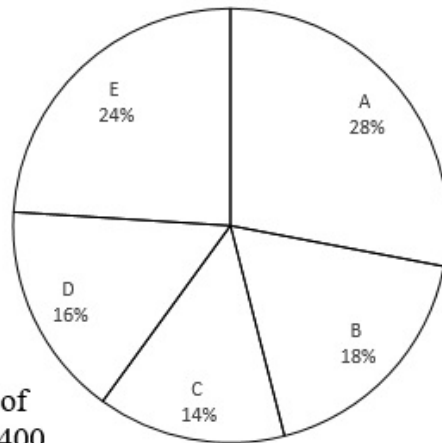
Question ID : 509647814  
Status : **Answered**  
Chosen Option : 1

**Q.5**



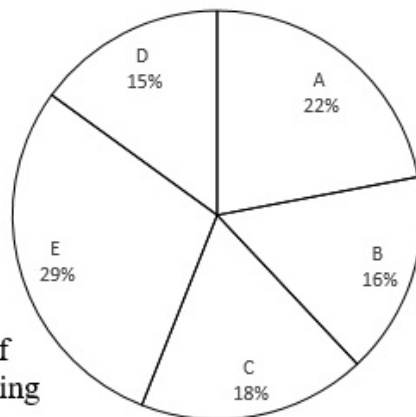
Study the following pie chart and answer the question.

Percentage break-up of number of children in five villages



Total number of Children = 5,400

Break-up of children attending school from these villages (A, B, C, D & E)



Total number of Children attending School = 3,200

What is the ratio of the total number of children in village C and D to the total number of children attending schools in A and C?

- Ans
- 1. 81 : 71
  - 2. 91 : 71
  - 3. 91 : 64
  - 4. 81 : 64

Question ID : 509647818  
 Status : Answered  
 Chosen Option : 4

Q.6

The value of  $\frac{5\frac{3}{4} - \frac{3}{7} \text{ of } 15\frac{3}{4} + 2\frac{2}{25} \div \frac{1}{4} \text{ of } 5\frac{19}{25}}$  lies between:

$$\left(\frac{1}{2} + \frac{1}{4}\right) \times \frac{4}{7} \times \left(8 \times \frac{2}{3} + \frac{4}{5}\right)$$

- Ans  1. 0.3 and 0.4  
 2. 0.1 and 0.2  
 3. 0.2 and 0.3  
 4. 0.4 and 0.5

Question ID : 509647807  
Status : Answered  
Chosen Option : 4

Q.7 The value of  $\frac{4.1 \times 26.21 - 12.3 \times 4.93}{(26.21)^2 - 9 \times (4.93)^2}$  is:

- Ans  1. 0.2  
 2. 0.02  
 3. 0.01  
 4. 0.1

Question ID : 509647806  
Status : Answered  
Chosen Option : 4

Q.8 10 persons begin to work together on a job, but after some days, 4 persons leave. As a result, the job, which could have been completed in 40 days, was completed in 50 days. How many days after commencement of the work did the four persons leave?

- Ans  1. 25  
 2. 24  
 3. 30  
 4. 20

Question ID : 509647816  
Status : Answered  
Chosen Option : 1

Q.9 The ratio of the mean proportion between 1.6 and 32.4 and the third proportional between 0.8 and 1.2 is:

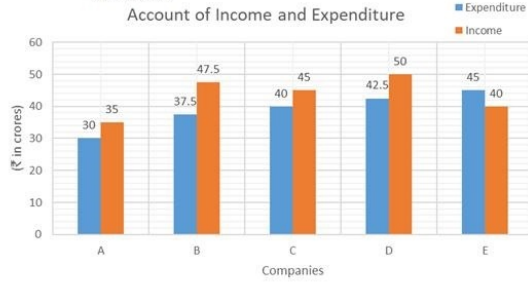
- Ans  1. 3 : 2  
 2. 4 : 1  
 3. 2 : 1  
 4. 5 : 2

Question ID : 509647809  
Status : Answered  
Chosen Option : 1

Q.1  
0

Study the following bar graph which shows the account of income and expenditure (in crore rupees) of 5 companies in the year 2016, and answer the question.

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



What is the approximate percentage of profit earned by all the companies together in 2016?

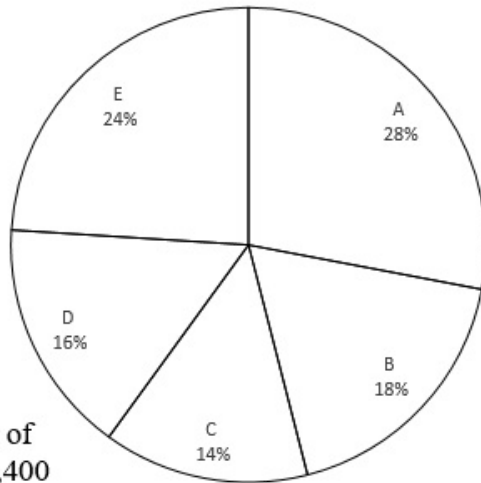
- Ans  1. 11.5  
 2. 12.4  
 3. 10.8  
 4. 12.2

Question ID : 509647820  
Status : Answered  
Chosen Option : 2

Q.1  
1

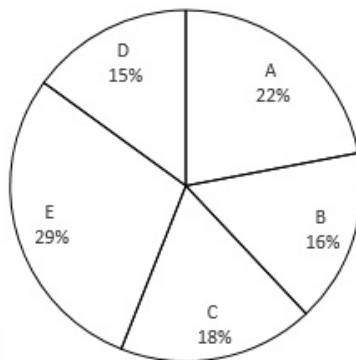
Study the following pie chart and answer the question.

