

PREVIEW QUESTION BANK

Module Name : SCPH16 Mathematics - ENG
Exam Date : 27-Oct-2023 Batch : 09:30-12:30

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negativ Marks
Objective Question				
1	982001	A good lab experiment report should be organized into 1. introduction, results and discussion/conclusions 2. introduction, methodology, results and discussion/conclusions 3. methodology, results, discussion and conclusions 4. methodology, results and conclusions A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
Objective Question				
2	982002	Which among the following is correct phrase to write in the methodology section of research paper? 1. Add one gram of NaOH 2. We added one gram of NaOH 3. One gram of NaOH was added 4. Then add one gram of NaOH A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
Objective Question				
3	982003	Which of the following is not a reference management tool? 1. Paperpile 2. Mendley 3. Zotero 4. Prism A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0

Objective Question

4	982004	Which of the following is a S I unit to represent amount of a substance? 1. Molar 2. Mole 3. Litre 4. Atom A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

5	982005	Which among the following is not a statistical package? 1. SPSS 2. R 3. Metlab 4. MS Excel A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

6	982006	Among the following enzyme activities of an enzyme which one represent the most accurate and precise value 1. 12.4±0.6 2. 12.1±0.1 3. 12.0±0.6 4. 12.2±0.4 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

7	982007		4.0	0.0
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ENTREZ is a

1. search engine
2. database
3. tool to compare keywords
4. ontology assignment tool

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

8	982008	4.0	0.0
Which among the following is a plagiarism detection software?			
1. Turnitin 2. Grammerly 3. Quilbot 4. Mendley			
A1 : 1			
A2 : 2			
A3 : 3			
A4 : 4			

Objective Question

9	982009	4.0	0.0
Which of the following doesn't constitute plagiarism?			
1. forgetting to include a source in bibliography 2. paraphrasing without attribution 3. using someone else's work to build hypothesis 4. using someone's idea/work without giving proper credit			
A1 : 1			
A2 : 2			
A3 : 3			
A4 : 4			

Objective Question

10	982010	4.0	0.0

Describing somebody else's work by changing the words and restructuring the sentences is called as

1. paraphrasing
2. moderation
3. plagiarism
4. remodification

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

11	982011	A value that can be counted, measured or categorized is called as 1. variable 2. random sample 3. population 4. sample A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

12	982012	Which of the following will follow binomial distribution? 1. Height of students in a class 2. Number of people in which disease is cured by taking a drug 3. Number of accidents on a road 4. Rolling a dice A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

13	982013		4.0	0.0
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		Mode is 1. value in the middle when numbers have been listed in a rank order 2. Most frequently occurring term 3. value in the middle when numbers have been listed in ascending order only 4. value in the middle when numbers have been listed in descending order only A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
14	982014	Protein estimation using a standard curve is an example of 1. regression analysis 2. correlation analysis 3. cause and effect assertion 4. precision and accuracy A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
Objective Question				
15	982015	What are the condition in which Type-1 error occurs? 1. The null hypothesis get accepted even if it is false 2. The null hypothesis get rejected even if it is true 3. Both the null and alternative hypothesis are rejected 4. Both the null and alternative hypothesis are accepted A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
Objective Question				
16	982016		4.0	0.0

Which among the following can't be used to find related work of a research paper?

1. references mentioned in the paper
2. papers that have been cited the research paper
3. by H-index of authors
4. using MeSH term

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

17 982017 4.0 0.0

Online journals are considered better than the print only journals because

1. most online journals are open access
2. online journals are easy to access
3. content of online journals can be searched more easily
4. low cost of publication

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

18 982018 4.0 0.0

What is the difference between a barplot and histogram?

1. Barplot is for catagorical data while histogram is for continuous data
2. Barplot is for continuous data while histogram is for catagorical data
3. Barplot is for continuous data while histogram is for discrete data
4. Barplot is for catagorical data while histogram is not for discrete data

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

19 982019 4.0 0.0

Which of the following option is wrong in context of the following statement?

