

Banaras Hindu University

Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

Question Paper Name :	895 904 16th Mar 2022 Shift 3
Subject Name :	895 904
Creation Date :	2022-03-16 19:31:36
Duration :	120
Total Marks :	300
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
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Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	No
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

RET_Mathematics

Group Number :	1
Group Id :	593452140
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Research_Methodology

Section Id :	593452275
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	40
Number of Questions to be attempted :	40
Section Marks :	120
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	593452303
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 59345215548 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

What is a Research Design ?

शोध अभिकल्प क्या है ?

Options :

A way of conducting research that is not grounded in theory.

1. ✘ शोध संचालन का एक तरीका, जो सिद्धांत पर आधारित न हो।

The choice between using qualitative or quantitative methods.

2. ✘ गुणात्मक या परिमाणात्मक पद्धतियों के उपयोग के मध्य चुनाव।

The style in which you present your research findings e.g. a graph.

3. ✘ वह शैली जिसमें आप अपने शोध खोजों को प्रस्तुत करते हैं; जैसे - ग्राफ।

A framework for every stage of the collection and analysis of data.

4. ✔ आँकड़ों के संकलन और विश्लेषण के प्रत्येक स्तर के लिए एक ढाँचा।

Question Number : 2 Question Id : 59345215549 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The study design of collecting data at a particular point of time is called :

किसी विशेष समय बिन्दु पर आँकड़े संग्रहण करने वाला अध्ययन अभिकल्प कहलाता है :

Options :

Cohort study

1. ✘ सहगण अध्ययन (कोहार्ट स्टडी)

Trend study

2. ✘ प्रवृत्ति अध्ययन

Cross sectional study

3. ✔ प्रतिनिध्यात्मक (समकालीन) अध्ययन

Longitudinal study

4. ✘ अनुदैर्घ्य (दीर्घकालिक) अध्ययन

Question Number : 3 Question Id : 59345215550 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The value of middle position in a distribution of values is called :

मूल्यों के वितरण में मध्य स्थिति का मान कहलाता है :

Options :

Mean

1. ✘ माध्य

Median

2. ✔ माध्यिका

Mode

3. ✖ बहुलक

Mid-point

4. ✖ मध्य-बिन्दु

Question Number : 4 Question Id : 59345215551 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

In order to pursue research, which of the following is priorly required ?

शोध को आगे बढ़ाने के लिए, निम्नलिखित में से किसकी पहले आवश्यकता होती है ?

Options :

Develop a research design

1. ✖ शोध अभिकल्प का विकास

Formulate research questions

2. ✔ शोध प्रश्नों का निर्माण

Deciding about the data analysis procedure

3. ✖ आंकड़ा विश्लेषण प्रक्रिया के बारे में निर्णय लेना

Formulating a research hypothesis

4. ✖ शोध परिकल्पना का निर्माण करना

Question Number : 5 Question Id : 59345215552 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which of the following is a basis of the quality of a research journal ?

निम्नलिखित में से किसी शोध पत्रिका की गुणवत्ता का आधार कौन है ?

Options :

Impact factor

1. ✓ प्रभाव गुण

h-index

2. ✘ एच-इंडेक्स

g-index

3. ✘ जी-इंडेक्स

i10-index

4. ✘ i10-इंडेक्स

Question Number : 6 Question Id : 59345215553 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If the population is heterogeneous, which one of the following probability sampling methods will be suitable ?

यदि जनसंख्या विजातीय है, तो निम्नलिखित में से कौन-सी सम्भाव्यता प्रतिदर्श विधि अधिक उपयुक्त होगी ?

Options :

- 1. ✘ Sequential sampling
क्रमानुसार प्रतिचयन
- 2. ✘ Quota sampling
कोटा प्रतिचयन
- 3. ✘ Double sampling
दोहरा प्रतिचयन
- 4. ✔ Stratified sampling
स्तरीकृत प्रतिचयन

Question Number : 7 Question Id : 59345215554 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Manipulation is a part of :

प्रहस्तन का एक हिस्सा है।

Options :

- 1. ✘ Historical research
ऐतिहासिक शोध

- Fundamental research
2. ✖ मौलिक शोध
- Descriptive research
3. ✖ वर्णनात्मक शोध
- Experimental research
4. ✔ प्रायोगिक शोध