Percentage break-up of number of children in five villages



Total number of Children = 5,400

Break-up of children attending school from these villages (A, B, C, D & E)



Total number of Children attending School = 3,200

The total number of children NOT attending school in villages A, E and D is approximately what percentage of the total number of children in A, B and C?

- Ans
- 1. 50
  - 2. 46
  - 3. 45
  - 4. 48

Question ID : 509647819

Status : Answered

Chosen Option : 4

Q.1 Sudha bought an article for ₹ 6,200 and sold it at a loss 25%. With this amount, she bought another article and sold it at a gain of 4%. What was her overall gain/loss?

Ans

- 1. 1.5% loss
- 2. 5% gain
- 3. 5% loss
- 4. 15% gain

Question ID : 509647811  
Status : Answered  
Chosen Option : 3

Q.1 A field is in the shape of a trapezium, whose parallel sides measure 250 m and 110 m and non-parallel sides measure 150 m and 130 m. What is the area (in hectares) of the field?

- Ans
- 1. 2.16
  - 2. 2.12
  - 3. 2.54
  - 4. 3.24

Question ID : 509647817  
Status : Answered  
Chosen Option : 1

Q.1 A sum of ₹ 4,200 is divided among A, B, C and D such that the share of B is equal to  $\frac{2}{3}$  of the share of C and the share of C is equal to  $\frac{9}{13}$  of the share of D. If the ratio of the share of A and B is 8 : 9, then the difference between the shares of B and D will be:

- Ans
- 1. ₹ 860
  - 2. ₹ 882
  - 3. ₹ 840
  - 4. ₹ 924

Question ID : 509647808  
Status : Answered  
Chosen Option : 2

Q.1 The salary of A is 50% more than the salary of B. If A got a 50% rise in his salary and B got a 25% rise in his salary, then the percentage increase in their combined salaries will be:

- Ans
- 1.  $33\frac{1}{3}$
  - 2. 40
  - 3.  $35\frac{1}{2}$
  - 4. 75

Question ID : 509647810  
Status : Answered  
Chosen Option : 2

Section : General English

Q.1

Select the most appropriate option to fill in the blank.

You must reach the theatre a little early, \_\_\_\_\_ you will not get a seat.

- Ans
- 1. otherwise
  - 2. therefore
  - 3. moreover
  - 4. besides

Question ID : 509647828  
Status : Answered  
Chosen Option : 1

Q.2 Select the most appropriate option to fill in the blank.

He \_\_\_\_\_ his breakfast when his friends arrived and asked him to come with them.

- Ans
- 1. is just finishing
  - 2. just finishes
  - 3. has just finished
  - 4. had just finished

Question ID : 509647822  
Status : Answered  
Chosen Option : 4

Q.3 Select the most appropriate antonym of the given word.

APPARENT

- Ans
- 1. Hamper
  - 2. Clear
  - 3. Obvious
  - 4. Obscure

Question ID : 509647833  
Status : Answered  
Chosen Option : 2

Q.4 Select the most appropriate option to fill in the blank.

The \_\_\_\_\_ church on the riverside looked very beautiful from the boat.

- Ans
- 1. old stone red
  - 2. stone red old
  - 3. old red stone
  - 4. red stone old

Question ID : 509647824  
Status : Answered

Q.5 Select the option that is NOT an antonym of a word by way of adding the prefix 'in-'.

- Ans  1. increment  
 2. incurable  
 3. inconsistent  
 4. incomparable

Question ID : 509647834  
Status : Answered  
Chosen Option : 1

Q.6 Select the correct passive form of the given sentence.

The rules forbid the people to cross the railway line.

- Ans  1. The people are forbidden by rules to cross the railway line.  
 2.  
The people are being forbidden by rules to cross the railway line.  
 3.  
The people have forbidden by rules to cross the railway line.  
 4. The railway line are forbidden to cross the people.

Question ID : 509647829  
Status : Answered  
Chosen Option : 1

Q.7 Select the most appropriate option to fill in the blank.

Sachin is \_\_\_\_\_ in having a good time than to study.

- Ans  1. interested  
 2. as interested  
 3. most interested  
 4. more interested

Question ID : 509647823  
Status : Answered  
Chosen Option : 4

Q.8 Select the most appropriate indirect form of the given sentence.

She said, "I can't come to the party on Saturday."

- Ans  1. She said that I can't come to the party on Saturday.  
 2. She said that she can't come to the party on Saturday.  
 3. She said that she wouldn't come to the party on Saturday.