To reject the null hypothesis at 95% confidence limit the calculated probability that the two samples belong to the same population must fall below

1. 1 in 20
2. 5%
3. $p < 0.05$
4. $p < 0.5$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

20	982020	Which of the following is not a part of research	4.0	0.0
1. Defining and redefining problem 2. Hypothesis formulation 3. Making deduction 4. Writing report				
A1 : 1				
A2 : 2				
A3 : 3				
A4 : 4				

Objective Question

21	982021	Which among the following is FALSE in context of qualitative research?	4.0	0.0
1. It is highly replicable 2. The outcome is based on subjective experiences 3. The conclusion is difficult to generalize in a large population 4. The outcome is prone to misrepresentation				
A1 : 1				
A2 : 2				
A3 : 3				
A4 : 4				

Objective Question

22	982022		4.0	0.0
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Development of COVAXIN (covid vaccine) is an example of

1. Exploratory research
2. Experimental research
3. Applied research
4. Qualitative research

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

23 982023 4.0 0.0

Experiments on which of the following doesn't require ethical approval

1. Human
2. All vertebrate Animals
3. Bacteria
4. Monkeys

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

24 982024 4.0 0.0

Which of the following doesn't require literature review?

1. Title
2. Introduction
3. Discussion
4. Conclusion

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

25 982025 4.0 0.0

Which of the following is not a citation style?

1. MLA
2. PLA
3. APG
4. CMS

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

26 982026

4.0 0.0

- (A). The main purpose of descriptive research is to report the state of affair as it exists today.
- (B). The main purpose of analytical research is to use facts or information already available and analyze them to make critical evaluation of the situation.
- (C). Conceptual research is data-based research, whose conclusion can be verified by experimentation.
- (D). Emperical research is data-based research, whose conclusion can be verified by experimentation.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

27 982027

4.0 0.0

- (A). In random sampling each item has equal chance of being selected.
- (B). In systematic sampling each n th item is selected.
- (C). Cluster sampling involves grouping the data into cluster and selecting an individual from the cluster
- (D). Stratified sampling is used for homogenous data.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

28	982028	(A). When a sample is exposed to usual condition, it is called as control group. (B). When a sample is exposed to some treatment, it is called as experimental group (C). The main purpose of exploratory research is to formulate a problem for more precise investigation. (D). The main purpose of experimental research is to check the validity of a hypothesis. Choose the correct answer from the options given below: 1. (A), (B) and (C) only. 2. (A), (B) and (D) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only.	4.0	0.0
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

29	982029	(A). Number mentioned at the jersey of football player is an example of nominal scale (B). Nominal scale is random. (C). In the nominal scale no relationship can be derived among the items. (D). Ranking of students on the basis of marks obtained by them is an example of ordinal scale. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only.	4.0	0.0
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

30	982030		4.0	0.0
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- (A). The data that we want to ideally analyze is called as population.
- (B). The data on which we work and assume it to be a representative of the complete data is called as sample.
- (C). The larger is the sample size greater is the variability
- (D). All samples must have identical mean, median and mode.
- Choose the **correct** answer from the options given below:

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

31 982031

4.0 0.0

- (A). A frequency distribution is said to be positively skewed if the frequency curve has a longer tail towards the higher values.
- (B). A frequency distribution is said to be negatively skewed if the frequency curve has a longer tail towards the lower values.
- (C). For positively skewed distribution Mean>median>mode
- (D). Negatively skewed distribution has no effect
- Choose the **correct** answer from the options given below:

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

32 982032

4.0 0.0

- (A). Information collected for the first time is called as primary data.
- (B). Information that is already available is called as secondary data.
- (C). Observation, interview, questionnaire and feedback forms are tools to collect primary data.
- (D). Observation, interview, questionnaire and feedback forms are tools to collect secondary data.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

33 982033

4.0 0.0

Match List-I with List-II

List-I	List-II
Process	Meaning
(A). Processing of data	(I). Simplification of recording answers
(B). Editing	(II). Grouping the data on the basis of some common characteristics
(C). Coding	(III). Accuracy, completeness, uniformity and consistency of gathered information is examined
(D). Classification	(IV). Process to eliminate any error or mistake