Question Number : 8 Question Id : 59345215555 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

p-value stands for :

पी-मूल्य से तात्पर्य है :

Options :

- Probability value
1. ✔ सम्भाव्य मूल्य
- Preference value
2. ✖ वरीयता मूल्य
- Pre-determined value
3. ✖ पूर्व-निर्धारित मूल्य

Prescribed value

4. ✖ नियत मूल्य

Question Number : 9 Question Id : 59345215556 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

R^2 is known as the :

R^2 को के रूप में जाना जाता है।

Options :

Coefficient of determination

1. ✔ निर्धारण का गुणांक

Multiple correlation coefficient

2. ✖ बहु-सहसम्बन्ध गुणांक

Partial correlation coefficient

3. ✖ आंशिक सहसम्बन्ध गुणांक

Semi-partial correlation coefficient

4. ✖ अर्ध-आंशिक सहसम्बन्ध गुणांक

Question Number : 10 Question Id : 59345215557 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Rejection of null hypothesis, when it is true, leads to :

शून्य परिकल्पना अस्वीकृत हो जाये जबकि यह सत्य है को इंगित करती है।

Options :

Sampling Error

1. ✖ प्रतिचयन त्रुटि

Type II Error

2. ✖ टाइप II त्रुटि

Type I Error

3. ✔ टाइप I त्रुटि

Estimation Error

4. ✖ अनुमान त्रुटि

Question Number : 11 Question Id : 59345215558 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which of the following is first stage in Grounded Theory data analysis :

निम्नलिखित में से ग्राउंडेड थ्योरी के आँकड़ा विश्लेषण का प्रथम चरण कौन-सा होता है ?

Options :

Examination

1. ✖ परीक्षण

Open coding

2. ✔ खुली कूट संकेतन

Retardation

3. ✖ अवरोध

Comparison

4. ✖ तुलना

Question Number : 12 Question Id : 59345215559 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The area of the rejection region for a two-tailed test in comparison with area of the one-tailed test for the same level of significance will be :

सार्थकता के समान स्तर के लिए एक-पुच्छीय परीक्षण के अस्वीकृति क्षेत्र की तुलना में द्वि-पुच्छीय परीक्षण का क्षेत्र :

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

Smaller

1. छोटा होगा

- Same
2. समान होगा
- Larger
3. बड़ा होगा
- One-fourth
4. एक चौथाई होगा

Question Number : 13 Question Id : 59345215560 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Basic research is :

मौलिक शोध होता है :

Options :

- Practical and descriptive
1. ✖ व्यावहारिक और वर्णनात्मक
- Client-driven
2. ✖ ग्राहक-प्रेरित
- Expands current knowledge
3. ✔ वर्तमान ज्ञान का विस्तार करने वाला
- Advancement of technology
4. ✖ प्रौद्योगिकी में उन्नति लाने वाला

Question Number : 14 Question Id : 59345215561 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The technique in which an individual is presented with a stimulus and asked to respond with the first thing that comes to mind is known as :

वह तकनीक जिसमें व्यक्ति के सामने एक उत्तेजना प्रस्तुत की जाती है और पहली बात जो दिमाग में आती है, उसका जवाब देने के लिए कहा जाता है, को जाना जाता है :

Options :

Completion techniques

1. ✘ पूर्ति तकनीक

Focus groups

2. ✘ केंद्रित समूह

Association techniques

3. ✔ साहचर्य तकनीक

In depth interviews

4. ✘ गहन साक्षात्कार

Question Number : 15 Question Id : 59345215562 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

An Independent variable is defined as :

एक स्वतंत्र चर को परिभाषित किया जाता है :

Options :

- Change variable
1. ✓ परिवर्तनशील चर
- Confounding variable
2. ✘ भ्रमित चर
- Extraneous variable
3. ✘ वाह्य चर
- Outcome variable
4. ✘ परिणाम चर

Question Number : 16 Question Id : 59345215563 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which one of the following statements is *false* for Research ?

निम्नलिखित में से कौन-सा कथन अनुसंधान के लिए *गलत* है ?