✓ 4. She said that she couldn't come to the party on Saturday.

Question ID : 509647839  
Status : Answered  
Chosen Option : 4

Q.9 Select the most appropriate option to fill in the blank.

I looked for my suitcase at the station but \_\_\_\_\_ had disappeared.

- Ans
- ✗ 1. its
  - ✓ 2. it
  - ✗ 3. he
  - ✗ 4. she

Question ID : 509647825  
Status : Answered  
Chosen Option : 2

Q.1  
0 Select the correct active form of the given sentence.

He will surely be elected by the people in the next elections.

- Ans
- ✗ 1. People would surely be electing him in the next election.
  - ✗ 2. He will surely elect the people in the next election.
  - ✗ 3. People will surely be electing him in the next election.
  - ✓ 4. People will surely elect him in the next election.

Question ID : 509647830  
Status : Answered  
Chosen Option : 4

Q.1  
1 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.

There are not a great deal of difference between the two schools but I think mine is slightly better.

- Ans
- ✗ 1. difference between
  - ✗ 2. but I think
  - ✗ 3. slightly
  - ✓ 4. There are not

Question ID : 509647837  
Status : Answered  
Chosen Option : 1

Q.1  
2 Select the most appropriate option to fill in the blank.

Although she couldn't speak Spanish, she managed to make \_\_\_\_\_ understood in Spain.

- Ans
- ✗ 1. oneself

- 2. itself
- 3. herself
- 4. himself

Question ID : 509647826  
Status : Answered  
Chosen Option : 3

Q.1  
3 Select the most appropriate synonym of the given word.

Reproach

- Ans
- 1. Blame
  - 2. Appreciate
  - 3. Confuse
  - 4. Approach

Question ID : 509647832  
Status : Answered  
Chosen Option : 1

Q.1  
4 Select the correctly spelt word.

- Ans
- 1. associassion
  - 2. asociation
  - 3. associasion
  - 4. association

Question ID : 509647835  
Status : Answered  
Chosen Option : 4

Q.1  
5 Select the most appropriate option to fill in the blank.

\_\_\_\_\_ the A.C. was on, the room was not cool.

- Ans
- 1. In spite of
  - 2. Although
  - 3. Whether
  - 4. In case

Question ID : 509647827  
Status : Answered  
Chosen Option : 2

Q.1  
6 Select the most appropriate synonym of the given word.

GRACEFUL

Ans

- 1. Natural
- 2. Decorated
- 3. Elegant
- 4. Artificial

Question ID : 509647831  
Status : Answered  
Chosen Option : 3

Q.1  
7 Select the most appropriate option to fill in the blank.

She \_\_\_\_\_ her daughter to school before she goes to work.

- Ans
- 1. takes
  - 2. taking
  - 3. has taken
  - 4. took

Question ID : 509647821  
Status : Answered  
Chosen Option : 3

Q.1  
8 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:

As heavy rain continued to lash Kerala for the third consecutive day, the State Government has been sounding red alert in eight districts.

- Ans
- 1. has been sounding
  - 2. continued to lash
  - 3. in eight districts
  - 4. for

Question ID : 509647838  
Status : Answered  
Chosen Option : 1

Q.1  
9 Select the most appropriate direct form of the given sentence.

He said that he was not feeling well and that he wanted to go to bed.

- Ans
- 1. He said, "He was not feeling well. He wanted to go to bed."
  - 2. He said, "I am not feeling well. I want to go to bed."
  - 3. He said, "I am not feeling well and that I want to go to bed."
  - 4. He said, "I was not feeling well. I wanted to go to bed."

Question ID : 509647840  
Status : Answered  
Chosen Option : 2

Q.2 Select the wrongly spelt word.

- Ans
- 1. morphine
  - 2. moralise
  - 3. mortuary
  - 4. mortguage

Question ID : 509647836  
Status : Answered  
Chosen Option : 4

Section : Discipline

Q.1 Which of the following materials is used for the generation of ultrasonic waves by using magnetostriction effect?

- Ans
- 1. Paramagnetic material
  - 2. Ferromagnetic material
  - 3. Diamagnetic materials
  - 4. Both paramagnetic and diamagnetic material

Question ID : 509647861  
Status : Answered  
Chosen Option : 4

Q.2 Consider the below data:

$x$	:	0	1	2
$f(x)$	:	4	3	12

The value of  $\int_0^2 f(x)dx$  by Trapezoidal rule will be:

- Ans
- 1. 11
  - 2. 12
  - 3. 15
  - 4. 9

Question ID : 509647899  
Status : Answered  
Chosen Option : 1

Q.3 For what value of  $\lambda$ , do the simultaneous equations  $2x + 3y = 1$ ,  $4x + 6y = \lambda$  have infinite solutions?

- Ans
- 1.  $\lambda = 0$
  - 2.  $\lambda = 1$
  - 3.  $\lambda \neq 2$
  - 4.  $\lambda = 2$

Question ID : 509647893  
Status : Answered

Q.4 Which of the following particles in motion, having the same kinetic energy, has the shortest wavelength?