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

34 982034

4.0 0.0

Match List-I with List-II

List-I	List-II
Type	Attribute
(A). Linear correlation	(I). relationship between three or more variables are determined
(B). Multiple correlation	(II). relationship between two variables
(C). Correlation coefficient	(III). Strength of association
(D). Scatter diagram	(IV). change in one variable is equal to the change in another variable

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

35 982035

4.0 0.0

Match List-I with List-II

Type of test	Used for
(A). Z-test	(I). Comparison of variance of two independent samples
(B). T-test	(II). Significance for mean
(C). Chi-square	(III). Significance of difference between the means of two samples
(D). F-test	(IV). Comparison of sample variance to a theoretical population variance

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

36 982036

4.0 0.0

Match **List-I** with **List-II**

List-I	List-II
Type of plagiarism	Definition
(A). Mosaic Plagiarism	(I). the writer tacks on a new opening part of the first sentence in the hope that the reader won't notice that the rest of the paragraph is simply copied from the source.
(B). Paraphrase	(II). verbatim copying of sentence(s)
(C). Word-for-Word	(III). phrases and terms are lifted from the source and sprinkled in among your own prose
(D). Exact	(IV) substituting your own words and sentences for those of the original

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

37 982037

4.0 0.0

Match List-I with List-II

List-I	List-II
Type of intellectual property right	Description
(A). patent	(I). Ornamental or aesthetic aspect of a useful article, which must appeal to the sense of sight and may consist of the shape and/or pattern and/or colour of article.
(B). trade mark	(II). Right given by the law to creators of literary, dramatic, musical and artistic works and producers of cinematograph films and sound recordings.
(C). Copyright	(III). Visual symbol/word that indicate the source of the goods, a signature, name, device, label, numerals, or combination of colours used, or services, or other articles of commerce to distinguish it from other similar goods or services originating from another
(D). Industrial design	(IV). scientific inventions having potential for industrial application are being protected

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

38 982038

- (A). Patenting is done to keep the invention secret
- (B). Patent is supposed to promote research
- (C). Only a very few patents can make money
- (D). Each country has their own patent rule

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0 0.0

Objective Question

39	982039	Arrange the steps in order (A). Grant of patent (B). Registration of patent application (C). Filing a patent (D). Patent search process Choose the correct answer from the options given below: 1. (C), (D), (B), (A). 2. (A), (B), (C), (D). 3. (B), (A), (D), (C). 4. (C), (B), (D), (A). A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

40	982040	(A). Impact factor of a journal for year x of a journal = A/B. A = number of times articles published in years $x - 1$ and $x - 2$ were cited by indexed journals in year x. B = total number of 'citable items' published by that journal in years $x - 1$ and $x - 2$. (B). An individual has H-index h if h of N papers have at least h citations each, and remaining $(N - h)$ papers have not more than h citations each. (C). G-index: Given a set of articles ranked in decreasing order of the number of citations that they received, the G-index is the (unique) largest number g such that the top g articles together received at least g^2 citations (D). An individual has H-index h if $(N - h)$ papers have at least h citations each, and the remaining h of N papers have less than h citations each. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

41	982041		4.0	0.0
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Which of the following are methods of Dissemination of Research findings?

- A. Research Paper publishing
- B. Poster presentation in a conference
- C. Discussion among family/friends
- D. Oral presentation in Conference

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

42 982042

4.0 0.0

Arrange the following in increasing order.

- (A). micro Litre
- (B). milli Litre
- (C). Litre
- (D). Nano Litre

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

- 1. (D), (A), (B), (C).
- 2. (A), (B), (C), (D).
- 3. (B), (A), (D), (C).
- 4. (C), (B), (D), (A).

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

43 982043

4.0 0.0

Which of the following are part of the current trend termed a Onehealth approach?

- (A). human diseases
- (B). environmental health
- (C). veterinary health
- (D). antibiotic resistance

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

44	982044	Which of the following is NOT part of Bibliography? (A). Footnotes (B). Personal communication (C). References (D). Webpage Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (B) and (D) only. 3. (A), (C) and (D) only. 4. (B) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

45	982045		4.0	0.0
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Which of the following institutions is NOT involved in formulating guidelines related to human/animal ethics and Biosafety?

