



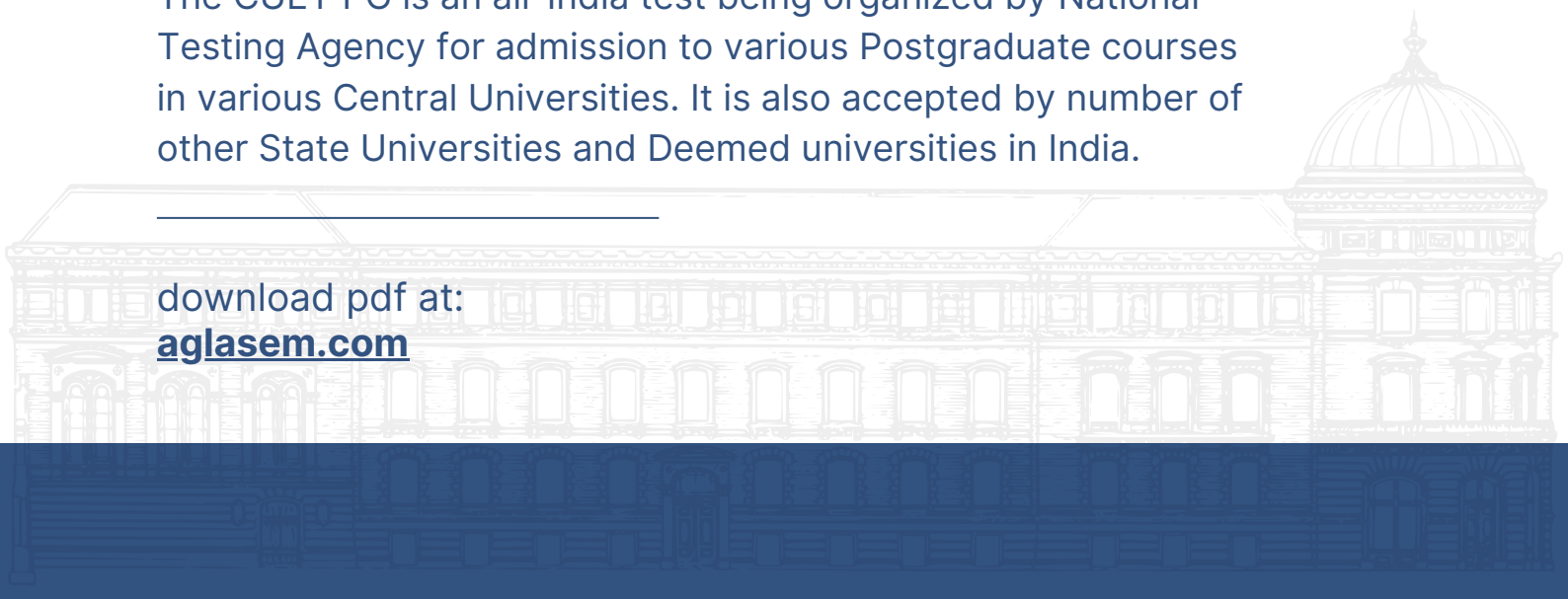
Common University Entrance Test (PG)

# CUET PG 2023 Question Paper

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# National Testing Agency

|                       |                                        |
|-----------------------|----------------------------------------|
| Question Paper Name : | Mathematics Eng 05th June 2023 Shift 1 |
| Subject Name :        | Mathematics Eng                        |
| Creation Date :       | 2023-06-05 16:59:16                    |
| Duration :            | 120                                    |
| Total Marks :         | 400                                    |
| Display Marks:        | Yes                                    |

## Mathematics

|                               |           |
|-------------------------------|-----------|
| Group Number :                | 1         |
| Group Id :                    | 68634044  |
| Group Maximum Duration :      | 0         |
| Group Minimum Duration :      | 120       |
| Show Attended Group? :        | No        |
| Edit Attended Group? :        | No        |
| Break time :                  | 0         |
| Group Marks :                 | 400       |
| Is this Group for Examiner? : | No        |
| Examiner permission :         | Cant View |
| Show Progress Bar? :          | No        |

## Part A

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Section Id :                                                 | 68634087  |
| Section Number :                                             | 1         |
| Section type :                                               | Online    |
| Mandatory or Optional :                                      | Mandatory |
| Number of Questions :                                        | 21        |
| Number of Questions to be attempted :                        | 21        |
| Section Marks :                                              | 100       |
| Enable Mark as Answered Mark for Review and Clear Response : | Yes       |
| Maximum Instruction Time :                                   | 0         |
| Sub-Section Number :                                         | 1         |
| Sub-Section Id :                                             | 686340130 |
| Question Shuffling Allowed :                                 | No        |
| Is Section Default? :                                        | null      |

Question Id : 6863404344 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Question Numbers : (1 to 5)  
Question Label : Comprehension

During my visit to Cuttack I participated in the birthday celebration of the late Justice Harihar Mahapatra. I went there at the invitation of Justice Ranganath Mishra. For me, it was a revelation, how the independence movement, the first vision for the nation, had created the larger-than-life figure of Justice Harihar Mahapatra. He lived to the age of ninety-two and established Cuttack Eye Hospital, Utkal University and above all organized multi-pronged efforts to remove poverty. My biography in Oriya was released. At the end of my speech the youngsters crowding around put forth many questions.

The first question was, 'Sir, tell us which are your favourite books, that you loved and which have shaped your mind?'

I said, 'Four books in my life have been very close to my heart. I cherish treasuring them. The first is *Man the Unknown* by Dr Alexis Carrel, a doctor turned-philosopher and a Nobel laureate. This book highlights how the mind and body both have to be treated in an ailment as the two are integrated. You cannot treat one and ignore the other. In Particular, children who dream of becoming doctors should read the book. They will learn that the human body a mechanical system it is a very intelligent one with a most intricate and sensitive feedback system. The second book, one I venerate, is Tiruvalluvar's *Thirukkural*, which provides an excellent code of life. The third *Light from Many Lamps* by Lillian Eichler Watson which has touched me deeply. It illuminates how we live and has been an invaluable guide to me for fifty years. And the Holy Quran is, of course, a constant companion.'

#### Sub questions

Question Number : 1 Question Id : 6863404345 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

Choose the best option from the given alternative the book 'Man the unknown' highlights that the mind and the body are to be equally treated in an ailment as they are integrated. Replace the underlined word from a suitable synonym given below.

1. Collaborated
2. Removed
3. Disintegrated
4. Separated

#### Options :

68634017201. 1  
68634017202. 2  
68634017203. 3  
68634017204. 4

Question Number : 2 Question Id : 6863404346 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

Choose the best option from the given alternative. The author participated in the birthday celebration of \_\_\_\_\_.

1. Justice Ranganath Mishra
2. Dr Alexis Carrel
3. Justice Harihar Mahapatra
4. Lillian Eichler Watson

**Options :**

68634017205. 1  
68634017206. 2  
68634017207. 3  
68634017208. 4

**Question Number : 3 Question Id : 6863404347 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Choose the best option from the given alternatives the book \_\_\_\_\_ had a deep impact on the author.

1. Thirukkural
2. The Holy Quran
3. Light from many lamps
4. Man the unknown

**Options :**

68634017209. 1  
68634017210. 2  
68634017211. 3  
68634017212. 4

**Question Number : 4 Question Id : 6863404348 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Find a word from the passage that is an antonym to the word 'Conceal'

1. Ailment
2. Illuminate
3. Revelation
4. Sensitive

**Options :**

68634017213. 1  
68634017214. 2  
68634017215. 3  
68634017216. 4

**Question Number : 5 Question Id : 6863404349 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Find a word from the passage that means "very complicated."

1. Highlight
2. Multi-pronged
3. Invaluable
4. Intricate

**Options :**

68634017217. 1  
68634017218. 2  
68634017219. 3  
68634017220. 4

**Question Id : 6863404344 Question Type : COMPREHENSION Sub Question Shuffling Allowed : Yes Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Question Numbers : (1 to 5)**

Question Label : Comprehension

During my visit to Cuttack I participated in the birthday celebration of the late Justice Harihar Mahapatra. I went there at the invitation of Justice Ranganath Mishra. For me, it was a revelation, how the independence movement, the first vision for the nation, had created the larger-than-life figure of Justice Harihar Mahapatra. He lived to the age of ninety-two and established Cuttack Eye Hospital, Utkal University and above all organized multi-pronged efforts to remove poverty. My biography in Oriya was released. At the end of my speech the youngsters crowding around put forth many questions.

The first question was, 'Sir, tell us which are your favourite books, that you loved and which have shaped your mind?'

I said, 'Four books in my life have been very close to my heart. I cherish treasuring them. The first is Man the Unknown by Dr Alexis Carrel, a doctor turned-philosopher and a Nobel laureate. This book highlights how the mind and body both have to be treated in an ailment as the two are integrated. You cannot treat one and ignore the other. In Particular, children who dream of becoming doctors should read the book. They will learn that the human body a mechanical system it is a very intelligent one with a most intricate and sensitive feedback system. The second book, one I venerate, is Tiruvalluvar's Thirukkural, which provides an excellent code of life. The third Light from Many Lamps by Lillian Eichler Watson which has touched me deeply. It illuminates how we live and has been an invaluable guide to me for fifty years. And the Holy Quran is, of course, a constant companion.'

**Sub questions**

**Question Number : 1 Question Id : 6863404345 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Choose the best option from the given alternative the book 'Man the unknown' highlights that the mind and the body are to be equally trested in a ailment as they are integrated. Replace the underlined word from a suitable synonym given below.

1. Collaborated
2. Removed
3. Disintegrated
4. Separated

**Options :**

68634017201. 1  
68634017202. 2  
68634017203. 3  
68634017204. 4

**Question Number : 2 Question Id : 6863404346 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Choose the best option from the given alternative. The author participated in the birthday celebration of \_\_\_\_\_.

1. Justice Ranganath Mishra
2. Dr Alexis Carrel
3. Justice Harihar Mahapatra
4. Lillian Eichler Watson

**Options :**

68634017205. 1  
68634017206. 2  
68634017207. 3  
68634017208. 4

**Question Number : 3 Question Id : 6863404347 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Choose the best option from the given alternatives the book \_\_\_\_\_ had a deep impact on the author.

1. Thirukkural
2. The Holy Quran
3. Light from many lamps
4. Man the unknown

**Options :**

68634017209. 1  
68634017210. 2

68634017211. 3

68634017212. 4

**Question Number : 4 Question Id : 6863404348 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Find a word from the passage that is an antonym to the word 'Conceal'

1. Ailment
2. Illuminate
3. Revelation
4. Sensitive

**Options :**

68634017213. 1

68634017214. 2

68634017215. 3

68634017216. 4

**Question Number : 5 Question Id : 6863404349 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Find a word from the passage that means "very complicated."

1. Highlight
2. Multi-pronged
3. Invaluable
4. Intricate

**Options :**

68634017217. 1

68634017218. 2

68634017219. 3

68634017220. 4

|                                     |           |
|-------------------------------------|-----------|
| <b>Sub-Section Number :</b>         | 2         |
| <b>Sub-Section Id :</b>             | 686340131 |
| <b>Question Shuffling Allowed :</b> | Yes       |
| <b>Is Section Default? :</b>        | null      |

**Question Number : 6 Question Id : 6863404350 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Match List I with List II Fill the blanks in List I with suitable prepositional phrases from List II

| LIST I |                                                                         | LIST II |                   |
|--------|-------------------------------------------------------------------------|---------|-------------------|
| A.     | I doubt if she got the job _____                                        | I.      | At the very least |
| B.     | They should give me my money back or _____ offer to exchange the shoes  | II.     | On balance        |
| C.     | I thought i understood it, but _____ I realized it was more complicated | III.    | On merit          |
| D.     | I would say that, _____, the best thing is to do nothing for the moment | IV.     | On reflection     |

Choose the most appropriate answer from the options given below:

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

**Options :**

68634017221. 1  
68634017222. 2  
68634017223. 3  
68634017224. 4

**Question Number : 6 Question Id : 6863404350 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Match List I with List II Fill the blanks in List I with suitable prepositional phrases from List II

| LIST I |                                                                         | LIST II |                   |
|--------|-------------------------------------------------------------------------|---------|-------------------|
| A.     | I doubt if she got the job _____                                        | I.      | At the very least |
| B.     | They should give me my money back or _____ offer to exchange the shoes  | II.     | On balance        |
| C.     | I thought i understood it, but _____ I realized it was more complicated | III.    | On merit          |
| D.     | I would say that, _____, the best thing is to do nothing for the moment | IV.     | On reflection     |

Choose the most appropriate answer from the options given below:

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

**Options :**

68634017221. 1  
68634017222. 2  
68634017223. 3  
68634017224. 4

**Question Number : 7 Question Id : 6863404351 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Accepting something unpleasant when one can not avoid of os: \_\_\_\_\_ .

1. Take a Bull by the horn
2. In the blues
3. Black and white
4. Bite the bullet

**Options :**

- 68634017225. 1
- 68634017226. 2
- 68634017227. 3
- 68634017228. 4

**Question Number : 7 Question Id : 6863404351 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Accepting something unpleasant when one can not avoid of os: \_\_\_\_\_ .

1. Take a Bull by the horn
2. In the blues
3. Black and white
4. Bite the bullet

**Options :**

- 68634017225. 1
- 68634017226. 2
- 68634017227. 3
- 68634017228. 4

**Question Number : 8 Question Id : 6863404352 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

- A. Normally, a hair allowed to grow uncut will last from two to six year
- B. These harmones supress the activity of certain follicles on the scalp so that the life span of the hair that grows from them is reduced
- C. But as boldness sets in, the hair in some of head falls out more often
- D. The overall effects is that hair in those places gets thinner and shorter until it in reduced to fuzz
- E. The exact genetic code that causes boldness and thinning still eludes researchers, but they know it is has something to do with make sex hormone called androgens

Choose the most appropriate answer from the options given below:

- 1. D, C, A, B, E
- 2. B, C, D, A, E
- 3. E, B, A, C, D
- 4. E, B, C, D, A

**Options :**

- 68634017229. 1
- 68634017230. 2
- 68634017231. 3
- 68634017232. 4

**Question Number : 8 Question Id : 6863404352 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

- A. Normally, a hair allowed to grow uncut will last from two to six year
- B. These harmones supress the activity of certain follicles on the scalp so that the life span of the hair that grows from them is reduced
- C. But as boldness sets in, the hair in some of head falls out more often
- D. The overall effects is that hair in those places gets thinner and shorter until it in reduced to fuzz
- E. The exact genetic code that causes boldness and thinning still eludes researchers, but they know it is has something to do with make sex hormone called androgens

Choose the most appropriate answer from the options given below:

- 1. D, C, A, B, E
- 2. B, C, D, A, E
- 3. E, B, A, C, D
- 4. E, B, C, D, A

**Options :**

- 68634017229. 1
- 68634017230. 2
- 68634017231. 3
- 68634017232. 4

**Question Number : 9 Question Id : 6863404353 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Which of the options below this sentence should replace it to make it grammatically correct:

My decision for buying an electric car was motivated by economical consideration.