- Ans  1. A neutron  
 2. An alpha-particle  
 3. A proton  
 4. An electron

Question ID : 509647843

Status : Answered

Chosen Option : 2

Q.5 A positron is an anti-particle of an electron, having the same mass but opposite charge to electron. Then, the minimum energy released in annihilation of matter of a pair of an electron and a positron is nearly:

- Ans  1. 2.01 MeV  
 2. 1.20 MeV  
 3. 1.02 MeV  
 4. 0.51 MeV

Question ID : 509647853

Status : Answered

Chosen Option : 3

Q.6 Consider two differential equations:

$$\text{I : } e^y dx + (xe^y + 2y)dy = 0$$

$$\text{II : } xdy + 2y^2 dx = 0$$

Which of the following statements is correct?

- Ans  1. Both I and II are exact differential equations.  
 2. I is not exact but II is an exact differential equation.  
 3. Neither I nor II are exact differential equations.  
 4. I is exact but II is not an exact differential equation.

Question ID : 509647872

Status : Answered

Chosen Option : 1

Q.7 A partial differential equation derived from the equation  $z = ae^{by} \sin bx$  will be:

- Ans  1.  $\frac{\partial z}{\partial y} = 2y \left( \frac{\partial z}{\partial x} \right)^2$   
 2.  $\left( 1 + \frac{\partial z}{\partial y} \right) \frac{\partial z}{\partial x} = z$



✓ 3.  $\frac{\partial^2 z}{\partial x^2} + \frac{\partial^2 z}{\partial y^2} = 0$

✗ 4.  $2z = x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y}$

Question ID : 509647886

Status : Answered

Chosen Option : 2

Q.8 The value of  $\int \frac{e^x}{e^{2x}-4} dx$  will be \_\_\_\_\_, where C is an arbitrary constant.

Ans ✗ 1.  $\frac{1}{2} \log \left| \frac{e^x+1}{e^x-1} \right| + C$

✗ 2.  $\frac{1}{3} \log \left| \frac{2e^x-1}{2e^x+1} \right| + C$

✓ 3.  $\frac{1}{4} \log \left| \frac{e^x-2}{e^x+2} \right| + C$

✗ 4.  $\frac{1}{2} \log \left| \frac{e^{2x}+2}{e^{2x}-2} \right| + C$

Question ID : 509647891

Status : Answered

Chosen Option : 4

Q.9 Ultrasonic pulse echo technique, a non-destructive ultrasonic testing, is employed for any possible flaw detection in a metallic bar of thickness 30 cm. If the arrival times of the ultrasonic pulses are 45  $\mu$ s and 90  $\mu$ s respectively, the distance of the flaw from one end of the steel bar at which the ultrasonic pulse initially enters the steel bar, will be:

Ans ✗ 1. 14 cm

✓ 2. 15 cm

✗ 3. 18 cm

✗ 4. 16 cm

Question ID : 509647862

Status : Answered

Chosen Option : 3

Q.1 In an experimental arrangement of a Fresnel's biprism, monochromatic light of wavelength  $\lambda$  is used to produce interference fringe pattern. On introducing a thin, transparent glass sheet of refractive index 1.50 and thickness of 7 microns in the path of one of the interfering beams, the central fringe of the pattern is shifted to the position of 6<sup>th</sup> bright fringe. Then, the wavelength  $\lambda$  of the monochromatic light used is nearly:

Ans ✗ 1. 555 nm

✗ 2. 650 nm

✗ 3. 618 nm

✓ 4. 581 nm

Question ID : 509647854

Status : Answered

Chosen Option : 4

Q.1  
1

## General solution of partial differential equation

$$x(y^2 + z) \frac{\partial z}{\partial x} - y(x^2 + z) \frac{\partial z}{\partial y} = (x^2 - y^2)z \text{ will be:}$$

Ans  1.

$$\varphi(xyz, x^2 + y^2 - 2z) = 0, \text{ where } \varphi \text{ is an arbitrary function.}$$

2.

$$\varphi(x + y + z, x^2 + y^2) = 0, \text{ where } \varphi \text{ is an arbitrary function.}$$

3.

$$\varphi(x^2 + y^2 + z^2, x + y + z) = 0, \text{ where } \varphi \text{ is an arbitrary function.}$$

4.

$$\varphi(x + y - z, xy + yz + zx) = 0, \text{ where } \varphi \text{ is an arbitrary function.}$$

Question ID : 509647887

Status : Answered

Chosen Option : 2

Q.1 A biased six-faced dice when thrown, is thrice as likely to show an odd number than an even number. If it is thrown twice, then the probability that the sum of two numbers thrown is odd will be:

Ans  1.  $\frac{3}{8}$

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

3.  $\frac{1}{8}$

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

Question ID : 509647875

Status : Answered

Chosen Option : 3

Q.1 Let  $p$  be a prime number. Then  $\sqrt{p}$  is:

Ans  1. a rational number

2. an integer

3. a prime number

4. not a rational number

Question ID : 509647879

Status : Answered

Chosen Option : 4

Q.1 Which of the following pairs of phenomena illustrate the particle nature of the electromagnetic radiation?