- (A). CSIR (Council of Scientific and Industrial Research)
- (B). DBT (Department of Biotechnology)
- (C). ICMR (Indian Council of Medical Research)
- (D). ICSSR (Indian Council of Social Science Research)

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

46	982046		4.0	0.0
The main functions of Data Analysis are: (A).Researcher can analyse data for thinking about the problem (B).Researcher study the original records of data before analysis (C). Researcher analyze available data for examining statement of problem (D).Researcher can not explore new facts about problem Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (B), (C) and (D). 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4				

Objective Question

47	982047		4.0	0.0

Which among the following countries have been successful in sending probe to the South pole of the moon?

- (A). America
- (B). France
- (C). Russia
- (D). India

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

48	982048	STEM cell research holds great potential to cure degenerative diseases. Which of the following sources can be used as a source of STEM cells for an individual? (A). Placenta (B). Milk tooth pulp (C). Nails (D). Hair Choose the correct answer from the options given below: 1. (A) and (B). 2. (A), (B) and (D) only. 3. (A), (B) and (C) only. 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

49	982049		4.0	0.0
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A reseracher received a paper for review, which he rejected citing lack of experimenal clarity. He however submitted the same data for publication under his own name. This will be considered an act of

- (A). Plagiarism
- (B). Data Fabrication
- (C). Ethical misconduct
- (D). Data Falsification

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

50	982050	Correlation coeficient was calculated for two variables in an experiment. Which of the following can be a valid value? (A). -1 (B). + 1 (C). + 2.5 (D). - 2.5 Choose the correct answer from the options given below: 1. (A) and (B) only. 2. (A) and (D) only. 3. (A), (B), (C) and (D). 4. (B) and (C) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

51	982051		4.0	0.0
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The cardinality $|\mathbb{Q}|$ of the set of all rational numbers is related with the cardinality $|\mathbb{N}|$ of all natural numbers by

1. $|\mathbb{Q}| < |\mathbb{N}|$
2. $|\mathbb{Q}| > |\mathbb{N}|$
3. $|\mathbb{Q}| = |\mathbb{N}|$
4. $|\mathbb{N}| < |\mathbb{Q}| < 2|\mathbb{N}|$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

52 982052

The series $\sum_{n=1}^{\infty} x^n$ is

1. convergent on $[0, 1]$
2. uniformly convergent on $[0, 1)$
3. convergent but not uniformly convergent on $[0, 1)$
4. uniformly convergent on $[0, 1]$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

53 982053

The function $f : \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(t) = \begin{cases} t \left(e^{\frac{1}{t}} - e^{-\frac{1}{t}} \right) & , t \neq 0 \\ \left(\frac{1}{e^t} + e^{-\frac{1}{t}} \right) & , t = 0 \end{cases}$ is

1. not continuous at $t = 0$
2. differentiable at $t = 0$
3. not continuous but differentiable at $t = 0$
4. continuous but not differentiable at $t = 0$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

54 982054

The shortest distance from origin to the curve $x^2 + 8xy + 7y^2 = 225, z = 0$ is

1. 0
2. 15
3. 25
4. 15/2

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

55 982055

The number of holomorphic functions defined on the open unit disc of the complex plane for which $f(1/n) = 3^{-n}, n = 2, 3, \dots$ is

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0 0.0

Objective Question

56 982056

Which one of the following entire functions is not a constant?

1. an entire function which is bounded
2. an entire function whose real part is positive
3. an entire function whose real part is bounded
4. an entire function f for which $|f(z)/z|$ is bounded outside $|z| > \epsilon$ for some $\epsilon > 0$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0 0.0

Objective Question

57 982057

4.0 0.0

Which one of the following holomorphic functions is not angle preserving at $z = 1$?