1. My decision for buying an electric car was motivated by economic consideration
2. My decision to buy an electric car was motivated by economic consideration
3. My decision to buy an electric car was motivated by economical considerations
4. No correction

**Options :**

68634017233. 1  
68634017234. 2  
68634017235. 3  
68634017236. 4

**Question Number : 9 Question Id : 6863404353 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Which of the options below this sentence should replace it to make it grammatically correct:

My decision for buying an electric car was motivated by economical consideration.

1. My decision for buying an electric car was motivated by economic consideration
2. My decision to buy an electric car was motivated by economic consideration
3. My decision to buy an electric car was motivated by economical considerations
4. No correction

**Options :**

68634017233. 1  
68634017234. 2  
68634017235. 3  
68634017236. 4

**Question Number : 10 Question Id : 6863404354 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

An explosive for firing a bullet or a rocket is:

1. Putsch
2. Prosody
3. Propellant
4. Pulmonary

**Options :**

68634017237. 1

68634017238. 2  
68634017239. 3  
68634017240. 4

**Question Number : 10 Question Id : 6863404354 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

An explosive for firing a bullet or a rocket is:

1. Putsch
2. Prosody
3. Propellant
4. Pulmonary

**Options :**

68634017237. 1  
68634017238. 2  
68634017239. 3  
68634017240. 4

**Question Number : 11 Question Id : 6863404355 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

A certain sum fetched simple interest of ₹3200 at the rate of 6.25% per annum in 4 years. What is the sum?

1. ₹13000
2. ₹12800
3. ₹12500
4. ₹12000

**Options :**

68634017241. 1  
68634017242. 2  
68634017243. 3  
68634017244. 4

**Question Number : 11 Question Id : 6863404355 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

A certain sum fetched simple interest of ₹3200 at the rate of 6.25% per annum in 4 years. What is the sum?

1. ₹13000
2. ₹12800
3. ₹12500
4. ₹12000

**Options :**

68634017241. 1  
68634017242. 2  
68634017243. 3  
68634017244. 4

**Question Number : 12 Question Id : 6863404356 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

A candidate who gets 20% marks fails by 10 marks. Another candidate who gets 42% marks gets 12 marks more than the minimum passing marks. Find the maximum marks of the test.

1. 50
2. 80
3. 100
4. 150

**Options :**

68634017245. 1  
68634017246. 2  
68634017247. 3  
68634017248. 4

**Question Number : 12 Question Id : 6863404356 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

A candidate who gets 20% marks fails by 10 marks. Another candidate who gets 42% marks gets 12 marks more than the minimum passing marks. Find the maximum marks of the test.

1. 50
2. 80
3. 100
4. 150

**Options :**

68634017245. 1  
68634017246. 2  
68634017247. 3

**Question Number : 13 Question Id : 6863404357 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If a man increases his speed to  $\frac{9}{5}$  times his usual speed, he reaches his office 24 minutes before the office time. Find the time taken by to reach his office with usual speed.

1. 50 minutes
2. 52 minutes
3. 54 minutes
4. 55 minutes

**Options :**

68634017249. 1  
68634017250. 2  
68634017251. 3  
68634017252. 4

**Question Number : 13 Question Id : 6863404357 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If a man increases his speed to  $\frac{9}{5}$  times his usual speed, he reaches his office 24 minutes before the office time. Find the time taken by to reach his office with usual speed.

1. 50 minutes
2. 52 minutes
3. 54 minutes
4. 55 minutes

**Options :**

68634017249. 1  
68634017250. 2  
68634017251. 3  
68634017252. 4

**Question Number : 14 Question Id : 6863404358 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The value of  $\frac{43}{3} - \left(3 + \frac{1}{3 + \frac{1}{3}}\right) - \left(2 - \frac{1}{2 - \frac{1}{2}}\right)$  is

1. 9
2. 9.7
3. 7.9
4. 2.7

**Options :**

68634017253. 1  
68634017254. 2  
68634017255. 3  
68634017256. 4

**Question Number : 14 Question Id : 6863404358 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The value of  $\frac{43}{3} - \left(3 + \frac{1}{3 + \frac{1}{3}}\right) - \left(2 - \frac{1}{2 - \frac{1}{2}}\right)$  is

1. 9
2. 9.7
3. 7.9
4. 2.7

**Options :**

68634017253. 1  
68634017254. 2  
68634017255. 3  
68634017256. 4

**Question Number : 15 Question Id : 6863404359 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If a right circular cylinder a height 14cm is increased in a sphere of radius 8cm then volume of the cylinder (in.cm<sup>3</sup>)- (use  $\pi = \frac{22}{7}$ ).

1. 110
2. 220
3. 4 40
4. 600

**Options :**

68634017257. 1  
68634017258. 2  
68634017259. 3  
68634017260. 4

**Question Number : 15 Question Id : 6863404359 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If a right circular cylinder a height 14cm is increased in a sphere of radius 8cm then volume of the cylinder (in.cm<sup>3</sup>)- (use  $\pi = \frac{22}{7}$  ).

1. 110
2. 220
3. 4 40
4. 600

**Options :**

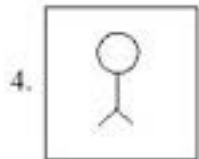
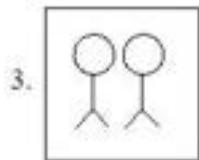
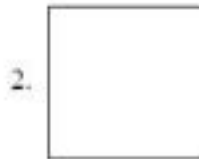
68634017257. 1  
68634017258. 2  
68634017259. 3  
68634017260. 4

**Question Number : 16 Question Id : 6863404360 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Find out which of the answer figures (1), (2), (3) and (4) completes the figure matrix:

|                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| AAA                                                                               |  | AA                                                                                |
|  | A                                                                                 |  |
| AA                                                                                |  | ?                                                                                 |



**Options :**

68634017261. 1

68634017262. 2

68634017263. 3

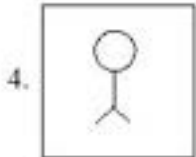
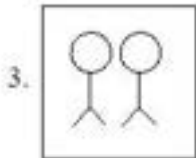
68634017264. 4

**Question Number : 16 Question Id : 6863404360 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Find out which of the answer figures (1), (2), (3) and (4) completes the figure matrix:

|                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| AAA                                                                               |  | AA                                                                                |
|  | A                                                                                 |  |
| AA                                                                                |  | ?                                                                                 |



Options :

- 68634017261. 1
- 68634017262. 2
- 68634017263. 3
- 68634017264. 4

Question Number : 17 Question Id : 6863404361 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1

Pointing to a photograph, Aman tells his friend, "she is the grand daughter of the elder brothers of my father.  
"How is the girl in the photograph related to Aman?

1. Sister
2. Maternal Aunt
3. Niece
4. Aunt

**Options :**

68634017265. 1  
68634017266. 2  
68634017267. 3  
68634017268. 4

**Question Number : 17 Question Id : 6863404361 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1**

Pointing to a photograph, Aman tells his friend, "she is the grand daughter of the elder brothers of my father.  
"How is the girl in the photograph related to Aman?

1. Sister
2. Maternal Aunt
3. Niece
4. Aunt

**Options :**

68634017265. 1  
68634017266. 2  
68634017267. 3  
68634017268. 4

**Question Number : 18 Question Id : 6863404362 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1**

What should come in place of the questions mark?

11, 20, 38, 74 \_\_\_\_\_?

1. 146
2. 154
3. 128
4. 136

**Options :**

68634017269. 1

68634017270. 2  
68634017271. 3  
68634017272. 4

**Question Number : 18 Question Id : 6863404362 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

What should come in place of the questions mark?

11, 20, 38, 74 \_\_\_\_\_?

1. 146
2. 154
3. 128
4. 136

**Options :**

68634017269. 1  
68634017270. 2  
68634017271. 3  
68634017272. 4

**Question Number : 19 Question Id : 6863404363 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

The giving statement is followed by three arguments. Decide which of the options is correct about the given arguments.

Statements: Should seniority be only criterion for promotion in MNC's?

Arguments

- I. Yes, otherwise seniors will feel humiliated
- II. Yes, seniors are more experienced and must be rewarded
- III. No, it would be an injustice to those juniors who are more deserving and suitable for higher position

1. I and II
2. II and III
3. Only III
4. Only I

**Options :**

68634017273. 1  
68634017274. 2  
68634017275. 3  
68634017276. 4

**Question Number : 19 Question Id : 6863404363 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The giving statement is followed by three arguments. Decide which of the options is correct about the given arguments.

Statements: Should seniority be only criterion for promotion in MNC's?

Arguments

- I. Yes, otherwise seniors will feel humiliated
- II. Yes, seniors are more experienced and must be rewarded
- III. No, it would be an injustice to those juniors who are more deserving and suitable for higher position

- 1. I and II
- 2. II and III
- 3. Only III
- 4. Only I

**Options :**

- 68634017273. 1
- 68634017274. 2
- 68634017275. 3
- 68634017276. 4

**Question Number : 20 Question Id : 6863404364 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If QUALITY is coded as 8313927, then GOVERNMENT is coded as:

- 1. 7645954551
- 2. 7645954552
- 3. 7645954452
- 4. 8645954552

**Options :**

- 68634017277. 1
- 68634017278. 2
- 68634017279. 3
- 68634017280. 4

**Question Number : 20 Question Id : 6863404364 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If QUALITY is coded as 8313927, then GOVERNMENT is coded as:

1. 7645954551
2. 7645954552
3. 7645954452
4. 8645954552

**Options :**

68634017277. 1  
68634017278. 2  
68634017279. 3  
68634017280. 4

**Question Number : 21 Question Id : 6863404365 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Match List I with List II

| LIST I                          |                        | LIST II                |                          |
|---------------------------------|------------------------|------------------------|--------------------------|
| Name of Padma Vibhushan Awardee |                        | Awarded in the service |                          |
| A.                              | Ms. Prabha Atre        | I.                     | Public Affairs           |
| B.                              | Mr Kalyan Singh        | II.                    | Literature and Education |
| C.                              | Mr. Radheyshyam Khemka | III.                   | Civil Service            |
| D.                              | General Bipin Rawat    | IV.                    | Art                      |

Choose the most appropriate answer from the options given below:

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

**Options :**

68634017281. 1  
68634017282. 2  
68634017283. 3  
68634017284. 4

**Question Number : 21 Question Id : 6863404365 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Match List I with List II

| LIST I                          |                        | LIST II                |                          |
|---------------------------------|------------------------|------------------------|--------------------------|
| Name of Padma Vibhushan Awardee |                        | Awarded in the service |                          |
| A.                              | Ms. Prabha Atre        | I.                     | Public Affairs           |
| B.                              | Mr Kalyan Singh        | II.                    | Literature and Education |
| C.                              | Mr. Radheyshyam Khemka | III.                   | Civil Service            |
| D.                              | General Bipin Rawat    | IV.                    | Art                      |

Choose the most appropriate answer from the options given below:

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

**Options :**

68634017281. 1  
68634017282. 2  
68634017283. 3  
68634017284. 4

**Question Number : 22 Question Id : 6863404366 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Date of launching of satellite 'Aryabhata' is \_\_\_\_\_ .

1. 7 June, 1979
2. 19 April, 1975
3. 19 June, 1953
4. 07 April, 1981

**Options :**

68634017285. 1  
68634017286. 2  
68634017287. 3  
68634017288. 4

**Question Number : 22 Question Id : 6863404366 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Date of launching of satellite 'Aryabhata' is \_\_\_\_\_ .

1. 7 June, 1979
2. 19 April, 1975
3. 19 June, 1953
4. 07 April, 1981

**Options :**

68634017285. 1  
68634017286. 2  
68634017287. 3  
68634017288. 4

**Question Number : 23 Question Id : 6863404367 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Given below are two statements:

Statement I: Due to disease 'Pneumonia', lungs of the human body are affected.

Statement II: Lungs of human body are also affected due to disease 'Diphtheria'

In the light of the above statements, choose the most appropriate answer from the options given below:

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

**Options :**

68634017289. 1  
68634017290. 2  
68634017291. 3  
68634017292. 4

**Question Number : 23 Question Id : 6863404367 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Given below are two statements:

Statement I: Due to disease 'Pneumonia', lungs of the human body are affected.

Statement II: Lungs of human body are also affected due to disease 'Diphtheria'

In the light of the above statements, choose the most appropriate answer from the options given below:

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

**Options :**

68634017289. 1  
68634017290. 2  
68634017291. 3  
68634017292. 4

**Question Number : 24 Question Id : 6863404368 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Passport Sewa Diwas is celebrated on which day?

1. 12 March
2. 24 June
3. 18 May
4. 20 April

**Options :**

68634017293. 1  
68634017294. 2  
68634017295. 3  
68634017296. 4

**Question Number : 24 Question Id : 6863404368 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Passport Sewa Diwas is celebrated on which day?