Ans  1. Compton effect and Photoelectric effect

2. Compton effect and Pauli's principle



3. Bragg's diffraction and photoelectric effect

4. Bragg's diffraction and Compton effect

Question ID : 509647859

Status : Answered

Chosen Option : 3

Q.1  
5 The frequency of ultrasonic waves is:

Ans  1. Less than 20 Hz

2. More than 20 KHz

3. Equal to 20 Hz

4. Greater than 20 Hz and less than 20 KHz

Question ID : 509647848

Status : Answered

Chosen Option : 2

Q.1  
6 The value of  $\int_0^1 \frac{\sin^{-1} x}{x} dx$  is:

Ans  1.  $\pi \log 2$

2.  $\frac{2\pi}{3}$

3.  $\frac{\pi}{4}$

4.  $\frac{\pi}{2} \log 2$

Question ID : 509647890

Status : Answered

Chosen Option : 1

Q.1  
7 A sugar solution in a tube of length 2.0 dm produces optical rotation of  $12^\circ$ . Then, the sugar solution is diluted to one half of its initial concentration. If the dilute solution is contained in another tube of length 3.0 dm, the optical rotation produced by it will be:

Ans  1.  $9^\circ$

2.  $7^\circ$

3.  $10^\circ$

4.  $11^\circ$

Question ID : 509647869

Status : Answered

Chosen Option : 1

Q.1  
8 The standard ordered basis of  $\mathbb{R}^3$  is  $\{e_1, e_2, e_3\}$ . Let  $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$  be the linear transformation such that  $T(e_1) = 7e_1 - 5e_3$ ,  $T(e_2) = -2e_2 + 9e_3$ ,  $T(e_3) = e_1 + e_2 + e_3$ . The standard matrix of T is:

Ans  1.  $\begin{pmatrix} 7 & 0 & 1 \\ 0 & -2 & 1 \\ -5 & 9 & 1 \end{pmatrix}$

2.  $\begin{pmatrix} 7 & -2 & 1 \\ -5 & 9 & 1 \\ 0 & 0 & 1 \end{pmatrix}$

3.  $\begin{pmatrix} 7 & 0 & -5 \\ 0 & -2 & 9 \\ 1 & 1 & 1 \end{pmatrix}$

4.  $\begin{pmatrix} 7 & -5 & 0 \\ -2 & 9 & 1 \\ 1 & 1 & 1 \end{pmatrix}$

Question ID : 509647896  
Status : Answered  
Chosen Option : 3

Q.1  
9 Which of the following equations correctly represents the momentum  $p$  of a photon of Energy  $E$ ?

- Ans  1.  $E / c$   
 2.  $E^2 c$   
 3.  $Ec$   
 4.  $Ec^2$

Question ID : 509647865  
Status : Answered  
Chosen Option : 1

Q.2  
0 The group velocity of matter waves associated with a moving particle is:

- Ans  1. the same as phase velocity  
 2. less than the particle velocity  
 3. equal to the particle velocity  
 4. more than the particle velocity

Question ID : 509647842  
Status : Answered  
Chosen Option : 2

Q.2  
1 The speed of a fast moving electron, having total energy of 2 MeV, is nearly:

- Ans  1. 0.96 C  
 2. 0.99 C  
 3. 0.98 C  
 4. 0.97 C

Question ID : 509647868  
Status : Answered  
Chosen Option : 1

Q.2  
2 The value of  $\int \frac{1}{(x+1)\sqrt{x^2-1}} dx$  will be \_\_\_\_\_, where  $C$  is an arbitrary constant.

Ans

1.  $\sqrt{\frac{x^2+1}{x^2-1}} + C$

2.  $\sqrt{\frac{x-1}{x+1}} + C$

3.  $\log \frac{x+1}{x-1} + C$

4.  $\log \frac{x^2-1}{x^2+1} + C$

Question ID : 509647892

Status : Answered

Chosen Option : 2

Q.2  
3 The value of  $\oint_C \frac{1}{z^2+4} dz$  where C is  $|z - 2i| = 1$  will be:

Ans  1. 0

2.  $1/5$

3.  $\pi/2$

4.  $\pi/3$

Question ID : 509647878

Status : Answered

Chosen Option : 3

Q.2  
4 Which of the following materials behaves as a dielectric?

Ans  1. Tungsten

2. Copper

3. Germanium

4. Mica

Question ID : 509647860

Status : Answered

Chosen Option : 4

Q.2  
5 The value of  $\lim_{x \rightarrow 0} \left( x \sin \frac{1}{x} \right)$  is:

Ans  1.  $\alpha$

2. -1

3. 0

4. 1

Question ID : 509647882

Status : Answered

Chosen Option : 3

Q.2 The ratio of the amplitudes of the electric field and magnetic field strengths has the same dimensions as that of:

<https://www.freshersnow.com/previous-year-question-papers/>

6

- Ans
- 1. Permittivity
  - 2. Inductance
  - 3. Capacitance
  - 4. Impedance

Question ID : 509647841  
Status : Answered  
Chosen Option : 1

Q.2 For a non-relativistic particle, the ratio of phase velocity to group velocity of de Broglie waves is:

7

- Ans
- 1. 1 : 2
  - 2. 2 : 3
  - 3. 3 : 2
  - 4. 2 : 1

Question ID : 509647846  
Status : Answered  
Chosen Option : 2

Q.2 Which of the following phenomena establishes the transverse nature of light waves?