1. $f(z) = z^2$
2. $f(z) = 2z + 3$
3. $f(z) = (z - 1)^2$
4. $f(z) = 1/z$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

58 982058

4.0 0.0

The curve which extremizes the functional $I(y) = \int_2^3 \frac{\sqrt{1+(y'(x))^2}}{x} dx$, $y(2) = 0, y(3) = 1$ is a portion of

1. an ellipse
2. a parabola
3. a hyperbola
4. a circle

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

59 982059

4.0 0.0

The image of half plane $y \geq 0$ under the transformation $z \mapsto \frac{z-1}{z+1}$ onto w-Plane(u-vPlane) is

1. half plane $v \geq 0$.
2. a line parallel to the u-axis
3. a line parallel to the u-axis
4. a unit circle in w-plane

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

60 982060

4.0 0.0

The value of $\int_C \frac{\sin z}{z^{2023}} dz$ along the unit circle C centred at the origin in the counter-clock wise direction is

1. 0
2. $\frac{2\pi i}{2022!}$
3. $\frac{2\pi i}{2023!}$
4. $\frac{2\pi i}{2024!}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

61	982061	The number of fixed points of any fractional linear transformation cannot be 1. 0 2. 1 3. 2 4. 3 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

62	982062	Consider the following topological subspaces of the topological space $\mathbb{R}^2$ equipped with the usual topology: $A = \{(x, y) \in \mathbb{R}^2 : x^2 + y^2 = 1\}$, $B = \{(x, y) \in \mathbb{R}^2 : x + y = 1\}$, $C = \{(x, y) \in \mathbb{R}^2 : xy = 0\}$, Then which one of the following statements is true: 1. A is homeomorphic to B but not to C 2. B is homeomorphic to C but not to A 3. C is homeomorphic to A but not to B 4. All of A, B, C are homeomorphic to each other. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

63	982063		4.0	0.0
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Suppose that W_1, W_2, W_3 are 8-dimensional distinct subspaces of Euclidean 9-space $\mathbb{R}^9$. If $W = W_1 \cap W_2 \cap W_3$, then

1. W is not a subspace of $\mathbb{R}^9$
2. $\dim(W) \geq 6$
3. $\dim(W) \leq 3$
4. $\dim(W) = 4$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

64 982064

Let V be a 3-dimensional vector space over the field $\mathbb{Z}/3\mathbb{Z}$ of three elements. Then, the number of distinct 1-dimensional subspaces of V is

1. 13
2. 14
3. 15
4. 16

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

65 982065

Let V be a finite dimensional real vector space, and $T: V \rightarrow V$ a linear transformation such that $\text{Rank}(T^2) = \text{Rank}(T)$. Then which one of the following statements is not true?

1. $\text{Ker}(T^2) = \text{Ker}(T)$
2. $\text{Range}(T^2) = \text{Range}(T)$
3. $\text{Ker}(T) \cap \text{Range}(T) = \{0\}$
4. $\text{Ker}(T) = \text{Range}(T)$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

66 982066

Which one of the following is a metric on the set of real valued continuous functions defined on the closed interval $[0,1]$?

1. $d(f, g) = \sup\{|f(x) - g(x)| : x \in [0,1]\}$
2. $d(f, g) = \inf\{|f(x) - g(x)| : x \in [0,1]\}$
3. $d(f, g) = \sup\{|f(x) \cdot g(x)| : x \in [0,1]\}$
4. $d(f, g) = \int_0^1 |f(x) + g(x)| dx$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

67 982067

4.0 0.0

Consider the following subspace of $\mathbb{R}^2$, equipped with the usual topology, given by

$$A = \{(x, y) : (x + 1)^2 + y^2 \leq 1\} \cup \left\{ \left(x, x \sin \frac{1}{x} \right) : x > 0 \right\}.$$

Then

1. A is connected
2. A is compact
3. A is not compact but bounded
4. A is bounded

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

68 982068

4.0 0.0

Which one of the following curves is not a regular curve?