1. 12 March
2. 24 June
3. 18 May
4. 20 April

**Options :**

- 68634017293. 1
- 68634017294. 2
- 68634017295. 3
- 68634017296. 4

**Question Number : 25 Question Id : 6863404369 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

- A. The election commission of India has decided to increase the amount of security for Lok Sabha candidates from the present ₹10,000 to ₹25,000
- B. The election commission of India has decided to increase the amount of security for Vidhan Sabha candidate from the present ₹5,000 to ₹15,000
- C. As per election commission, the candidate who secure less than one-sixth of the valid votes caste lose their security deposit in an election
- D. The house of the people elects its own presiding officers, called speaker and the deputy speaker

Choose the correct answer from the options given below:

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

**Options :**

- 68634017297. 1
- 68634017298. 2
- 68634017299. 3
- 68634017300. 4

**Question Number : 25 Question Id : 6863404369 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

- A. The election commission of India has decided to increase the amount of security for Lok Sabha candidates from the present ₹10,000 to ₹25,000
- B. The election commission of India has decided to increase the amount of security for Vidhan Sabha candidate from the present ₹5,000 to ₹15,000
- C. As per election commission, the candidate who secure less than one-sixth of the valid votes caste lose their security deposit in an election
- D. The house of the people elects its own presiding officers, called speaker and the deputy speaker

Choose the correct answer from the options given below:

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

**Options :**

68634017297. 1  
68634017298. 2  
68634017299. 3  
68634017300. 4

**Part B: Mathematics**

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Section Id :                                                 | 68634088  |
| Section Number :                                             | 2         |
| Section type :                                               | Online    |
| Mandatory or Optional :                                      | Mandatory |
| Number of Questions :                                        | 75        |
| Number of Questions to be attempted :                        | 75        |
| Section Marks :                                              | 300       |
| Enable Mark as Answered Mark for Review and Clear Response : | Yes       |
| Maximum Instruction Time :                                   | 0         |
| Sub-Section Number :                                         | 1         |
| Sub-Section Id :                                             | 686340132 |
| Question Shuffling Allowed :                                 | Yes       |
| Is Section Default? :                                        | null      |

Question Number : 26 Question Id : 6863404370 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

Let  $U$  and  $W$  are distinct 4-dimensional subspaces of a vector space  $V$  of dimension 6. Consider the following statements:

- A. The dimension of  $U \cap W$  is either 2 or 3.
- B. The dimension of  $U + W$  is either 5 or 6.
- C. The dimension of  $U \cap W$  is always greater than 4.
- D. The dimension of  $U + W$  is always greater than 4.

Choose the correct answer from the options given below:

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

**Options :**

68634017301. 1  
68634017302. 2  
68634017303. 3  
68634017304. 4

Question Number : 26 Question Id : 6863404370 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

माना कि  $U$  तथा  $W$  विमा 6 के सदिश समष्टि  $V$  के भिन्न चतुर्भिमीय उपसमष्टि हैं। निम्नलिखित कथनों का विचार कीजिए:

- A.  $U \cap W$  की विमा या तो 2 या 3 है।
- B.  $U + W$  की विमा या तो 5 या 6 है।
- C.  $U \cap W$  की विमा सदैव 4 से अधिक है।
- D.  $U + W$  की विमा सदैव 4 से अधिक है।

नीचे दिए गए विकल्पों में से सही उत्तर का चयन कीजिए:

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

**Options :**

- 68634017301. 1
- 68634017302. 2
- 68634017303. 3
- 68634017304. 4

**Question Number : 27 Question Id : 6863404371 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The positive term series  $\sum_{n=1}^{\infty} \frac{1}{n^p}$  is convergent if

- 1.  $p > 0$
- 2.  $p > 1$
- 3.  $p < 1$
- 4.  $p \geq 1$

**Options :**

- 68634017305. 1
- 68634017306. 2
- 68634017307. 3
- 68634017308. 4

**Question Number : 27 Question Id : 6863404371 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

धनात्मक पदों की श्रेणी  $\sum_{n=1}^{\infty} \frac{1}{n^p}$  अभिसारित है, यदि-

1.  $p > 0$

2.  $p > 1$

3.  $p < 1$

4.  $p \geq 1$

**Options :**

68634017305. 1

68634017306. 2

68634017307. 3

68634017308. 4

**Question Number : 28 Question Id : 6863404372 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following set(s) is/are convex set(s)?

A.  $\{(x, y): xy \leq 1, x \geq 0, y \geq 0\}$

B.  $\{(x, y): x^2 - 3 > -y^2, x, y \geq 0\}$

C.  $\{(x, y): y^2 \leq 4x, x \geq 0, y \geq 0\}$

D.  $\{(x, y): x^2 + y^2 \leq 4\}$

Choose the most appropriate answer from the options given below:

1. A and B only

2. A and C only

3. B and C only

4. C and D only

**Options :**

68634017309. 1

68634017310. 2

68634017311. 3

68634017312. 4

**Question Number : 28 Question Id : 6863404372 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

निम्नलिखित समुच्चयों में से कौन सा/से उत्तल (कॉनवेक्स) समुच्चय है?

- A.  $\{(x, y): xy \leq 1, x \geq 0, y \geq 0\}$
- B.  $\{(x, y): x^2 - 3 > -y^2, x, y \geq 0\}$
- C.  $\{(x, y): y^2 \leq 4x, x \geq 0, y \geq 0\}$
- D.  $\{(x, y): x^2 + y^2 \leq 4\}$

नीचे दिए गए विकल्पों में से सही उत्तर का चयन कीजिए:

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

**Options :**

- 68634017309. 1
- 68634017310. 2
- 68634017311. 3
- 68634017312. 4

**Question Number : 29 Question Id : 6863404373 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The solution of the Linear Programming Problem

maximize  $Z = 107x + y$

subject to constraints  $x + y \leq 2$

$$-3x + y \geq 3$$

$$x, y \geq 0 \text{ is}$$

- 1. 0
- 2. 2
- 3. 4
- 4. No solution

**Options :**

- 68634017313. 1
- 68634017314. 2
- 68634017315. 3
- 68634017316. 4

**Question Number : 29 Question Id : 6863404373 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

रेखिक प्रोग्रामन समस्या

$Z = 107x + y$  का अधिकतमीकरण निम्न अवरोधों के अंतर्गत

$$x + y \leq 2$$

$$-3x + y \geq 3$$

$x, y \geq 0$  का हल है:

1. 0

2. 2

3. 4

4. कोई हल नहीं

Options :

68634017313. 1

68634017314. 2

68634017315. 3

68634017316. 4

Question Number : 30 Question Id : 6863404374 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The natural domain of definition of the function  $f(z) = \frac{1}{1-|z|^2}$  is \_\_\_\_\_.

1. whole complex plane

2. whole complex plane excluding the points which lie on the unit circle  $x^2 + y^2 = 1$ .

3. complex plane excluding the point  $z = 0$ .

4. whole complex plane excluding the point  $z = \frac{1}{2}$

Options :

68634017317. 1

68634017318. 2

68634017319. 3

68634017320. 4

Question Number : 30 Question Id : 6863404374 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

फलन  $f(z) = \frac{1}{1-|z|^2}$  का परिभाषित प्राकृतिक प्रांत है:

1. सम्पूर्ण सम्मिश्र तल
2. इकाई वृत्त  $x^2 + y^2 = 1$  पर स्थित बिंदुओं के अतिरिक्त सम्पूर्ण सम्मिश्र तल
3. बिन्दु  $z = 0$  के अतिरिक्त सम्मिश्र तल
4. बिन्दु  $z = \frac{1}{2}$  के अतिरिक्त सम्पूर्ण सम्मिश्र तल

**Options :**

68634017317. 1  
68634017318. 2  
68634017319. 3  
68634017320. 4

**Question Number : 31 Question Id : 6863404375 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

For what value(s) of  $k$  the set of vectors  $\{(1, k, 5), (1, -3, 2), (2, -1, 1)\}$  form a basis in  $\mathbb{R}^3$ ?

1.  $k \neq \frac{-10}{3}$
2.  $k = -8$
3.  $k \neq 8$
4.  $k \neq -8$

**Options :**

68634017321. 1  
68634017322. 2  
68634017323. 3  
68634017324. 4

**Question Number : 31 Question Id : 6863404375 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

$k$  के किस मान के लिए सदिशों का समुच्चय  $\{(1, k, 5), (1, -3, 2), (2, -1, 1)\}$ ,  $\mathbb{R}^3$  का एक बेसिस (आधार) बनाता है?

1.  $k \neq \frac{-10}{3}$
2.  $k = -8$
3.  $k \neq 8$
4.  $k \neq -8$

**Options :**

68634017321. 1  
68634017322. 2  
68634017323. 3  
68634017324. 4

**Question Number : 32 Question Id : 6863404376 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

Evaluate the integral  $\oint_C \frac{dz}{(z^2 + 4)^2}, C: |z - i| = 2$

1.  $\pi i/4$
2.  $\pi i/16$
3.  $\pi/16$
4.  $-\pi i/4$

**Options :**

68634017325. 1  
68634017326. 2  
68634017327. 3  
68634017328. 4

**Question Number : 32 Question Id : 6863404376 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

समाकलन  $\oint_C \frac{dz}{(z^2 + 4)^2}, C: |z - i| = 2$  का मान ज्ञात कीजिए।

1.  $\pi i/4$
2.  $\pi i/16$
3.  $\pi/16$
4.  $-\pi i/4$

**Options :**

68634017325. 1  
68634017326. 2  
68634017327. 3  
68634017328. 4

Question Number : 33 Question Id : 6863404377 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

The area bounded by the curves  $y = x^2$  and  $y = 4 - x^2$  is

1.  $\frac{16\sqrt{2}}{3}$

2.  $\frac{16}{3}$

3.  $\frac{16\pi}{3}$

4.  $\frac{8}{\sqrt{3}}$

Options :

68634017329. 1  
68634017330. 2  
68634017331. 3  
68634017332. 4

Question Number : 33 Question Id : 6863404377 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

वक्रों  $y = x^2$  तथा  $y = 4 - x^2$  से घिरे क्षेत्र का क्षेत्रफल है

1.  $\frac{16\sqrt{2}}{3}$

2.  $\frac{16}{3}$

3.  $\frac{16\pi}{3}$

4.  $\frac{8}{\sqrt{3}}$

Options :

68634017329. 1  
68634017330. 2  
68634017331. 3  
68634017332. 4

Question Number : 34 Question Id : 6863404378 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

Which one of the following is a cyclic group?

1. The set of non-zero square matrices of order  $2 \times 2$  over  $\mathbb{R}$  under matrix multiplication
2. The group of roots (real or complex) of the equation  $x^n - 1 = 0$ , where  $n$  is a natural number
3. The group  $\mathbb{Q} / \{0\}$  of non-zero rationals under multiplication
4. The group  $\mathbb{Q}$  of rationals under addition

Options :

68634017333. 1  
68634017334. 2  
68634017335. 3  
68634017336. 4

Question Number : 34 Question Id : 6863404378 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से कौन सा चक्रीय समूह है?

1. आव्यूह के गुणन के अंतर्गत  $\mathbb{R}$  पर परिभाषित कोटि  $2 \times 2$  के गैर शून्य आव्यूहों का समुच्चय
2. समीकरण  $x^n - 1 = 0$ , जहाँ  $n$  एक प्राकृत संख्या है, के मूलों (वास्तविक अथवा सम्मिश्र) का समूह
3. गैर-शून्य परिमेय संख्याओं  $\mathbb{Q} / \{0\}$  का गुणन के अंतर्गत समूह
4. परिमेय संख्याओं  $\mathbb{Q}$  का योग के अंतर्गत समूह

Options :

68634017333. 1  
68634017334. 2  
68634017335. 3  
68634017336. 4

Question Number : 35 Question Id : 6863404379 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A scalar potential  $\Psi$  has the gradient defined as  $\nabla \Psi = yz \hat{i} + xz \hat{j} + xy \hat{k}$ . The value of the integral

$\int_C \nabla \Psi \cdot d\vec{r}$  on the curve  $\vec{r} = x \hat{i} + y \hat{j} + z \hat{k}$ , where curve  $C : x = t, y = t^2, z = 3t^2$  ( $1 \leq t \leq 3$ ) is:

1. 0
2. 1
3. 242
4. 726

**Options :**

- 68634017337. 1
- 68634017338. 2
- 68634017339. 3
- 68634017340. 4

**Question Number : 35 Question Id : 6863404379 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

एक आदेश विभव  $\Psi$  की प्रवणता इस प्रकार परिभाषित है:  $\nabla \Psi = yz \hat{i} + xz \hat{j} + xy \hat{k}$ , समाकलन

$\int_C \nabla \Psi \cdot d\vec{r}$  का मान, वक्र  $\vec{r} = x \hat{i} + y \hat{j} + z \hat{k}$ , पर जहाँ वक्र  $C : x = t, y = t^2, z = 3t^2$  ( $1 \leq t \leq 3$ ) है:

- 1. 0
- 2. 1
- 3. 242
- 4. 726

**Options :**

- 68634017337. 1
- 68634017338. 2
- 68634017339. 3
- 68634017340. 4

**Question Number : 36 Question Id : 6863404380 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The work done by the force  $\vec{F} = (x^2 - y^2) \hat{i} + (x + y) \hat{j}$  in moving a particle along the closed path  $C$  containing the curves  $x + y = 0$ ,  $x^2 + y^2 = 16$  and  $y = x$  in the first and fourth quadrant is

- 1.  $\frac{52}{3}$  units
- 2.  $52\pi + 94$  units
- 3.  $52\pi - 96$  units
- 4.  $96\pi - 52$  units

**Options :**

- 68634017341. 1
- 68634017342. 2
- 68634017343. 3
- 68634017344. 4

**Question Number : 36 Question Id : 6863404380 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

बल  $\vec{F} = (x^2 - y^2)\hat{i} + (x + y)\hat{j}$  द्वारा एक कण को संवृत पथ जिसमें वक्र

$x + y = 0$ ,  $x^2 + y^2 = 16$  तथा  $y = x$ , प्रथम और चतुर्थ चतुर्थांश में सम्मिलित हैं, के साथ गतिमान रहने के लिए किया गया कार्य है

1.  $\frac{52}{3}$  इकाई
2.  $52\pi + 94$  इकाई
3.  $52\pi - 96$  इकाई
4.  $96\pi - 52$  इकाई

**Options :**

68634017341. 1  
68634017342. 2  
68634017343. 3  
68634017344. 4

**Question Number : 37 Question Id : 6863404381 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The line integral  $\vec{V} = x^2\hat{i} - 2y\hat{j} + z^2\hat{k}$  over the straight line path from the point  $(-1, 2, 3)$  to  $(2, 3, 5)$  is

1.  $\frac{27}{15}$
2.  $\frac{37}{15}$
3.  $\frac{163}{4}$
4.  $\frac{92}{3}$

**Options :**

68634017345. 1  
68634017346. 2  
68634017347. 3  
68634017348. 4

**Question Number : 37 Question Id : 6863404381 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

$\vec{r} = x^2 \hat{i} - 2y \hat{j} + z^2 \hat{k}$  का सीधी रेखा पथ पर बिंदु  $(-1, 2, 3)$  से  $(2, 3, 5)$  तक रेखा समाकलन का मान है

1.  $\frac{27}{15}$

2.  $\frac{37}{15}$

3.  $\frac{163}{4}$

4.  $\frac{92}{3}$

Options :

68634017345. 1

68634017346. 2

68634017347. 3

68634017348. 4

Question Number : 38 Question Id : 6863404382 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

Let  $\vec{V}$  be a vector field and  $f$  be a scalar point function, then

$\text{curl} (f \vec{V})$  is equivalent to \_\_\_\_\_.