8

- Ans
- 1. Polarisation
  - 2. Diffraction
  - 3. Photoelectric effect
  - 4. Compton effect

Question ID : 509647864  
Status : Answered  
Chosen Option : 1

Q.2 Ultrasonic waves, propagating through a medium, can be detected by:

9

- Ans
- 1. Quinck's tube
  - 2. Light meter
  - 3. Envelope detector
  - 4. Piezoelectric detector

Question ID : 509647863  
Status : Answered  
Chosen Option : 1

Q.3 The value of the integral  $\int_0^{1+i} (x - y + ix^2) dZ$  along the straight line from  $z = 0$  to  $Z = 1 + i$  will be:

0

- Ans
- 1.  $\frac{1}{3}(i + 1)$

2.  $\frac{2}{3}(1+i)$

3.  $\frac{1}{3}(i-1)$

4.  $\frac{2}{3}(i-1)$

Question ID : 509647874

Status : Answered

Chosen Option : 3

Q.3  
1 The general solution of  $\frac{dx}{y^2} = \frac{dy}{x^2} = \frac{dz}{x^2y^2z^2}$  will be:

Ans  1.

$x + 3y = C_1, y^2 + z^3 = C_2$ , where  $C_1$  and  $C_2$  are arbitrary constants.

2.

$x^3 + y^2 = C_1, x^2 + 3z^2 = C_2$ , where  $C_1$  and  $C_2$  are arbitrary constants.

3.

$x^3 - y^3 = C_1, x^3 + 3z^{-1} = C_2$ , where  $C_1$  and  $C_2$  are arbitrary constants.

4.

$x^2 + 2y^2 = C_1, x^3 - 3z = C_2$ , where  $C_1$  and  $C_2$  are arbitrary constants.

Question ID : 509647884

Status : Answered

Chosen Option : 3

Q.3  
2 Let A be a non-singular diagonalisable matrix of order 3 with eigenvalues  $\lambda_1, \lambda_2, \lambda_3$ .  $A^{-1}$  is diagonalisable if:

Ans  1.  $\lambda_1 = 2, \lambda_2 = 0, \lambda_3 = -1$

2.  $\lambda_1 = 0, \lambda_2 = 3, \lambda_3 = -2$

3.  $\lambda_1 = -1, \lambda_2 = 2, \lambda_3 = -3$

4.  $\lambda_1 = -3, \lambda_2 = 1, \lambda_3 = 0$

Question ID : 509647897

Status : Answered

Chosen Option : 3

Q.3  
3 A complete solution of partial differential equation

$x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} - z = \frac{\partial z}{\partial x} \frac{\partial z}{\partial y}$  will be:

Ans  1.  $z = ax + by - ab$ , where a, b are arbitrary constants.

2.  $z = x^2 + y^2 - 2ab$ , where a, b are arbitrary constants.

3.  $z = ax^2 + by^2 + abxy$ , where a, b are arbitrary constants.

✗ 4.  $z = ax - by + ab$ , where a, b are arbitrary constants.

Question ID : 509647888

Status : Answered

Chosen Option : 1

Q.3  
4 The solution of differential equation  $u_{n+3} - 4u_{n+2} + u_{n+1} + 6u_n = 0$  will be:

Ans ✗ 1.

$u_n = C_1(1)^n + C_2(2)^n + C_3(-3)^n$ , where  $C_1, C_2, C_3$  are constants.

✗ 2.

$u_n = C_1(-1)^n + C_2(-2)^n + C_3(-3)^n$ , where  $C_1, C_2, C_3$  are constants.

✗ 3.

$u_n = C_1(1)^n + C_2(-2)^n + C_3(3)^n$ , where  $C_1, C_2, C_3$  are constants.

✓ 4.

$u_n = C_1(-1)^n + C_2(2)^n + C_3(3)^n$ , where  $C_1, C_2, C_3$  are constants.

Question ID : 509647876

Status : Answered

Chosen Option : 4

Q.3  
5 Maximum angle of diffraction in a plane transmission diffraction grating is:

Ans ✓ 1.  $90^\circ$

✗ 2.  $45^\circ$

✗ 3.  $180^\circ$

✗ 4.  $135^\circ$

Question ID : 509647849

Status : Answered

Chosen Option : 1

Q.3  
6 The value of  $\int_0^{2\pi} \int_0^{\pi/4} \int_0^1 r^2 \sin\theta \, dr \, d\theta \, d\phi$  will be:

Ans ✗ 1.  $\frac{\sqrt{2}\pi}{3}(\sqrt{2} + \sqrt{3})$

✗ 2.  $\frac{2\pi}{3}(\sqrt{3} - 1)$

✗ 3.  $\frac{2\pi}{3}(\sqrt{3} - \sqrt{2})$

✓ 4.  $\frac{\sqrt{2}\pi}{3}(\sqrt{2} - 1)$

Question ID : 509647873

Status : Answered

Chosen Option : 4



Q.3  
7 The curve represented by  $Z\bar{Z} + (1+i)Z + (1-i)\bar{Z} = 0$  will be:

Ans  1. a circle with centre at  $(-1, 1)$  and radius as  $\sqrt{2}$ .