1. $\gamma(t) = (t^2, t^3)$
2. $\gamma(t) = (t, t^2)$
3. $\gamma(t) = (a \cos t, a \sin t), a \neq 0$
4. $\gamma(t) = (a \cosh t, a \sinh t), a \neq 0$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

69 982069

4.0 0.0

The maximum number of independent entries of a real symmetric matrix of finite order n is

1. n
2. n^2
3. $\frac{n(n+1)}{2}$
4. $\frac{n(n-1)}{2}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

70	982070	4.0	0.0
Which of the following is not homeomorphic to all of the remaining ones: (A) surface of a cube (B) a sphere (C) an ellipsoid (D) a torus 1. (A) 2. (B) 3. (C) 4. (D) A1 : 1 A2 : 2 A3 : 3 A4 : 4			

Objective Question

71	982071	4.0	0.0
Which one of the following subsets of $\mathbb{R}^2$ is not compact with respect to the subspace topology? 1. $\{(x, y) \in \mathbb{R}^2 : x^2 + y^2 \leq 1\}$ 2. $\{(x, y) \in \mathbb{R}^2 : x^2 + y^2 \geq 1\}$ 3. $\{(x, y) \in \mathbb{R}^2 : x^2 + y^2 = 1\}$ 4. $\{(x, y) \in \mathbb{R}^2 : x + y = 1\}$ A1 : 1 A2 : 2 A3 : 3 A4 : 4			

Objective Question

72	982072	4.0	0.0
Which one of the following regular surfaces has positive Gaussian curvature at each of its points? 1. an ellipsoid 2. a right circular cylinder 3. a hyperboloid of one sheet 4. a torus A1 : 1			

A2 : 2

A3 : 3

A4 : 4

Objective Question

73	982073	Which one of the following curve is parametrize by arc length parameter?	4.0	0.0
1. $\gamma(t) = (t^2, t)$ 2. $\gamma(t) = (t, t)$ 3. $\gamma(t) = (a \sin t, a \cos t), a \neq 1$ 4. $\gamma(t) = \left(a \sin \frac{t}{a}, a \cos \frac{t}{a}\right), a \neq 0$				
A1 : 1				
A2 : 2				
A3 : 3				
A4 : 4				

Objective Question

74	982074	Which one of the following equations is the class equation of a group of order 10?	4.0	0.0
1. $1 + 1 + 1 + 2 + 5 = 10$ 2. $1 + 1 + 2 + 2 + 2 + 2 = 10$ 3. $1 + 2 + 2 + 5 = 10$ 4. $1 + 2 + 3 + 4 = 10$				
A1 : 1				
A2 : 2				
A3 : 3				
A4 : 4				

Objective Question

75	982075	When 2^{2023} is divided by 31, the remainder is	4.0	0.0
1. 6 2. 7 3. 8 4. 9				
A1 : 1				
A2 : 2				
A3 : 3				
A4 : 4				

Objective Question

76	982076	Which of the following is/are correct? (A). Newton's second law of motion follows from the Hamilton's principle. (B). Hamilton's principle follows from the D'Alembert's principle. (C). Hamilton's principle follows from Lagrange's equations. (D). Hamilton's principle is usually not applicable to non-holonomic system unless a relation connecting the differentials of generalized coordinates is given. Choose the correct answer from the options given below: (A) and (C) only. (A), (B) and (D) only. (A), (B), (C) and (D). (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

77	982077	Given below are two statements: Statement (I): The partial differential equation $5u_{xx} + 6u_{xy} + 2u_{yy} = 0$ is elliptic. Statement (II): The partial differential equation $2u_{xx} + 6u_{xy} + 2u_{yy} = 0$ is hyperbolic. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. Choose the correct answer from the options given below: - Both Statement (I) and (II) are true - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

78	982078		4.0	0.0
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Consider the ordinary differential equation $y' = (y - 1)(y - 3)(y - 5)$. Which of the following is/are true

(A). If $y(0) = 2$ then y is increasing.

(B). $y(x) = 1$, and $y(x) = 5$ are equilibrium solution .

(C). $y(x) = 3$ is stable solution .

(D). $y(x) = 1$ is stable solution.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

79 982079

4.0 0.0

Given below are two statements:

Statement (I): A simple group has no proper normal subgroup.

Statement (II): If G is a simple group of order 168 then the number of subgroup of order 7 is 8.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

80 982080

4.0 0.0

Given below are two statements:

Statement (I): The set of all Mobius transformations forms an abelian group under product of transformations.