1.  $(\text{grad } f) \cdot \vec{V} + f \text{div} \left( \vec{V} \right)$

2.  $(\text{grad } f) \times \vec{V} + f \text{curl} (\vec{V})$

3.  $(\text{grad } f) \cdot \left( \text{div} \vec{V} \right) + \text{curl} \left( \text{curl} \vec{V} \right)$

4.  $\text{grad} [\text{div} \vec{V}] - f \text{curl} (\vec{V})$

Options :

68634017349. 1

68634017350. 2

68634017351. 3

68634017352. 4

Question Number : 38 Question Id : 6863404382 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

माना  $f$  एक सदिश क्षेत्र है और  $V$  एक अदिश बिंदु फलन है, तब  $\text{curl}(fV)$  समतुल्य है:

1.  $(\text{grad } f) \cdot \vec{V} + f \text{div}(\vec{V})$

2.  $(\text{grad } f) \times \vec{V} + f \text{curl}(\vec{V})$

3.  $(\text{grad } f) \cdot (\text{div } \vec{V}) + \text{curl}(\text{curl } \vec{V})$

4.  $\text{grad}[\text{div } \vec{V}] - f \text{curl}(\vec{V})$

Options :

68634017349. 1

68634017350. 2

68634017351. 3

68634017352. 4

Question Number : 39 Question Id : 6863404383 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Let  $S$  be a piecewise smooth surface of the sphere  $x^2 + y^2 + z^2 = 16$ ,  $z > 0$ , bounded by a simple closed curve

$C$ . Let  $\vec{V} = (3x - y)\hat{i} - 2yz^2\hat{j} - 2y^2z\hat{k}$  be a vector field which is continuous and has continuous

first order partial derivatives in a domain which contains  $S$ . Then the value of  $\iint_S (\nabla \times \vec{V}) \cdot \hat{n} dA$ , where  $\hat{n}$  is

the unit normal vector to  $S$  is:

1.  $\frac{16}{3}$

2.  $48\pi - 3$

3.  $64 + 3\pi$

4.  $16\pi$

Options :

68634017353. 1

68634017354. 2

68634017355. 3

68634017356. 4

Question Number : 39 Question Id : 6863404383 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

माना  $S$  गोले  $x^2 + y^2 + z^2 = 16, z > 0$  का खंडशः चिकना पृष्ठ है जो कि सरल संवृत्त वक्र  $C$  द्वारा परिबद्ध है। माना  $\vec{V} = (3x - y)\hat{i} - 2yz^2\hat{j} - 2y^2z\hat{k}$  एक सदिश क्षेत्र है जो कि संतत है तथा  $S$  में अंतर्विष्ट प्रांत में संतत प्रथम कोटि के आंशिक अवकलन है। तब  $\iint_S (\nabla \times \vec{V}) \cdot \hat{n} dA$ , जहाँ  $\hat{n}$ ,  $S$  पर इकाई अभिलंब है, का मान है:

1.  $\frac{16}{3}$
2.  $48\pi - 3$
3.  $64 + 3\pi$
4.  $16\pi$

**Options :**

68634017353. 1  
 68634017354. 2  
 68634017355. 3  
 68634017356. 4

**Question Number : 40 Question Id : 6863404384 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The all values of  $z$ , such that

$\sqrt{2} \sin z = \cosh \beta + i \sinh \beta$ , where  $\beta$  is real, are

1.  $z = (2n+1)\frac{\pi}{2} + (-1)^n \left( \frac{\pi}{4} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$
2.  $z = n\pi - (-1)^n \left( \frac{3\pi}{4} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$
3.  $z = n\pi + (-1)^n \left( \frac{\pi}{4} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$
4.  $z = (2n+1)\frac{\pi}{2} + (-1)^n \left( \frac{\pi}{2} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$

**Options :**

68634017357. 1  
 68634017358. 2  
 68634017359. 3  
 68634017360. 4

**Question Number : 40 Question Id : 6863404384 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

$z$  के सभी मान, जहाँ  $\sqrt{2} \sin z = \cosh \beta + i \sinh \beta$ ,  $\beta$  एक वास्तविक संख्या है, हैं -

$$1. z = (2n+1)\frac{\pi}{2} + (-1)^n \left( \frac{\pi}{4} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$$

$$2. z = n\pi - (-1)^n \left( \frac{3\pi}{4} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$$

$$3. z = n\pi + (-1)^n \left( \frac{\pi}{4} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$$

$$4. z = (2n+1)\frac{\pi}{2} + (-1)^n \left( \frac{\pi}{2} + i\beta \right), n = 0, \pm 1, \pm 2, \dots$$

**Options :**

68634017357. 1

68634017358. 2

68634017359. 3

68634017360. 4

**Question Number : 41 Question Id : 6863404385 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The solution of the differential equation

$$\{x^4 + 6x^2 + 2(x+y)\} dx - xdy = 0$$

subject to the condition  $y(1) = 0$  is

$$1. 2y(x) = x^2 + x^4 (6 \log|x| - 3) + 4x$$

$$2. y(x) = \frac{1}{2} [x^2 + x^4 (12 \log|x| + 3) + 4x]$$

$$3. y(x) = x^4 + x^2 (12 \log|x| + 3) - 4x$$

$$4. 2y(x) = x^4 + x^2 (12 \log|x| + 3) - 4x$$

**Options :**

68634017361. 1

68634017362. 2

68634017363. 3

68634017364. 4

**Question Number : 41 Question Id : 6863404385 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

अवकल समीकरण  $\{x^4 + 6x^2 + 2(x+y)\} dx - xdy = 0$ , जो कि प्रतिबंध  $y(1) = 0$  के पराधीन है, का हल है:

1.  $2y(x) = x^2 + x^4 (6 \log|x| - 3) + 4x$

2.  $y(x) = \frac{1}{2} [x^2 + x^4 (12 \log|x| + 3) + 4x]$

3.  $y(x) = x^4 + x^2 (12 \log|x| + 3) - 4x$

4.  $2y(x) = x^4 + x^2 (12 \log|x| + 3) - 4x$

**Options :**

68634017361. 1

68634017362. 2

68634017363. 3

68634017364. 4

**Question Number : 42 Question Id : 6863404386 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Which of the following statement is not correct?

1. If  $A$  and  $B$  are non-singular matrices, then  $(AB)$  is also a non-singular matrix.
2. If  $AB = AC$  and  $A$  is non-singular matrix, then  $B = C$ .
3. The inverse of a non-singular symmetric matrix is also a symmetric matrix.
4. If  $A$  and  $B$  are symmetric matrices, then  $(AB - BA)$  is not a skew-symmetric matrix.

**Options :**

68634017365. 1

68634017366. 2

68634017367. 3

68634017368. 4

**Question Number : 42 Question Id : 6863404386 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

निम्नलिखित में से कौन सा कथन सही नहीं है?

1. यदि  $A$  और  $B$  व्युत्क्रमणीय आव्यूह हैं तो  $(AB)$  भी एक व्युत्क्रमणीय आव्यूह है।
2. यदि  $AB = AC$  और  $A$  एक व्युत्क्रमणीय आव्यूह है तो  $B = C$
3. एक व्युत्क्रमणीय सममित आव्यूह का व्युत्क्रम भी एक सममित आव्यूह होता है।
4. यदि  $A$  और  $B$  सममित आव्यूह है, तो  $(AB - BA)$  एक विषम सममित आव्यूह नहीं है।

**Options :**

68634017365. 1

68634017366. 2  
68634017367. 3  
68634017368. 4

**Question Number : 43 Question Id : 6863404387 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

Let  $A$  and  $B$  be  $2 \times 2$  matrices, then which of the following is correct?

1.  $\det(A + B) + \det(A - B) = 2 \det(A) + 2 \det(B)$
2.  $\det(A + B) + \det(A - B) = \det(A) + \det(B)$
3.  $\det(A + B) + \det(A - B) = \det(A) - \det(B)$
4.  $\det(A + B) + \det(A - B) = 2 \det(A) - 2 \det(B)$

**Options :**

68634017369. 1  
68634017370. 2  
68634017371. 3  
68634017372. 4

**Question Number : 43 Question Id : 6863404387 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

माना कि  $A$  और  $B$ ,  $2 \times 2$  के आव्यूह हैं तो निम्नलिखित में से कौन सा सही है?

1.  $\det(A + B) + \det(A - B) = 2 \det(A) + 2 \det(B)$
2.  $\det(A + B) + \det(A - B) = \det(A) + \det(B)$
3.  $\det(A + B) + \det(A - B) = \det(A) - \det(B)$
4.  $\det(A + B) + \det(A - B) = 2 \det(A) - 2 \det(B)$

**Options :**

68634017369. 1  
68634017370. 2  
68634017371. 3  
68634017372. 4

**Question Number : 44 Question Id : 6863404388 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

Let  $f(x)$  be defined on  $[0, 3]$  by  $f(x) = \begin{cases} x, & \text{if } x \text{ is a rational number} \\ 3-x, & \text{if } x \text{ is an irrational number} \end{cases}$  Then  $f(x)$  is continuous in the interval at:

1. no point
2. all points
3. 2 points
4. one point

**Options :**

68634017373. 1  
68634017374. 2  
68634017375. 3  
68634017376. 4

**Question Number : 44 Question Id : 6863404388 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

माना कि फलन  $f(x) = \begin{cases} x, & \text{यदि } x \text{ एक परिमेय संख्या है} \\ 3-x, & \text{यदि } x \text{ एक अपरिमेय संख्या है} \end{cases}$  ,  $[0, 3]$  पर परिभाषित है, तब फलन  $f(x)$  अंतराल में संतत है:

1. किसी बिंदु पर नहीं
2. सभी बिंदुओं पर
3. दो बिंदुओं पर
4. एक बिंदु पर

**Options :**

68634017373. 1  
68634017374. 2  
68634017375. 3  
68634017376. 4

**Question Number : 45 Question Id : 6863404389 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If  $A$  is symmetric real valued matrix of dimension 2022, then eigenvalues of  $A$  are

1. 1011 distinct pairs of complex conjugate numbers
2. 1011 pairs of complex conjugate numbers not necessarily distinct
3. 2022 distinct real values
4. 2022 real values not necessarily distinct

Options :

68634017377. 1  
68634017378. 2  
68634017379. 3  
68634017380. 4

Question Number : 45 Question Id : 6863404389 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

यदि  $A$  वास्तविक संख्याओं का एक सममित आव्यूह है, जिसकी विमा 2022 है, तो  $A$  के अभिलाक्षणिक मान हैं:

1. सम्मिश्र संयुग्मी संख्याओं के 1011 भिन्न युग्म
2. सम्मिश्र संयुग्मी संख्याओं के 1011 युग्म, अनिवार्य रूप से भिन्न नहीं
3. 2022 भिन्न वास्तविक मान
4. 2022 वास्तविक मान, अनिवार्य रूप से भिन्न नहीं

Options :

68634017377. 1  
68634017378. 2  
68634017379. 3  
68634017380. 4

Question Number : 46 Question Id : 6863404390 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

Which one of the following rings is an integral domain?

1.  $\mathbb{Z}_{100}$
2.  $\mathbb{Z}_{102}$
3.  $\mathbb{Z}_{113}$
4.  $\mathbb{Z}_{153}$

Options :

68634017381. 1  
68634017382. 2  
68634017383. 3

68634017384. 4

**Question Number : 46 Question Id : 6863404390 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

निम्नलिखित में से कौन सा वलय अभिन्न (इंटीग्रल) डोमेन नहीं है?

1.  $Z_{100}$

2.  $Z_{102}$

3.  $Z_{113}$

4.  $Z_{153}$

**Options :**

68634017381. 1  
68634017382. 2  
68634017383. 3  
68634017384. 4

**Question Number : 47 Question Id : 6863404391 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Let  $f: G \rightarrow H$  be a group homomorphism from group  $G$  into group  $H$  with kernel  $K$ . If the order of  $G$ ,  $H$  and  $K$  are 50, 25 and 10 respectively then the order of  $f(G)$  is

1. 2

2. 5

3. 10

4. 25

**Options :**

68634017385. 1  
68634017386. 2  
68634017387. 3  
68634017388. 4

**Question Number : 47 Question Id : 6863404391 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

माना  $f: G \rightarrow H$  अति  $K$  के साथ समूह  $G$  से समूह  $H$  पर समूह समाकारी है। यदि  $G, H$  तथा  $K$  की कोटि क्रमशः 50, 25 तथा 10 हो तब  $f(G)$  की कोटि है-

1. 2
2. 5
3. 10
4. 25

**Options :**

68634017385. 1  
68634017386. 2  
68634017387. 3  
68634017388. 4

**Question Number : 48 Question Id : 6863404392 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The equation  $(2x + y + 1) dx + (x + 2y + 1) dy = 0$  represents a family of:

1. circles
2. parabolas
3. ellipses
4. hyperbolas

**Options :**

68634017389. 1  
68634017390. 2  
68634017391. 3  
68634017392. 4

**Question Number : 48 Question Id : 6863404392 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

समीकरण  $(2x + y + 1) dx + (x + 2y + 1) dy = 0$  एक परिवार दर्शाता है:

1. वृत्तों का
2. परवलयों का
3. दीर्घवृत्तों का
4. अतिपरवलयों का

**Options :**

68634017389. 1  
68634017390. 2

68634017391. 3  
68634017392. 4

Question Number : 49 Question Id : 6863404393 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

The value of surface integral  $\iint_S (9x\hat{i} - 2y\hat{j} - z\hat{k}) \cdot \hat{n} dS$  over the surface  $S$  of the sphere  $x^2 + y^2 + z^2 = 9$  where  $\hat{n}$  is the unit outward normal to surface element  $dS$  is:

1.  $\frac{24}{3} \pi$
2.  $\frac{216}{3} \pi$
3.  $216 \pi$
4.  $24 \pi$

Options :

68634017393. 1  
68634017394. 2  
68634017395. 3  
68634017396. 4

Question Number : 49 Question Id : 6863404393 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

पृष्ठीय समाकलन  $\iint_S (9x\hat{i} - 2y\hat{j} - z\hat{k}) \cdot \hat{n} dS$  का गोले  $x^2 + y^2 + z^2 = 9$  के पृष्ठ  $S$  पर मान, जहाँ  $\hat{n}$  पृष्ठीय अंश  $dS$  पर इकाई बाह्य लम्ब है, है:

1.  $\frac{24}{3} \pi$
2.  $\frac{216}{3} \pi$
3.  $216 \pi$
4.  $24 \pi$

Options :

68634017393. 1  
68634017394. 2  
68634017395. 3  
68634017396. 4

Question Number : 50 Question Id : 6863404394 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

The line integral of function  $F = yz \hat{i}$ , in the counter clockwise direction, along the circle  $x^2 + y^2 = 1$  at  $z = 1$  is

1.  $-2\pi$
2.  $-\pi$
3.  $\pi$
4.  $2\pi$

**Options :**

68634017397. 1  
68634017398. 2  
68634017399. 3  
68634017400. 4

**Question Number : 50 Question Id : 6863404394 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

फलन  $F = yz \hat{i}$  का वामावर्त दिशा में वृत्त  $x^2 + y^2 = 1$  के साथ  $z = 1$  पर रेखा समकलन है:

1.  $-2\pi$
2.  $-\pi$
3.  $\pi$
4.  $2\pi$

**Options :**

68634017397. 1  
68634017398. 2  
68634017399. 3  
68634017400. 4

**Question Number : 51 Question Id : 6863404395 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If  $\vec{r} = x_1 \hat{a}_{x_1} + x_2 \hat{a}_{x_2} + x_3 \hat{a}_{x_3}$  and  $|\vec{r}| = r$ , then  $\text{div}(r^2 \nabla(\ln r))$  is

1. 0
2. 3
3.  $r$
4.  $r^2$

**Options :**

68634017401. 1

68634017402. 2

68634017403. 3

68634017404. 4

**Question Number : 51 Question Id : 6863404395 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $\vec{r} = x_1 \hat{a}_{x_1} + x_2 \hat{a}_{x_2} + x_3 \hat{a}_{x_3}$  और  $|\vec{r}| = r$  है, तो  $\text{div}(r^2 \nabla(\ln r))$  है:

1. 0

2. 3

3. r

4.  $r^2$

**Options :**

68634017401. 1

68634017402. 2

68634017403. 3

68634017404. 4

**Question Number : 52 Question Id : 6863404396 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The area of surface of solid generated by the revolution of line segment  $y = 2x$  from  $x = 0$  to  $x = 2$  about x-axis is equal to:

1.  $\pi\sqrt{5}$

2.  $2\pi\sqrt{5}$

3.  $4\pi\sqrt{5}$

4.  $8\pi\sqrt{5}$

**Options :**

68634017405. 1

68634017406. 2

68634017407. 3

68634017408. 4

**Question Number : 52 Question Id : 6863404396 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

रेखा खण्ड  $y = 2x$  को  $x = 0$  से  $x = 2$  तक  $x$ -अक्ष के सापेक्ष घुमाने से बने ठोस के पृष्ठ का क्षेत्रफल बराबर है:

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

**Options :**

68634017405. 1  
68634017406. 2  
68634017407. 3  
68634017408. 4

**Question Number : 53 Question Id : 6863404397 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

To evaluate the double integral  $\int_0^8 \left( \int_{y/2}^{(y/2)+1} \left( \frac{2x-y}{2} \right) dx \right) dy$ , we make the substitution  $u = \frac{2x-y}{2}$  and  $v = \frac{y}{2}$ . The integral will reduce to

1.  $\int_0^4 \left( \int_0^2 2u du \right) dv$
2.  $\int_0^4 \left( \int_0^1 2u dv \right) dv$
3.  $\int_0^4 \left( \int_0^1 u dv \right) dv$
4.  $\int_0^4 \left( \int_0^{21} 2u du \right) dv$

**Options :**

68634017409. 1  
68634017410. 2  
68634017411. 3  
68634017412. 4

**Question Number : 53 Question Id : 6863404397 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

दोहरे समाकलन  $\int_0^8 \left( \int_{y/2}^{(y/2)+1} \left( \frac{2x-y}{2} \right) dx \right) dy$  का मान ज्ञात करने के लिए हम  $u = \frac{2x-y}{2}$  तथा  $v = \frac{y}{2}$  प्रतिस्थापित करते हैं।

समाकलन रूपांतरित होगा:

1.  $\int_0^4 \left( \int_0^2 2u du \right) dv$

2.  $\int_0^4 \left( \int_0^1 2u dv \right) dv$

3.  $\int_0^4 \left( \int_0^1 u dv \right) dv$

4.  $\int_0^4 \left( \int_0^{21} 2u dv \right) dv$

**Options :**

68634017409. 1

68634017410. 2

68634017411. 3

68634017412. 4

**Question Number : 54 Question Id : 6863404398 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If  $\phi(z) = c_0 + c_1 z^{-1}$ , then  $\oint_{|z|=1} \frac{1 + \phi(z)}{z} dz$  is

1.  $2\pi c_1$

2.  $2\pi(1 + c_0)$

3.  $2\pi i c_1$

4.  $2\pi i(1 + c_0)$

**Options :**

68634017413. 1

68634017414. 2

68634017415. 3

68634017416. 4

**Question Number : 54 Question Id : 6863404398 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $\phi(z) = c_0 + c_1 z^{-1}$ , है, तब  $\oint_{|z|=1} \frac{1+\phi(z)}{z} dz$  है:

1.  $2\pi c_1$
2.  $2\pi(1 + c_0)$
3.  $2\pi i c_1$
4.  $2\pi i(1 + c_0)$

**Options :**

68634017413. 1  
68634017414. 2  
68634017415. 3  
68634017416. 4

**Question Number : 55 Question Id : 6863404399 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If  $P(x)$  is a polynomial of degree 10 with leading coefficient as 11 and having  $(x - 1), (x - 2), (x - 3), \dots, (x - 10)$  as factor, then the coefficient of  $x^9$  in  $P(x)$  is

1. -55
2. 605
3. - 605
4. 55

**Options :**

68634017417. 1  
68634017418. 2  
68634017419. 3  
68634017420. 4

**Question Number : 55 Question Id : 6863404399 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $P(x)$  घात 10 का एक बहुपद है जिसका अग्रणी गुणांक 11 और गुणनखंड  $(x - 1), (x - 2), (x - 3), \dots, (x - 10)$  है, तब  $P(x)$  में  $x^9$  का गुणांक है:

1. -55
2. 605
3. - 605
4. 55

**Options :**

68634017417. 1

68634017418. 2  
68634017419. 3  
68634017420. 4

**Question Number : 56 Question Id : 6863404400 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

In the neighborhood of  $z = 1$ , the function  $f(z)$  has a power series expansion of the form

$f(z) = 1 + (1 - z) + (1 - z)^2 + \dots$  then  $f(z)$  is

1.  $\frac{1}{z}$

2.  $\frac{-1}{z-2}$

3.  $\frac{1}{2z-1}$

4.  $\frac{z-1}{z+1}$

**Options :**

68634017421. 1  
68634017422. 2  
68634017423. 3  
68634017424. 4

**Question Number : 56 Question Id : 6863404400 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

$z = 1$  के प्रतिवेश में, फलन  $f(z)$  की श्रृंखला विस्तार का रूप  $f(z) = 1 + (1 - z) + (1 - z)^2 + \dots$  है, तब  $f(z)$  है:

1.  $\frac{1}{z}$

2.  $\frac{-1}{z-2}$

3.  $\frac{1}{2z-1}$

4.  $\frac{z-1}{z+1}$

**Options :**

68634017421. 1  
68634017422. 2  
68634017423. 3  
68634017424. 4

Question Number : 57 Question Id : 6863404401 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

A rectangular box open at the top is to have volume of 32 cubic feet. The minimum outer surface area of the box is

1. 32 sq.ft
2. 46 sq.ft
3. 44 sq.ft
4. 48 sq.ft

Options :

68634017425. 1  
68634017426. 2  
68634017427. 3  
68634017428. 4

Question Number : 57 Question Id : 6863404401 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

एक आयताकार संदूक जो कि ऊपर से खुला है, का आयतन 32 घनफीट है। संदूक का निम्नतम बाह्य पृष्ठीय क्षेत्रफल है:

1. 32 वर्ग फुट
2. 46 वर्ग फुट
3. 44 वर्ग फुट
4. 48 वर्ग फुट

Options :

68634017425. 1  
68634017426. 2  
68634017427. 3  
68634017428. 4

Question Number : 58 Question Id : 6863404402 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

The value of the dot product of the eigenvectors corresponding to any pair of different eigen values of a  $4 \times 4$  symmetric positive definite matrix is

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

**Options :**

68634017429. 1  
68634017430. 2  
68634017431. 3  
68634017432. 4

**Question Number : 58 Question Id : 6863404402 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

$4 \times 4$  सममित घनात्मक निश्चित आव्यूह के भिन्न अभिलाक्षणिक मानों के किसी युग्म के संगत अभिलाक्षणिक सदिशों के बिंदु (डॉट) गुणन का मान है:

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

**Options :**

68634017429. 1  
68634017430. 2  
68634017431. 3  
68634017432. 4

**Question Number : 59 Question Id : 6863404403 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The matrix  $P$  is the inverse of a matrix  $Q$ . If  $I$  denotes the identity matrix, which one of the following options is correct?

1.  $PQ = I$  but  $QP \neq I$
2.  $QP = I$  but  $PQ \neq I$
3.  $PQ = I$  and  $QP = I$
4.  $PQ - QP = I$

**Options :**

68634017433. 1

68634017434. 2  
68634017435. 3  
68634017436. 4

Question Number : 59 Question Id : 6863404403 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

आव्यूह  $P$  एक आव्यूह  $Q$  का व्युत्क्रम है। यदि  $I$  तत्समक आव्यूह दर्शाता है। निम्नलिखित में से कौन सा कथन सही है?

1.  $PQ = I$  परन्तु  $QP \neq I$
2.  $QP = I$  परन्तु  $PQ \neq I$
3.  $PQ = I$  और  $QP = I$
4.  $PQ - QP = I$

Options :

68634017433. 1  
68634017434. 2  
68634017435. 3  
68634017436. 4

Question Number : 60 Question Id : 6863404404 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

If the matrices  $\begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix}$ ,  $\begin{pmatrix} -1 & 0 \\ 0 & 0 \end{pmatrix}$ ,  $\begin{pmatrix} i & 0 \\ 0 & 0 \end{pmatrix}$  and  $\begin{pmatrix} -i & 0 \\ 0 & 0 \end{pmatrix}$  form a group with respect to matrix multiplication, then which one of the following statements about the groups, thus formed is correct?

1. The group has no element of order 4.
2. The group has an element of order 3.
3. The group is non-abelian
4.  $\begin{pmatrix} -1 & 0 \\ 0 & 0 \end{pmatrix}$  is its own inverse.

Options :

68634017437. 1  
68634017438. 2  
68634017439. 3  
68634017440. 4

Question Number : 60 Question Id : 6863404404 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

यदि आव्यूह  $\begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix}$ ,  $\begin{pmatrix} -1 & 0 \\ 0 & 0 \end{pmatrix}$ ,  $\begin{pmatrix} i & 0 \\ 0 & 0 \end{pmatrix}$  तथा  $\begin{pmatrix} -i & 0 \\ 0 & 0 \end{pmatrix}$  आव्यूह गुणन के अंतर्गत एक समूह बनाते हैं, तब समूहों के बारे में इस प्रकार बने निम्नलिखित कथनों में से कौन सा एक सही है?

1. समूह में कोई अवयव 4 कोटि का नहीं है।
2. समूह में एक अवयव 3 कोटि का है।
3. समूह गैर एबेलियन है।
4.  $\begin{pmatrix} -1 & 0 \\ 0 & 0 \end{pmatrix}$  अपना स्वयं का व्युत्क्रम है।

**Options :**

68634017437. 1  
68634017438. 2  
68634017439. 3  
68634017440. 4

**Question Number : 61 Question Id : 6863404405 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Which of the following are generators of the multiplicative group  $\{(1,2,3,4,5,6), \times_7\}$  where  $\times_7$  denotes multiplication moduls 7?

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

**Options :**

68634017441. 1  
68634017442. 2  
68634017443. 3  
68634017444. 4

**Question Number : 61 Question Id : 6863404405 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

निम्नलिखित में से कौन से गुणात्मक समूह  $\{(1,2,3,4,5,6), \times_7\}$  के जनक (जनरेटर) है? जहाँ  $\times_7$  गुणात्मक सापेक्ष 7 दर्शाता है।

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

**Options :**

68634017441. 1  
68634017442. 2  
68634017443. 3  
68634017444. 4

**Question Number : 62 Question Id : 6863404406 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The general solution of differential equation  $\frac{d^2 y}{dx^2} + 9y = \sin^3 x$  is  
(given that  $c_1$  and  $c_2$  are arbitrary constants)

1.  $y = c_1 \cos(3x + c_2) + \frac{1}{24} \sin x - \sin 3x$
2.  $y = c_1 e^{3x} + c_2 e^{-3x} + \frac{1}{32} \sin x + \frac{1}{2} \cos 3x$
3.  $y = c_1 + c_2 x e^{3x} + 2 \sin x - \frac{5}{13} \sin 3x$
4.  $y = c_1 \sin(3x + c_2) + \frac{3}{32} \sin x + \frac{x}{24} \cos 3x$

**Options :**

68634017445. 1  
68634017446. 2  
68634017447. 3  
68634017448. 4

**Question Number : 62 Question Id : 6863404406 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

अवकल समीकरण  $\frac{d^2y}{dx^2} + 9y = \sin^3 x$  का सामान्य हल है:

(दिया गया है कि  $c_1$  और  $c_2$  ऐच्छिक अचर हैं।)

1.  $y = c_1 \cos(3x + c_2) + \frac{1}{24} \sin x - \sin 3x$

2.  $y = c_1 e^{3x} + c_2 e^{-3x} + \frac{1}{32} \sin x + \frac{1}{2} \cos 3x$

3.  $y = c_1 + c_2 x e^{3x} + 2 \sin x - \frac{5}{13} \sin 3x$

4.  $y = c_1 \sin(3x + c_2) + \frac{3}{32} \sin x + \frac{x}{24} \cos 3x$

**Options :**

68634017445. 1

68634017446. 2

68634017447. 3

68634017448. 4

**Question Number : 63 Question Id : 6863404407 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The solution of  $(x^2 - \sqrt{2}y) dx + (y^2 - \sqrt{2}x) dy = 0$  is given by