2.

an ellipse with semi-major axis as 2 and semi-minor axis as 1

3. a straight line with  $x$ - intercept as  $-2$

4. a parabola with vertex at  $(-1, 0)$ .

Question ID : 509647871  
Status : Answered  
Chosen Option : 1

Q.3  
8 Which of the following is the energy quantum of radiation?

Ans  1. Phantom

2. Phonon

3. Positron

4. Photon

Question ID : 509647855  
Status : Answered  
Chosen Option : 4

Q.3  
9 The refractive indices of quartz crystal for right handed and left handed circularly polarized light of wavelength 762.9 nm are 1.5391 and 1.5392 respectively. The angle of rotation produced by the crystal plate of thickness 0.5 mm is:

Ans  1.  $25.5^\circ$

2.  $11.8^\circ$

3.  $13.8^\circ$

4.  $18.1^\circ$

Question ID : 509647870  
Status : Answered  
Chosen Option : 2

Q.4  
0 The solution  $e^x$ ,  $e^{-x}$ , and  $e^{2x}$  of  $\frac{d^3y}{dx^3} - 2\frac{d^2y}{dx^2} - \frac{dy}{dx} + 2y = 0$  will be:

Ans  1.

linearly dependent for  $x \in [-2, 2]$  and linearly independent elsewhere.

2.

linearly independent for  $x \in [-1, 1]$  and linearly dependent elsewhere.

3. linearly independent on every real interval.

4. linearly dependent for all real  $x$ .

Question ID : 509647883  
Status : Answered  
Chosen Option : 3



Q.4  
1 The wavelength produced by a He-Ne laser corresponds to the transition in:

- Ans
- 1. both Ne and He atoms
  - 2. Ne atoms only
  - 3. He atoms only
  - 4. most favourable to He atoms than Ne atoms

Question ID : 509647847  
Status : Answered  
Chosen Option : 3

Q.4  
2 If 3, 5 are the eigenvalues of a square matrix A of order 2, then the eigenvalues of the matrix  $A^3$  will be:

- Ans
- 1. 27, 125
  - 2. 9, 15
  - 3. 3, 5
  - 4. 9, 25

Question ID : 509647894  
Status : Answered  
Chosen Option : 3

Q.4  
3 The solution of differential equation  $x^2 \frac{d^2 y}{dx^2} - x \frac{dy}{dx} + y = \log x$  will be:

- Ans
- 1.  
 $y = C_1 + C_2 x \log x + x^2 \log x$ , where  $C_1$  and  $C_2$  are arbitrary constants.
  - 2.  
 $y = (C_1 + C_2 \log x)x + \log x + 2$ , where  $C_1$  and  $C_2$  are arbitrary constants.
  - 3.  
 $y = C_1 x + C_2 \log x + 3$ , where  $C_1$  and  $C_2$  are arbitrary constants.
  - 4.  
 $y = (C_1 x + C_2 \log x)x + \log(2x) + 2$ , where  $C_1$  and  $C_2$  are arbitrary constants.

Question ID : 509647885  
Status : Answered  
Chosen Option : 2

Q.4  
4 In order to investigate the internal atomic structure of crystals, we make use of:

- Ans
- 1. Orange light
  - 2. X- rays
  - 3. Ultraviolet radiation
  - 4. Infrared radiation

Question ID : 509647857  
Status : Answered  
Chosen Option : 2

Q.4  
5 For a complex variable  $z = x + iy$ , which of the following statements is true?

- Ans  1. Both  $\sin h Z$  and  $\cos h Z$  are entire functions.  
 2. Neither  $\sin h Z$  nor  $\cos h Z$  are entire functions.  
 3.  $\sin h Z$  is entire but  $\cos h Z$  is not an entire function.  
 4.  $\sin h Z$  is not entire but  $\cos h Z$  is an entire function.

Question ID : 509647877  
Status : Answered  
Chosen Option : 2

Q.4  
6 A ray of light is incident on a transparent medium at an angle of  $60^\circ$ . The reflected ray of light is found to be completely polarised. Then, the refractive index of the transparent medium is nearly:

- Ans  1. 1.73  
 2. 1.62  
 3. 1.52  
 4. 1.33

Question ID : 509647851  
Status : Answered  
Chosen Option : 2

Q.4  
7 A metre stick moves along its length with a certain speed. The apparent length of the moving metre stick as measured by a stationary observer on the ground is found to be 98 cm. Then, the velocity  $v$  of the metre stick in terms of the speed of light in vacuum  $c$  will be:

- Ans  1.  $0.17 c$   
 2.  $0.19 c$   
 3.  $0.98 c$   
 4.  $0.14 c$

Question ID : 509647866  
Status : Answered  
Chosen Option : 2

Q.4  
8 Which of the following materials exhibits piezoelectric effect?