Statement (II): Mobius transformation $T(z) = \frac{az + b}{cz + d}$: where a, b, c, d being complex constants then $ad - bc = 0$.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

81 982081

4.0 0.0

Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : The function $f(z) = e^{1/z}$ has an essential singularity at $z = 0$.

Reason (R) : A rational complex function has no essential singularity.

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

1. Both (A) and (R) are correct and (R) is the correct explanation of (A).
2. Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).
3. (A) is correct but (R) is not correct.
4. (A) is not correct but (R) is correct.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

82 982082

4.0 0.0

Given below are two statements:

Statement (I): The Cantor set is nowhere dense.

Statement (II): The Cantor set is perfect.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

83	982083	For the integral equation $\varphi(x) - \frac{e}{2} \int_{-1}^1 x e^t \varphi(t) dt = f(x)$ the two statements are given below: Statement (I): There exists a continuous function $f: [-1, 1] \rightarrow (0, \infty)$ for which solution exists. Statement (II): For $f(x) = e^{-x}(1 - 3x^2)$, a solution exists. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

84	982084	For the integral equation $y(x) = 1 + \lambda \int_0^{\frac{\pi}{2}} \cos(x-t) y(t) dt$ the two statements are given below: Statement (I): A unique solution for $\lambda \neq \frac{4}{\pi+2}$ Statement (II): A unique solution for $\lambda \neq \frac{4}{\pi-2}$ In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

85	982085		4.0	0.0
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For the continuous function f from the closed interval $[0,1]$ into itself and consider the iteration $x_{n+1} = f(x_n)$, the two statements are given below:

Statement (I): The function $f = \frac{x^2}{4}$ will yield a fixed point for f .

Statement (II): The function $f = \frac{x^2}{8}$ will yield a fixed point for f .

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

86 982086

For the iteration $x_{n+1} = \frac{1}{2} \left(x_n + \frac{2}{x_n} \right), n \geq 0$ for a given $x_0 \neq 0$. The two statements are given below:

Statement (I): x_n converges to $\sqrt{2}$ with rate of convergence 1.

Statement (II): x_n converges to $\sqrt{2}$ with rate of convergence 2.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

87 982087

If the function $f(x) = \sqrt{2+x}$ for $x \geq -2$ and the iteration $x_{n+1} = f(x_n)$, $n \geq 0$ for $x_0 = 1$, then the sequence of iterates converges to

- (A). $\sqrt{2}$
- (B). -1
- (C). 2
- (D). 1

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

88	982088	If $\{f_n\}$ is a sequence of real valued differentiable functions on $[a, b]$ such that $f_n(x) \rightarrow f(x)$ as $n \rightarrow \infty$ for every $x \in [a, b]$ and for some Riemann-integrable function $f: [a, b] \rightarrow \mathbb{R}$, then for two statements are given below: Statement (I): If $\{f_n\}$ converges uniformly then $\int_a^b f_n(x) dx \rightarrow \int_a^b f(x) dx$ Statement (II): If $\{f_n\}$ converges uniformly then f is differentiable. In light of the above statements, choose the most appropriate answer from the options given below. 1. Both Statement (I) and Statement (II) are true. 2. Both Statement (I) and Statement (II) are false. 3. Statement (I) is true but Statement (II) is false. 4. Statement (I) is false but Statement (II) is true.	4.0	0.0
		A1 : 1 A2 : 2 A3 : 3 A4 : 4		

Objective Question

89	982089		4.0	0.0

Match **List-I** with **List-II**

List-I	List-II
(A). $f(x)$ is continuous on $[-1,1]$	(I). $\exists a$
(B). $f(x)$ is continuous on $[-1,1]$ and $f(-1)f(1) \leq -1$	(II). $f(x)$
(C). $f(x)$ is differentiable on $[-1,1]$, $f(-1)=f(1)$	(III). $\exists \epsilon$
(D). $f(x)$ is differentiable on $[-1,1]$ and $f'(x) > 0$ for all $x \in [-1,1]$	(IV). $f'(x)$

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

- (A) - (II), (B) - (I), (C) - (IV), (D) - (III)
- (A) - (II), (B) - (I), (C) - (III), (D) - (IV)
- (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
- (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