1.  $x^3 - \sqrt{2}xy + y^3 = c$ , where c is an arbitrary constant

2.  $x^3 - 3\sqrt{2}xy + y^3 = c$ , where c is an arbitrary constant

3.  $x^3 + 3\sqrt{2}xy + y^3 = c$ , where c is an arbitrary constant

4.  $3x^3 - \sqrt{2}xy + 3y^3 = c$ , where c is an arbitrary constant

**Options :**

68634017449. 1

68634017450. 2

68634017451. 3

68634017452. 4

**Question Number : 63 Question Id : 6863404407 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

$(x^2 - \sqrt{2}y)dx + (y^2 - \sqrt{2}x)dy = 0$  का हल दिया जाता है:

1.  $x^3 - \sqrt{2}xy + y^3 = c$ , जहाँ  $c$  एक ऐच्छिक अचर है ।
2.  $x^3 - 3\sqrt{2}xy + y^3 = c$ , जहाँ  $c$  एक ऐच्छिक अचर है ।
3.  $x^3 + 3\sqrt{2}xy + y^3 = c$ , जहाँ  $c$  एक ऐच्छिक अचर है ।
4.  $3x^3 - \sqrt{2}xy + 3y^3 = c$ , जहाँ  $c$  एक ऐच्छिक अचर है ।

**Options :**

68634017449. 1  
68634017450. 2  
68634017451. 3  
68634017452. 4

**Question Number : 64 Question Id : 6863404408 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The solution  $x_1 = 1, x_2 = 1, x_3 = 0$  and  $z = 3$  to the system of equations

$$x_1 + x_2 + x_3 = 2$$

$$x_1 + x_2 - x_3 = 2$$

$$x_1, x_2, x_3 \geq 0$$

which minimizes  $z = x_1 + 2x_2 + 3x_3$  is

1. not feasible
2. not basic
3. feasible and basic
4. basic but not feasible

**Options :**

68634017453. 1  
68634017454. 2  
68634017455. 3  
68634017456. 4

**Question Number : 64 Question Id : 6863404408 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

समीकरणों के निकाय

$$x_1 + x_2 + x_3 = 2$$

$$x_1 + x_2 - x_3 = 2$$

$$x_1, x_2, x_3 \geq 0$$

का हल  $x_1 = 1, x_2 = 1, x_3 = 0$  और  $z = 3$  जो  $z = x_1 + 2x_2 + 3x_3$  का न्यूनतमीकरण करता है:

1. सुसंगत नहीं
2. आधारभूत (मूलभूत) नहीं
3. सुसंगत एवं मूलभूत
4. मूलभूत परन्तु सुसंगत नहीं

Options :

68634017453. 1  
68634017454. 2  
68634017455. 3  
68634017456. 4

Question Number : 65 Question Id : 6863404409 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

Consider the linear mapping  $F: \mathbb{R}^2 \rightarrow \mathbb{R}^2$  defined by  $F(x, y) = (3x + 4y, 2x - 5y)$  and following bases of  $\mathbb{R}^2$ :

$E = \{e_1, e_2\} = \{(1, 0), (0, 1)\}$  and  $S = \{u_1, u_2\} = \{(1, 2), (2, 3)\}$ . Then the matrix  $A$  representing  $F$  relative to the basis  $E$  is:

1.  $\begin{bmatrix} 3 & 4 \\ 2 & -5 \end{bmatrix}$
2.  $\begin{bmatrix} 3 & -5 \\ 4 & 3 \end{bmatrix}$
3.  $\begin{bmatrix} 3 & 0 \\ 1 & -5 \end{bmatrix}$
4.  $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

Options :

68634017457. 1  
68634017458. 2  
68634017459. 3  
68634017460. 4

Question Number : 65 Question Id : 6863404409 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

विचार कीजिए कि एक रेखिक चित्रण  $F: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ ,  $F(x, y) = (3x + 4y, 2x - 5y)$  द्वारा परिभाषित है और  $\mathbb{R}^2$  के निम्नलिखित बेसिस है।

$E = \{e_1, e_2\} = \{(1, 0), (0, 1)\}$  और  $S = \{u_1, u_2\} = \{(1, 2), (2, 3)\}$ . तब बेसिस  $E$  के सापेक्ष  $F$  को दर्शाने वाली आव्यूह  $A$  है:

1.  $\begin{bmatrix} 3 & 4 \\ 2 & -5 \end{bmatrix}$

2.  $\begin{bmatrix} 3 & -5 \\ 4 & 3 \end{bmatrix}$

3.  $\begin{bmatrix} 3 & 0 \\ 1 & -5 \end{bmatrix}$

4.  $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

Options :

68634017457. 1

68634017458. 2

68634017459. 3

68634017460. 4

Question Number : 66 Question Id : 6863404410 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

In a group  $G$ , if  $a^5 = e$ ,  $aba^{-1} = b^2$  for  $a, b \in G$  then  $\phi(b)$  is equal to:

1. 30

2. 32

3. 31

4. 25

Options :

68634017461. 1

68634017462. 2

68634017463. 3

68634017464. 4

Question Number : 66 Question Id : 6863404410 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

यदि  $a, b \in G$  के लिए एक समूह  $G$ , में  $a^5 = e$ ,  $aba^{-1} = b^2$  है, तो  $o(b)$  बराबर है:

1. 30
2. 32
3. 31
4. 25

**Options :**

68634017461. 1  
68634017462. 2  
68634017463. 3  
68634017464. 4

**Question Number : 67 Question Id : 6863404411 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

Which one of the following statements is wrong.

1. The centre of a group  $G$  is a subgroup of  $G$ .
2. The union of two subgroups is always a subgroup.
3. If  $G$  is a finite group and  $H$  is a subgroup of  $G$  then  $o(H)$  divides  $o(G)$ .
4.  $HK$  is a subgroup of  $G$  iff  $HK = KH$ .

**Options :**

68634017465. 1  
68634017466. 2  
68634017467. 3  
68634017468. 4

**Question Number : 67 Question Id : 6863404411 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

निम्नलिखित में से कौन सा कथन गलत है?

1. समूह  $G$  का केन्द्र  $G$  का उपसमूह होता है।
2. दो उपसमूहों का सम्मिलन सदैव एक उपसमूह होता है।
3. यदि  $G$  एक परिमित समूह है और  $H, G$  का एक उपसमूह है तो  $o(H), o(G)$  को विभाजित करता है।
4.  $HK, G$  का एक उपसमूह है यदि और केवल यदि  $HK = KH$ .

**Options :**

68634017465. 1  
68634017466. 2  
68634017467. 3

Question Number : 68 Question Id : 6863404412 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
 Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
 Correct Marks : 4 Wrong Marks : 1

Which one of the following is wrong?

1. The set  $\mathbb{Z}$  of integers forms a group with respect to the usual addition of integers.
2. Let  $G$  be the set  $\{1, -1\}$ . Then it forms a group under multiplication
3. Set of all non-zero complex numbers forms a group under multiplication.
4. The set  $\mathbb{Q}$  of rational numbers forms a group with respect to the usual multiplication of rational numbers.

Options :

- 68634017469. 1
- 68634017470. 2
- 68634017471. 3
- 68634017472. 4

Question Number : 68 Question Id : 6863404412 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
 Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
 Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से कौन सा एक गलत है?

1. पूर्णांक संख्याओं का समुच्चय  $\mathbb{Z}$  पूर्णांक संख्याओं के साधारण योग के अंतर्गत समूह बनाता है।
2. यदि  $G$  एक समुच्चय  $\{1, -1\}$  है, तो यह गुणन के अंतर्गत एक समूह बनाता है।
3. सभी गैर शून्य सम्मिश्र संख्याओं का समुच्चय गुणन के अंतर्गत एक समूह बनाता है।
4. परिमेय संख्याओं का समुच्चय  $\mathbb{Q}$  परिमेय संख्याओं के साधारण गुणन के अंतर्गत समूह बनाता है।

Options :

- 68634017469. 1
- 68634017470. 2
- 68634017471. 3
- 68634017472. 4

Question Number : 69 Question Id : 6863404413 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
 Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
 Correct Marks : 4 Wrong Marks : 1

If  $f(x)$  satisfies the conditions of Rolle's theorem in  $[1, 2]$  and  $f(x)$  is continuous in  $[1, 2]$ , then  $\int_1^2 f'(x) dx$  is equal to

1. 4

2. 0

3. 1

4. 2

**Options :**

68634017473. 1

68634017474. 2

68634017475. 3

68634017476. 4

**Question Number : 69 Question Id : 6863404413 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

यदि  $f(x)$  रोले की प्रमेय के  $[1, 2]$  में संतुष्ट करता है तथा  $f(x)$  अंतराल  $[1, 2]$  में सतत है, तब  $\int_1^2 f'(x) dx$  बराबर है:

1. 4

2. 0

3. 1

4. 2

**Options :**

68634017473. 1

68634017474. 2

68634017475. 3

68634017476. 4

**Question Number : 70 Question Id : 6863404414 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If  $f$  is twice differentiable function such that  $f''(x) = -f(x)$  and  $f'(x) = g(x)$ ,  $h(x) = [f(x)]^2 + [g(x)]^2$  and  $h(5) = 11$ , then  $h(10) =$

1. 22

2. 11

3. 15

4. 21

**Options :**

68634017477. 1  
68634017478. 2  
68634017479. 3  
68634017480. 4

**Question Number : 70 Question Id : 6863404414 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $f$  एक द्वि-अवकलनीय फलन इस प्रकार है कि  $f''(x) = -f(x)$  और  $f'(x) = g(x)$ ,  $h(x) = [f(x)]^2 + [g(x)]^2$  और  $h(5) = 11$ , तब  $h(10) =$

1. 22
2. 11
3. 15
4. 21

**Options :**

68634017477. 1  
68634017478. 2  
68634017479. 3  
68634017480. 4

**Question Number : 71 Question Id : 6863404415 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  be such that  $f(1) = 3$  and  $f'(1) = 6$ . Then  $\lim_{x \rightarrow 0} \left( \frac{f(1+x)}{f(1)} \right)^{1/x}$  equals

1.  $e^{1/2}$
2.  $e^2$
3.  $e^3$
4. 1

**Options :**

68634017481. 1  
68634017482. 2  
68634017483. 3  
68634017484. 4

**Question Number : 71 Question Id : 6863404415 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $f: \mathbb{R} \rightarrow \mathbb{R}$  इस प्रकार है कि  $f(1) = 3$  और  $f'(1) = 6$ , तब  $\lim_{x \rightarrow 0} \left( \frac{f(1+x)}{f(1)} \right)^{1/x}$  बराबर है:

1.  $e^{1/2}$
2.  $e^2$
3.  $e^3$
4. 1

**Options :**

68634017481. 1  
68634017482. 2  
68634017483. 3  
68634017484. 4

**Question Number : 72 Question Id : 6863404416 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The integrating factor of the differential equation  $\frac{dy}{dx} = \frac{x^3 + y^3}{xy^2}$  is

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

**Options :**

68634017485. 1  
68634017486. 2  
68634017487. 3  
68634017488. 4

**Question Number : 72 Question Id : 6863404416 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

अवकल समीकरण  $\frac{dy}{dx} = \frac{x^3 + y^3}{xy^2}$  का समाकल घटक है:

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

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

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

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

**Options :**

68634017485. 1

68634017486. 2

68634017487. 3

68634017488. 4

**Question Number : 73 Question Id : 6863404417 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The surface area of the sphere  $x^2 + y^2 + z^2 = 9$  lying inside the cylinder  $x^2 + y^2 = 3y$  is

1.  $18(\pi + 2)$

2.  $18(\pi - 2)$

3.  $18(\pi - 4)$

4.  $18(\pi + 4)$

**Options :**

68634017489. 1

68634017490. 2

68634017491. 3

68634017492. 4

**Question Number : 73 Question Id : 6863404417 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

बेलन  $x^2 + y^2 = 3y$  में स्थित गोले  $x^2 + y^2 + z^2 = 9$  का पृष्ठीय क्षेत्रफल है:

1.  $18(\pi + 2)$
2.  $18(\pi - 2)$
3.  $18(\pi - 4)$
4.  $18(\pi + 4)$

**Options :**

68634017489. 1  
68634017490. 2  
68634017491. 3  
68634017492. 4

**Question Number : 74 Question Id : 6863404418 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Let  $f(z) = u + iv$  be an analytic function, where  $u = x^3 - 3xy^2 + 3x^2 - 3y^2$ , then the imaginary part  $v$  of  $f(z)$  is

1.  $3x^2y + 6xy - y^3 + c$
2.  $3x^2y + 6xy + y^3 + c$
3.  $x^2y + 6xy - y^3 + c$
4.  $3x^2y - 6xy - y^3 + c$

**Options :**

68634017493. 1  
68634017494. 2  
68634017495. 3  
68634017496. 4

**Question Number : 74 Question Id : 6863404418 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $f(z) = u + iv$  एक विश्लेषक फलन है, जहाँ  $u = x^3 - 3xy^2 + 3x^2 - 3y^2$  है, तब  $f(z)$  का काल्पनिक भाग  $v$  है:

1.  $3x^2y + 6xy - y^3 + c$
2.  $3x^2y + 6xy + y^3 + c$
3.  $x^2y + 6xy - y^3 + c$
4.  $3x^2y - 6xy - y^3 + c$

**Options :**

- 68634017493. 1
- 68634017494. 2
- 68634017495. 3
- 68634017496. 4

**Question Number : 75 Question Id : 6863404419 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The order of the permutation  $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 4 & 6 & 5 & 1 & 3 \end{pmatrix}$  is

1. 1

2. 2

3. 4

4. 8

**Options :**

- 68634017497. 1
- 68634017498. 2
- 68634017499. 3
- 68634017500. 4

**Question Number : 75 Question Id : 6863404419 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

क्रमचय  $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 4 & 6 & 5 & 1 & 3 \end{pmatrix}$  की कोटि है:

1. 1

2. 2

3. 4

4. 8

**Options :**

- 68634017497. 1
- 68634017498. 2
- 68634017499. 3
- 68634017500. 4

**Question Number : 76 Question Id : 6863404420 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If  $\lambda_1, \lambda_2, \lambda_3$  are the eigen values of the matrix  $\begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ , then  $\lambda_1^2 + \lambda_2^2 + \lambda_3^2$  is equal to

1. 45

2. 40

3. 34

4. 43

**Options :**

68634017501. 1

68634017502. 2

68634017503. 3

68634017504. 4

**Question Number : 76 Question Id : 6863404420 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No**

**Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $\begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$  के अभिलक्षणिक मान  $\lambda_1, \lambda_2, \lambda_3$  हैं, तब  $\lambda_1^2 + \lambda_2^2 + \lambda_3^2$  बराबर है:

1. 45

2. 40

3. 34

4. 43

**Options :**

68634017501. 1

68634017502. 2

68634017503. 3

68634017504. 4

**Question Number : 77 Question Id : 6863404421 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No**

**Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The minimum distance of the point (3, 4, 12) from the sphere  $x^2 + y^2 + z^2 = 1$  is

1. 14

2. 16

3. 12

4. 10

**Options :**

68634017505. 1  
68634017506. 2  
68634017507. 3  
68634017508. 4

**Question Number : 77 Question Id : 6863404421 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

बिन्दु  $(3, 4, 12)$  की गोले  $x^2 + y^2 + z^2 = 1$  से निम्नतम दूरी है:

1. 14
2. 16
3. 12
4. 10

**Options :**

68634017505. 1  
68634017506. 2  
68634017507. 3  
68634017508. 4

**Question Number : 78 Question Id : 6863404422 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

If  $f(z) = \frac{1}{z^2 - 3z + 2}$  is expanded in the region  $|z| < 1$ , then

1.  $f(z) = \frac{1}{2} + \frac{3z}{4} + \frac{7}{8}z^2 + \frac{15}{16}z^3 + \dots$
2.  $f(z) = \frac{1}{2} + \frac{4}{3}z + \frac{8}{7}z^2 + \frac{16}{15}z^3 + \dots$
3.  $f(z) = \frac{1}{2} + \frac{3z}{4} + \frac{7}{9}z^2 + \frac{15}{19}z^3 + \dots$
4.  $f(z) = \frac{1}{2} + \frac{3z}{4} + \frac{6}{7}z^2 + \frac{15}{11}z^3 + \dots$

**Options :**

68634017509. 1  
68634017510. 2  
68634017511. 3  
68634017512. 4

**Question Number : 78 Question Id : 6863404422 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

यदि  $f(z) = \frac{1}{z^2 - 3z + 2}$  क्षेत्र  $|z| < 1$  में प्रसारित है, तब

1.  $f(z) = \frac{1}{2} + \frac{3z}{4} + \frac{7}{8}z^2 + \frac{15}{16}z^3 + \dots$

2.  $f(z) = \frac{1}{2} + \frac{4}{3}z + \frac{8}{7}z^2 + \frac{16}{15}z^3 + \dots$

3.  $f(z) = \frac{1}{2} + \frac{3z}{4} + \frac{7}{9}z^2 + \frac{15}{19}z^3 + \dots$

4.  $f(z) = \frac{1}{2} + \frac{3z}{4} + \frac{6}{7}z^2 + \frac{15}{11}z^3 + \dots$

**Options :**

- 68634017509. 1
- 68634017510. 2
- 68634017511. 3
- 68634017512. 4

**Question Number : 79 Question Id : 6863404423 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The function  $f(z)$  defined by  $f(z) = \begin{cases} \frac{\operatorname{Re}(z)}{z}, & z \neq 0 \\ 0, & z = 0 \end{cases}$  then which one of the following is true?

1.  $\lim_{z \rightarrow 0} f(z)$  exists

2.  $f(z)$  is continuous at  $z = 0$

3.  $f(z)$  is differentiable everywhere

4.  $f(z)$  is not continuous at  $z = 0$

**Options :**

- 68634017513. 1
- 68634017514. 2
- 68634017515. 3
- 68634017516. 4

**Question Number : 79 Question Id : 6863404423 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

फलन  $f(z)$  को  $f(z) = \begin{cases} \frac{\operatorname{Re}(z)}{z}, & z \neq 0 \\ 0, & z = 0 \end{cases}$  से परिभाषित किया जाता है, तब निम्नलिखित में से कौन सा सत्य है?

1.  $\lim_{z \rightarrow 0} f(z)$  विद्यमान है।
2.  $f(z)$ ,  $z = 0$  पर सतत है।
3.  $f(z)$  सभी जगह पर अवकलनीय है।
4.  $f(z)$ ,  $z = 0$  पर सतत नहीं है।

**Options :**

- 68634017513. 1
- 68634017514. 2
- 68634017515. 3
- 68634017516. 4

**Question Number : 80 Question Id : 6863404424 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The volume generated by the revolution of the cardioid  $r = a(1 - \cos\theta)$  about x-axis is

1.  $\frac{8\pi a^3}{3}$
2.  $8\pi a^3$
3.  $\frac{4\pi a^3}{3}$
4.  $4\pi a^3$

**Options :**

- 68634017517. 1
- 68634017518. 2
- 68634017519. 3
- 68634017520. 4

**Question Number : 80 Question Id : 6863404424 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

x-अक्ष के चारों ओर कार्डिऑइड  $r = a(1 - \cos\theta)$  के परिक्रमण द्वारा जनित आयतन है:

1.  $\frac{8\pi a^3}{3}$

2.  $8\pi a^3$

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

4.  $4\pi a^3$

**Options :**

68634017517. 1  
68634017518. 2  
68634017519. 3  
68634017520. 4

**Question Number : 81 Question Id : 6863404425 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

The value of  $\int_C \frac{\sin \pi z^2 + \cos \pi z^2}{(z-1)(z-2)} dz$ , where  $C$  is the circle  $|z| = 3$  is

1.  $4\pi i$

2.  $8\pi i$

3.  $2\pi i$

4.  $\pi i$

**Options :**

68634017521. 1  
68634017522. 2  
68634017523. 3  
68634017524. 4

**Question Number : 81 Question Id : 6863404425 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

$\int_C \frac{\sin \pi z^2 + \cos \pi z^2}{(z-1)(z-2)} dz$  जहाँ  $C : |z| = 3$  एक वृत्त है, का मान है:

1.  $4\pi i$

2.  $8\pi i$

3.  $2\pi i$

4.  $\pi i$

**Options :**

68634017521. 1

68634017522. 2

68634017523. 3

68634017524. 4

**Question Number : 82 Question Id : 6863404426 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The given series  $\frac{x}{1.3} + \frac{x^2}{2.4} + \frac{x^3}{3.5} + \dots$ , ( $x > 0$ ) is convergent in the interval

1.  $[1, \infty)$

2.  $(1, \infty)$

3.  $(0, 1]$

4.  $[0, 1)$

**Options :**

68634017525. 1

68634017526. 2

68634017527. 3

68634017528. 4

**Question Number : 82 Question Id : 6863404426 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

प्रदत्त श्रेणी  $\frac{x}{1.3} + \frac{x^2}{2.4} + \frac{x^3}{3.5} + \dots$ , ( $x > 0$ ) किस अंतराल में अभिसारी है:

1.  $[1, \infty)$

2.  $(1, \infty)$

3.  $(0, 1]$

4.  $[0, 1)$

**Options :**

- 68634017525. 1
- 68634017526. 2
- 68634017527. 3
- 68634017528. 4

**Question Number : 83 Question Id : 6863404427 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Which one of the following is not correct?

1. The set of limit points of a bounded sequence is bounded.
2. A bounded sequence with a unique limit point is convergent.
3. The limit points of the sequence  $\langle 2 + (-1)^n \rangle$  are 1 and 2.
4. The limit points of the sequence  $\langle (-1)^n \rangle$  are -1 and 1.

**Options :**

- 68634017529. 1
- 68634017530. 2
- 68634017531. 3
- 68634017532. 4

**Question Number : 83 Question Id : 6863404427 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

निम्नलिखित में से कौन सा एक सही नहीं है?

1. एक परिबद्ध अनुक्रम के सीमा बिन्दु का समुच्चय परिबद्ध है।
2. अद्वितीय सीमा बिन्दु की परिबद्ध अनुक्रम अभिसारी है।
3. अनुक्रम  $\langle 2 + (-1)^n \rangle$  की सीमा बिन्दु 1 तथा 2 है
4. अनुक्रम  $\langle (-1)^n \rangle$  की सीमा बिन्दु -1 तथा 1 है

**Options :**

- 68634017529. 1
- 68634017530. 2
- 68634017531. 3
- 68634017532. 4

**Question Number : 84 Question Id : 6863404428 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The general solution of  $(D^2 + 6D + 9)y = \frac{e^{-3x}}{x^3}$ , where  $D = \frac{d}{dx}$  is

(given that  $c_1$  and  $c_2$  are arbitrary constants)

1.  $y = (c_1 + c_2 x)e^{-3x} + \frac{e^{-3x}}{2x}$

2.  $y = (c_1 + c_2 x)e^{3x} + \frac{e^{3x}}{2x}$

3.  $y = (c_1 + c_2 x^2)e^{-3x} + \frac{e^{-3x}}{2}$

4.  $y = (c_1 + c_2 x)e^{-3x} + \frac{e^{3x}}{2x}$

**Options :**

68634017533. 1

68634017534. 2

68634017535. 3

68634017536. 4

**Question Number : 84 Question Id : 6863404428 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

$(D^2 + 6D + 9)y = \frac{e^{-3x}}{x^3}$  का सामान्य हल, जहाँ  $D = \frac{d}{dx}$ , है:

(दिया गया है कि  $c_1$  और  $c_2$  ऐच्छिक अचर हैं।)

1.  $y = (c_1 + c_2 x)e^{-3x} + \frac{e^{-3x}}{2x}$

2.  $y = (c_1 + c_2 x)e^{3x} + \frac{e^{3x}}{2x}$

3.  $y = (c_1 + c_2 x^2)e^{-3x} + \frac{e^{-3x}}{2}$

4.  $y = (c_1 + c_2 x)e^{-3x} + \frac{e^{3x}}{2x}$

**Options :**

68634017533. 1

68634017534. 2

68634017535. 3

68634017536. 4

Question Number : 85 Question Id : 6863404429 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

If  $\vec{F} = 2xz\hat{i} - x\hat{j} + y\hat{k}$  and  $V$  is the region bounded by the surface  $x = 0, y = 0, x = 2, y = 4, z = x^2, z = 2$ , then

value of  $\iiint_V \vec{F} dV$  is

1.  $\frac{32}{15}(3\hat{j} + 5\hat{k})$

2.  $\frac{32}{15}(3\hat{i} + 5\hat{k})$

3.  $\frac{32}{15}(5\hat{i} + 3\hat{k})$

4.  $\frac{32}{15}(3\hat{i} + 5\hat{j})$

Options :

68634017537. 1

68634017538. 2

68634017539. 3

68634017540. 4

Question Number : 85 Question Id : 6863404429 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

यदि  $\vec{F} = 2xz\hat{i} - x\hat{j} + y\hat{k}$  तथा  $V$  पृष्ठ  $x = 0, y = 0, x = 2, y = 4, z = x^2, z = 2$  द्वारा परिबद्ध क्षेत्र है, तब  $\iiint_V \vec{F} dV$  का मान है-

1.  $\frac{32}{15}(3\hat{j} + 5\hat{k})$

2.  $\frac{32}{15}(3\hat{i} + 5\hat{k})$

3.  $\frac{32}{15}(5\hat{i} + 3\hat{k})$

4.  $\frac{32}{15}(3\hat{i} + 5\hat{j})$

Options :

68634017537. 1

68634017538. 2

68634017539. 3

Question Number : 86 Question Id : 6863404430 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
 Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
 Correct Marks : 4 Wrong Marks : 1

If  $\vec{F} = y^2\hat{i} + xy\hat{j} + xz\hat{k}$  and  $C$  is the bounding curve of the hemisphere  $x^2 + y^2 + z^2 = 9, z > 0$ , oriented in the positive direction, then value of  $\int_C \vec{F} \cdot d\vec{r}$  is

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

Options :

68634017541. 1  
 68634017542. 2  
 68634017543. 3  
 68634017544. 4

Question Number : 86 Question Id : 6863404430 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
 Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
 Correct Marks : 4 Wrong Marks : 1

यदि  $\vec{F} = y^2\hat{i} + xy\hat{j} + xz\hat{k}$  तथा  $C$  गोलार्ध  $x^2 + y^2 + z^2 = 9, z > 0$  का सीमक वक्र है, जिसका अभिविन्यस्त धनात्मक दिशा में है, तब  $\int_C \vec{F} \cdot d\vec{r}$  का मान है:

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

Options :

68634017541. 1  
 68634017542. 2  
 68634017543. 3  
 68634017544. 4

Question Number : 87 Question Id : 6863404431 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
 Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
 Correct Marks : 4 Wrong Marks : 1

If  $W$  is a subspace of  $\mathbb{R}^3$ , where  $W = \{(a, b, c) : a + b + c = 0\}$ , then  $\dim W$  is equal to

1. 2

2. 3

3. 1

4. 0

**Options :**

68634017545. 1

68634017546. 2

68634017547. 3

68634017548. 4

**Question Number : 87 Question Id : 6863404431 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

यदि  $\mathbb{R}^3$  की उप-समष्टि  $W$  है जहाँ  $W = \{(a, b, c) : a + b + c = 0\}$ , तब  $\dim W$  बराबर है:

1. 2

2. 3

3. 1

4. 0

**Options :**

68634017545. 1

68634017546. 2

68634017547. 3

68634017548. 4

**Question Number : 88 Question Id : 6863404432 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The dimension of the general solution space  $W$  of the homogeneous system

$$x_1 + 2x_2 - 3x_3 + 2x_4 - 4x_5 = 0$$

$$2x_1 + 4x_2 - 5x_3 + x_4 - 6x_5 = 0$$

$$5x_1 + 10x_2 - 13x_3 + 4x_4 - 16x_5 = 0$$

1. 2

2. 3

3. 4

4. 5

**Options :**

- 68634017549. 1
- 68634017550. 2
- 68634017551. 3
- 68634017552. 4

**Question Number : 88 Question Id : 6863404432 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

समघात निकाय के व्यापक हल की विमा है -

$$x_1 + 2x_2 - 3x_3 + 2x_4 - 4x_5 = 0$$

$$2x_1 + 4x_2 - 5x_3 + x_4 - 6x_5 = 0$$

$$5x_1 + 10x_2 - 13x_3 + 4x_4 - 16x_5 = 0$$

1. 2

2. 3

3. 4

4. 5

**Options :**

- 68634017549. 1
- 68634017550. 2
- 68634017551. 3
- 68634017552. 4

**Question Number : 89 Question Id : 6863404433 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

Let  $F: \mathbb{R}^3 \rightarrow \mathbb{R}^2$  be the linear map defined by  $F(x, y, z) = (3x + 2y - 4z, x - 5y + 3z)$ . The basis of  $\mathbb{R}^3$  is  $S$  and basis of  $\mathbb{R}^2$  is  $S'$ , where  $S = \{(1, 1, 1), (1, 1, 0), (1, 0, 0)\}$  and  $S' = \{(1, 3), (2, 5)\}$ . Then the matrix of  $F$  in the bases of  $\mathbb{R}^3$  and  $\mathbb{R}^2$  is