- Ans  1. Copper  
 2. Aluminium  
 3. Iron  
 4. Quartz

Question ID : 509647844  
Status : Answered  
Chosen Option : 4

Q.4  
9 The experimental evidence that the electron exhibits wave-like characteristics was first provided by:

- Ans  1. Huygens  
 2. De Broglie

3. Davisson and Germer

4. Dirac

Question ID : 509647856  
Status : Answered  
Chosen Option : 1

Q.5  
0 Newton's rings can be obtained in:

Ans  1. both transmitted and reflected light systems

2. transmitted light system only

3. any light system with narrow source of light

4. reflected light system only

Question ID : 509647858  
Status : Answered  
Chosen Option : 3

Q.5  
1 If  $f(0) = 3$ ,  $f(1) = 5$ ,  $f(3) = 21$ , then the unique polynomial of degree 2 or less using Newton divided difference interpolation will be:

Ans  1.  $2x^2 + 2x + 1$

2.  $2x^2 - 3x + 1$

3.  $2x^2 + 3$

4.  $x^2 + 3x - 2$

Question ID : 509647898  
Status : Answered  
Chosen Option : 3

Q.5  
2 The 2<sup>nd</sup> approximation to a root of the equation  $x^2 - x - 1 = 0$  in the interval (1, 2) by Bisection method will be:

Ans  1. 1.75

2. 1.35

3. 1.25

4. 1.5

Question ID : 509647900  
Status : Answered  
Chosen Option : 1

Q.5  
3 The curie law,  $\chi = C/T$ , expressing susceptibility  $\chi$  varying with absolute temperature T, is obeyed by:

Ans  1. Both ferromagnetic and paramagnetic materials

2. Ferromagnetic materials only

3. Paramagnetic materials only

4. Diamagnetic materials only

Question ID : 509647867

Status : **Answered**  
Chosen Option : 2

Q.5 Which of the following materials is most suitable for marking electromagnetics and core of transformer?  
4

- Ans
- 1. Copper
  - 2. Aluminum
  - 3. Iron
  - 4. Cobalt

Question ID : **509647852**  
Status : **Answered**  
Chosen Option : 3

Q.5 Which of the following optical phenomena CANNOT convert unpolarised light to plane polarised light?  
5

- Ans
- 1. Double refraction of light
  - 2. Scattering of light
  - 3. Diffraction of light
  - 4. Reflection of light

Question ID : **509647850**  
Status : **Answered**  
Chosen Option : 3

Q.5 The Poynting vector of electromagnetic waves has the same dimensions as that of:  
6

- Ans
- 1. electric field
  - 2. electric current density
  - 3. electromagnetic power density
  - 4. electric charge density

Question ID : **509647845**  
Status : **Answered**  
Chosen Option : 1

Q.5 Which of the following statements is FALSE?  
7

- Ans
- 1. The series  $\sum_{n=1}^{\infty} \frac{1}{n^2}$  is convergent.
  - 2. A Cauchy sequence of real numbers need not be bounded.
  - 3. A sequence of real numbers is convergent if and only if it is a Cauchy sequence.
  - 4. If  $\langle x_n \rangle$  is a convergent sequence of real numbers, then  $\langle x_n \rangle$  is a Cauchy sequence.

Question ID : **509647881**  
Status : **Answered**

Q.5  
8 The length of the curve  $y = x^{3/2}$  over the interval  $[0,1]$  will be:

- Ans
- 1.  $\frac{1}{27} [(13)^{3/2} - 8]$  units
  - 2.  $\frac{1}{16} [(11)^{5/2} - 3]$  units
  - 3.  $\frac{57}{5}$  units
  - 4.  $\frac{1}{9} [(15)^{1/2} + 4]$  units

Question ID : 509647889

Status : Answered

Chosen Option : 1

Q.5  
9 Consider two subsets of  $\mathbb{R}^3$  given as,

$$S_1 = \{[2, 3, 1], [1, 0, 5], [0, 1, 0], [0, 0, 1]\} \text{ and } S_2 = \{[1, 0, 0], [0, 1, 1], [0, 0, 0]\}.$$

Which of the following statements is true?

- Ans
- 1.  $S_1$  is linearly dependent but  $S_2$  is linearly independent.
  - 2. Both  $S_1$  and  $S_2$  are linearly independent.
  - 3.  $S_1$  is linearly independent but  $S_2$  is linearly dependent.
  - 4. Both  $S_1$  and  $S_2$  are linearly dependent.

Question ID : 509647895

Status : Answered

Chosen Option : 2

Q.6  
0 The p-series  $\sum_{n=1}^{\infty} \frac{1}{n^p}$  diverges for:

- Ans
- 1.  $0 < p \leq 1$
  - 2.  $p \in [2, 3, 5, 7, 11, \dots]$
  - 3.  $p > 1$
  - 4.  $p \in [2, 4, 6, \dots]$

Question ID : 509647880

Status : Answered

Chosen Option : 3