90 982090

4.0 0.0

Consider (X, d) is a metric space. Let d_1 and d_2 be defined as follows

$$d_1(X, d) = \frac{d(X, d)}{1+d(X, d)}, \quad d_2(X, d) = \min\{1, d(X, d)\}.$$

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

- d_1 is a metric on X
- d_1 is not metric on X
- d_2 is a metric on X
- d_2 is not metric on X

- (A) and (C) only.
- (B) and (D) only.
- (A) and (D) only.
- (B) and (C) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

91	982091	For differentiable function $f: \mathbb{R}^2 \rightarrow \mathbb{R}$, consider the following statements Statement (I): If f is homogeneous of degree 2 then $x \frac{\partial f}{\partial x} + y \frac{\partial f}{\partial y} = 2f$ Statement (II): If $u = \sin^{-1} \frac{x+2y+3z}{x^8+y^8+z^8}$ then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z} = -7 \tan u$ In light of the above statements, choose the most appropriate answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

929820924.00.0

For the group $\mathbb{Z}/12\mathbb{Z}$ match **List-I** with **List-II**

List-I	List-II
Element	Order of element
(A). 2	(I). 12
(B). 3	(II). 3
(C). 4	(III). 4
(D). 5	(IV). 6

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

1. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)

2. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

3. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)

4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

93	982093		4.0	0.0
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Match **List-I** with **List-II**

List-I	List-II
Surface	Example
(A). A regular surface	(I). Möbius band
(B). An orientable surface with boundary	(II). A sphere
(C). A non-orientable surface with boundary	(III). Klein bottle
(D). A non-orientable surface without boundary	(IV). A right circular cylinder of unit height

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

94 982094

4.0 0.0

For the function $f(x): \mathbb{R} \rightarrow \mathbb{R}$ defined by

$$f(x) = \begin{cases} \sin x & : x \text{ is a rational} \\ \cos x & : x \text{ is an irrational} \end{cases}$$

the two statements are given below:

Statement (I): $f(x)$ is continuous on $\{n\pi + \frac{\pi}{4}, n \in \mathbb{I}, \mathbb{I} \text{ is set of integers}\}$ Statement (II): $f(x)$ is not continuous at $x = 0$.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

95	982095	For a bounded Riemann-integrable function $f: [0,1] \rightarrow \mathbb{R}$ and a continuous function $g: \mathbb{R} \rightarrow \mathbb{R}$, the two statements are given below: Statement (I): the function $g \circ f$ is continuous. Statement (II): the function $g \circ f$ is Riemann-integrable In light of the above statements, choose the most appropriate answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

96	982096	Given below are two statements: Statement (I): For a bijective differentiable function $f: [0,2] \rightarrow [0,2]$, there always exists a point $c \in [0,2]$ such that $f(c) = c$. Statement (II): For a bijective differentiable function f from the closed unit disc to itself, there exists a point (x,y) in the closed unit disc such that $f(x,y) = (x,y)$. In light of the above statements, choose the most appropriate answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	0.0
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Objective Question

97	982097		4.0	0.0
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For a non-zero 2×2 real matrix A satisfying $\text{Det}(A + I) = 1 + \text{Det}(A)$, consider the following two statements:

Statement (I): The matrix A is traceless.

Statement (II): The matrix A is singular.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

98 982098

4.0 0.0

Let E be a non-measurable subset of $[0, 2023]$. For the function $f: [0, 2023] \rightarrow \mathbb{R}$ defined by

$$f(t) = \begin{cases} -2023, & t \in E \\ 2023, & t \notin E \end{cases},$$

the two statements are given below:

Statement (I): f is measurable

Statement (II): $|f|$ is measurable

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

99 982099

4.0 0.0

Given below are two statements:

Statement (I): A catenoid is a minimal surface.

Statement (II): A helicoid is not a minimal surface.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

100 982100

Given below are two statements:

Statement (I): All eigen-values of a real symmetric matrix are real.

Statement (II): In Euclidean plane, the reflection about a straight line has two eigen-values of opposite sign.

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

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0 0.0