1.  $\begin{bmatrix} -7 & -33 & -13 \\ 4 & 19 & 8 \end{bmatrix}$

2.  $\begin{bmatrix} -7 & -33 & 8 \\ 3 & 15 & -13 \end{bmatrix}$

3.  $\begin{bmatrix} -7 & 4 \\ -33 & 19 \\ 13 & 18 \end{bmatrix}$

4.  $\begin{bmatrix} -7 & 13 & -33 \\ 4 & 18 & 9 \end{bmatrix}$

**Options :**

- 68634017553. 1
- 68634017554. 2
- 68634017555. 3
- 68634017556. 4

**Question Number : 89 Question Id : 6863404433 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

माना  $F: \mathbb{R}^3 \rightarrow \mathbb{R}^2$  रेखिक प्रतिचित्र है जो  $F(x, y, z) = (3x + 2y - 4z, x - 5y + 3z)$  द्वारा परिभाषित है।  $\mathbb{R}^3$  का आधार  $S$  तथा  $\mathbb{R}^2$  का आधार  $S'$  है, जहाँ  $S = \{(1, 1, 1), (1, 1, 0), (1, 0, 0)\}$  तथा  $S' = \{(1, 3), (2, 5)\}$ , तब  $\mathbb{R}^3$  तथा  $\mathbb{R}^2$  के आधार में  $F$  का आव्यूह है-

1.  $\begin{bmatrix} -7 & -33 & -13 \\ 4 & 19 & 8 \end{bmatrix}$

2.  $\begin{bmatrix} -7 & -33 & 8 \\ 3 & 15 & -13 \end{bmatrix}$

3.  $\begin{bmatrix} -7 & 4 \\ -33 & 19 \\ 13 & 18 \end{bmatrix}$

4.  $\begin{bmatrix} -7 & 13 & -33 \\ 4 & 18 & 9 \end{bmatrix}$

**Options :**

- 68634017553. 1
- 68634017554. 2
- 68634017555. 3
- 68634017556. 4

**Question Number : 90 Question Id : 6863404434 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

If  $A = \begin{bmatrix} 1 & 2 & 0 & -1 \\ 2 & 6 & -3 & -3 \\ 3 & 10 & -6 & -5 \end{bmatrix}$ , then which one of the following is true?

1. Rank (A) = 4

2. Rank (A) = 3

3. Rank (A) = 2

4. Rank (A) = 1

**Options :**

- 68634017557. 1
- 68634017558. 2

68634017559. 3  
68634017560. 4

**Question Number : 90 Question Id : 6863404434 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

यदि  $A = \begin{bmatrix} 1 & 2 & 0 & -1 \\ 2 & 6 & -3 & -3 \\ 3 & 10 & -6 & -5 \end{bmatrix}$  है, तब निम्नलिखित में से कौन सा सत्य है?

1. कोटि (A) = 4
2. कोटि (A) = 3
3. कोटि (A) = 2
4. कोटि (A) = 1

**Options :**

68634017557. 1  
68634017558. 2  
68634017559. 3  
68634017560. 4

**Question Number : 91 Question Id : 6863404435 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

If the solution of  $x \frac{dy}{dx} + y = x^3 y^6$  is  $\frac{1}{y^\alpha x^\beta} = \frac{\gamma}{2x^2} + C$ , then value of  $\alpha + \beta + \gamma$  is

1. 5
2. 10
3. 15
4. 20

**Options :**

68634017561. 1  
68634017562. 2  
68634017563. 3  
68634017564. 4

**Question Number : 91 Question Id : 6863404435 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 4 Wrong Marks : 1**

यदि  $x \frac{dy}{dx} + y = x^3 y^6$  का हल  $\frac{1}{y^\alpha x^\beta} = \frac{\gamma}{2x^2} + C$  है, तब  $\alpha + \beta + \gamma$  का मान है .

1. 5
2. 10
3. 15
4. 20

**Options :**

68634017561. 1  
 68634017562. 2  
 68634017563. 3  
 68634017564. 4

**Question Number : 92 Question Id : 6863404436 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If  $x^2 \frac{d^2 y}{dx^2} - 2x \frac{dy}{dx} - 4y = x^4$ , then particular integral (P.I) of the given differential equation is

1.  $\frac{xe^{4x}}{5}$
2.  $\frac{1}{5}x^4 \log x$
3.  $\frac{xe^{5x}}{4}$
4.  $\frac{1}{4}x^5 \log x$

**Options :**

68634017565. 1  
 68634017566. 2  
 68634017567. 3  
 68634017568. 4

**Question Number : 92 Question Id : 6863404436 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

यदि  $x^2 \frac{d^2 y}{dx^2} - 2x \frac{dy}{dx} - 4y = x^4$  है, तब दी गई अवकल समीकरण का विशिष्ट समाकल है -

1.  $\frac{xe^{4x}}{5}$
2.  $\frac{1}{5}x^4 \log x$
3.  $\frac{xe^{5x}}{4}$
4.  $\frac{1}{4}x^5 \log x$

**Options :**

68634017565. 1  
68634017566. 2  
68634017567. 3  
68634017568. 4

**Question Number : 93 Question Id : 6863404437 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If  $f: \mathbb{R}^2 \rightarrow \mathbb{R}^2$  is a function defined as  $f(x, y) = \begin{cases} \frac{x}{\sqrt{x^2 + y^2}}, & x \neq 0, y \neq 0 \\ 2, & x = 0, y = 0 \end{cases}$

then, which of the following is correct?

1.  $f(x, y)$  is continuous at origin.
2.  $f(x, y)$  is differentiable at origin.
3.  $\lim_{(x,y) \rightarrow (0,0)} f(x, y)$  exists and is equal to 2.
4.  $f(x, y)$  is not continuous at origin.

**Options :**

68634017569. 1  
68634017570. 2  
68634017571. 3  
68634017572. 4

**Question Number : 93 Question Id : 6863404437 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

यदि  $f: \mathbb{R}^2 \rightarrow \mathbb{R}^2$  एक फलन है जो  $f(x, y) = \begin{cases} \frac{x}{\sqrt{x^2 + y^2}}, & x \neq 0, y \neq 0 \\ 2, & x = 0, y = 0 \end{cases}$  से परिभाषित है, निम्नलिखित में कौन सही है ?

1.  $f(x, y)$  मूलबिन्दु पर सतत है।
2.  $f(x, y)$  मूलबिन्दु पर अवकलनीय है।
3.  $\lim_{(x,y) \rightarrow (0,0)} f(x, y)$  विद्यमान है तथा 2 के बराबर है।
4.  $f(x, y)$  मूलबिन्दु पर सतत नहीं है।

**Options :**

68634017569. 1  
68634017570. 2  
68634017571. 3  
68634017572. 4

**Question Number : 94 Question Id : 6863404438 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

If  $u = \cos^{-1} \left( \frac{x+y}{\sqrt{x} + \sqrt{y}} \right)$ , then the value of  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$  is

1.  $\frac{1}{2} \cot u$
2.  $-\frac{1}{2} \cot u$
3.  $-\frac{1}{2} \tan u$
4.  $\frac{1}{2} \tan u$

**Options :**

68634017573. 1  
68634017574. 2  
68634017575. 3  
68634017576. 4

**Question Number : 94 Question Id : 6863404438 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

यदि  $u = \cos^{-1}\left(\frac{x+y}{\sqrt{x}+\sqrt{y}}\right)$ , तब  $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$  का मान है:

1.  $\frac{1}{2}\cot u$
2.  $-\frac{1}{2}\cot u$
3.  $-\frac{1}{2}\tan u$
4.  $\frac{1}{2}\tan u$

**Options :**

68634017573. 1  
68634017574. 2  
68634017575. 3  
68634017576. 4

**Question Number : 95 Question Id : 6863404439 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The extreme points of the set  $\{(x, y); |x| \leq 2, |y| \leq 2\}$  are

1. (0, 0), (2, 2)
2. (1, 1), (2, 2), (-1, -1), (-2, -2)
3. (1, 1), (-1, 1), (-1, -1), (1, -1)
4. (2, 2), (-2, 2), (-2, -2), (2, -2)

**Options :**

68634017577. 1  
68634017578. 2  
68634017579. 3  
68634017580. 4

**Question Number : 95 Question Id : 6863404439 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

समुच्चय  $\{(x, y); |x| \leq 2, |y| \leq 2\}$  के चरम बिंदु है:

1. (0, 0), (2, 2)
2. (1, 1), (2, 2), (-1, -1), (-2, -2)
3. (1, 1), (-1, 1), (-1, -1), (1, -1)
4. (2, 2), (-2, 2), (-2, -2), (2, -2)

Options :

68634017577. 1  
68634017578. 2  
68634017579. 3  
68634017580. 4

Question Number : 96 Question Id : 6863404440 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

The point  $(-1, 2, 7, 6)$  lies in which of the following half spaces corresponding to hyperplane

$$2x_1 + 3x_2 + 4x_3 + 5x_4 = 6$$

1.  $2x_1 + 3x_2 + 4x_3 + 5x_4 < 6$
2.  $2x_1 + 3x_2 + 4x_3 + 5x_4 > 6$
3.  $2x_1 + 3x_2 + 4x_3 + 5x_4 < 62$
4.  $2x_1 + 3x_2 + 4x_3 + 5x_4 > 62$

Options :

68634017581. 1  
68634017582. 2  
68634017583. 3  
68634017584. 4

Question Number : 96 Question Id : 6863404440 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

बिन्दु  $(-1, 2, 7, 6)$  निम्नलिखित में से कौन से अर्ध समष्टि के अनुरूप अधिसमतल में विद्यमान है?

$$2x_1 + 3x_2 + 4x_3 + 5x_4 = 6$$

1.  $2x_1 + 3x_2 + 4x_3 + 5x_4 < 6$
2.  $2x_1 + 3x_2 + 4x_3 + 5x_4 > 6$
3.  $2x_1 + 3x_2 + 4x_3 + 5x_4 < 62$
4.  $2x_1 + 3x_2 + 4x_3 + 5x_4 > 62$

**Options :**

- 68634017581. 1
- 68634017582. 2
- 68634017583. 3
- 68634017584. 4

**Question Number : 97 Question Id : 6863404441 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

The value of  $\lim_{n \rightarrow \infty} \left[ \frac{2}{1} \left( \frac{3}{2} \right)^2 \left( \frac{4}{3} \right)^3 \dots \left( \frac{n+1}{n} \right)^n \right]^{\frac{1}{n}}$  is

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

**Options :**

- 68634017585. 1
- 68634017586. 2
- 68634017587. 3
- 68634017588. 4

**Question Number : 97 Question Id : 6863404441 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4 Wrong Marks : 1**

$\lim_{n \rightarrow \infty} \left[ \frac{2}{1} \left( \frac{3}{2} \right)^2 \left( \frac{4}{3} \right)^3 \dots \left( \frac{n+1}{n} \right)^n \right]^{\frac{1}{n}}$  का मान है:

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

**Options :**

- 68634017585. 1
- 68634017586. 2
- 68634017587. 3
- 68634017588. 4

Question Number : 98 Question Id : 6863404442 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

The orthogonal trajectories of the family of curves  $y = ax^3$  is

1.  $2x^2 + 3y^2 = c$

2.  $x^2 + 3y^2 = c$

3.  $3x^2 + y^2 = c$

4.  $x^2 + y^2 = c$

Options :

68634017589. 1

68634017590. 2

68634017591. 3

68634017592. 4

Question Number : 98 Question Id : 6863404442 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

वक्र  $y = ax^3$  के परिवार के लंबकोणीय प्रक्षेपों का पथ है:

1.  $2x^2 + 3y^2 = c$

2.  $x^2 + 3y^2 = c$

3.  $3x^2 + y^2 = c$

4.  $x^2 + y^2 = c$

Options :

68634017589. 1

68634017590. 2

68634017591. 3

68634017592. 4

Question Number : 99 Question Id : 6863404443 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No  
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 4 Wrong Marks : 1

The sequence  $\left\langle \frac{(-1)^n}{n} \right\rangle$  is

1. oscillatory sequence
2. divergent sequence
3. either Cauchy or convergent sequence
4. both Cauchy and convergent

**Options :**

68634017593. 1  
68634017594. 2  
68634017595. 3  
68634017596. 4

**Question Number : 99 Question Id : 6863404443 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

अनुक्रम  $\left\langle \frac{(-1)^n}{n} \right\rangle$  है:

1. दोलनी अनुक्रम
2. अपसारी अनुक्रम
3. या तो कौशी या उपसारी अनुक्रम
4. कौशी तथा उपसारी दोनों

**Options :**

68634017593. 1  
68634017594. 2  
68634017595. 3  
68634017596. 4

**Question Number : 100 Question Id : 6863404444 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

With the help of suitable transform of the independent variable, the differential equation

$$x \frac{d^2 y}{dx^2} + \frac{2dy}{dx} = 6x + \frac{1}{x} \text{ reduces to the form:}$$

1.  $\frac{d^2 y}{dt^2} + 2 \frac{dy}{dt} = 6e^{2t} + 1$

2.  $\frac{d^2 y}{dt^2} + \frac{dy}{dt} = 6e^{2t} + 1$

3.  $\frac{d^2 y}{dt^2} = 6e^{2t} + \log t$

4.  $\frac{d^2 y}{dt^2} = 6e^t + t$

**Options :**

68634017597. 1

68634017598. 2

68634017599. 3

68634017600. 4

**Question Number : 100 Question Id : 6863404444 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 4 Wrong Marks : 1**

स्वतंत्र चर के सही रूपांतरण की मदद से, अवकल समीकरण  $x \frac{d^2 y}{dx^2} + \frac{2dy}{dx} = 6x + \frac{1}{x}$  के समानयन का रूप है:

1.  $\frac{d^2 y}{dt^2} + 2 \frac{dy}{dt} = 6e^{2t} + 1$

2.  $\frac{d^2 y}{dt^2} + \frac{dy}{dt} = 6e^{2t} + 1$

3.  $\frac{d^2 y}{dt^2} = 6e^{2t} + \log t$

4.  $\frac{d^2 y}{dt^2} = 6e^t + t$

**Options :**

68634017597. 1

68634017598. 2

68634017599. 3

68634017600. 4