Options :

- Research design is a logical and systematic plan for a research study
1. ✘ अनुसंधान अभिकल्प शोध अध्ययन के लिए एक तार्किक और व्यवस्थित योजना है

Applied research is conducted to solve theoretical problems

2. ✓ सैद्धान्तिक समस्याओं को हल करने के लिए व्यावहारिक अनुसंधान किया जाता है

The basic research is also called as fundamental research

3. ✖ मूल शोध को मौलिक शोध भी कहा जाता है

A hypothesis is a statement that is tested for its validity

4. ✖ परिकल्पना एक कथन है जिसकी वैधता का परीक्षण किया जाता है

Question Number : 17 Question Id : 59345215564 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

A researcher has administered some drug for management of diabetes for 4 weeks in a group and measured pre and post data for blood glucose level. Which statistical tool will be used to analyze data ?

एक शोधकर्ता ने एक समूह में 4 सप्ताह के लिए मधुमेह के प्रबंधन के लिए कुछ दवा दी है और रक्त शर्करा के पूर्व और बाद के स्तरों का मापन किया। प्राप्त आँकड़ों के विश्लेषण के लिए किस सांख्यिकीय विधि का उपयोग किया जाएगा ?

Options :

Paired 't' test

1. ✓ युग्मित टी-परीक्षण

Independent t-test

2. ✖ स्वतंत्र टी-परीक्षण

ANOVA test

3. ✖ एनोवा परीक्षण

Chi-square test

4. ✖ कार्ई-वर्ग परीक्षण

Question Number : 18 Question Id : 59345215565 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which of the following is a qualitative variable ?

निम्न में से कौन एक गुणात्मक चर है ?

Options :

Colour of hair

1. ✔ बालों का रंग

Body weight

2. ✖ शारीरिक भार

Body height

3. ✖ शारीरिक ऊँचाई

Percentage of haemoglobin

4. ✖ हीमोग्लोबिन का प्रतिशत

Question Number : 19 Question Id : 59345215566 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

A researcher should consider which of the following to prepare good research proposal ?

एक शोधकर्ता को अच्छा शोध प्रस्ताव तैयार करने के लिए निम्नलिखित में से किस पर विचार करना चाहिए ?

- (a) Research question should be novel
शोध प्रश्न नवीन होना चाहिए
- (b) Research protocol should be ethical and relevant
अनुसंधान प्रोटोकॉल नैतिक और प्रासंगिक होना चाहिए
- (c) Research question should be interesting and feasible
शोध प्रश्न दिलचस्प और व्यवहार्य होना चाहिए
- (d) Researcher should consider only his/her own interest and benefit
शोधकर्ता को केवल अपनी स्वयं की रुचि एवम लाभ पर विचार करना चाहिए

Options :

- a & d are correct
- 1. ✘ a और d सही हैं
- c & d are incorrect
- 2. ✘ c और d गलत हैं
- a, c & d are correct
- 3. ✘ a, c और d सही हैं

a, b & c are correct

4. ✓ a, b और c सही हैं

Question Number : 20 Question Id : 59345215567 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Why reviewing the existing literature is needed ?

मौजूदा साहित्य की समीक्षा करने की आवश्यकता क्यों है ?

Options :

It does not provide references

1. ✘ यह संदर्भों को प्रदान नहीं करता

It does not provide required word-count

2. ✘ आवश्यक शब्द-गणना नहीं देता

To find out what is already known about area of interest

3. ✓ यह जानने के लिए कि रुचि के क्षेत्र के बारे में पहले से क्या ज्ञात है

To help in non-related disciplines

4. ✘ असम्बन्धित विषयों में सहयोग करने के लिए

Question Number : 21 Question Id : 59345215568 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which one is called non-probability sampling ?

किसे असंभाव्यता प्रतिचयन कहा जाता है ?

Options :

Quota sampling

1. ✓ कोटा प्रतिचयन

Cluster sampling

2. ✘ गुच्छ प्रतिचयन

Systematic sampling

3. ✘ व्यवस्थित प्रतिचयन

Stratified random sampling

4. ✘ स्तरीकृत यादृच्छिक प्रतिचयन

Question Number : 22 Question Id : 59345215569 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Random error can be effectively handled by :

यादृच्छिक त्रुटि को द्वारा प्रभावी ढंग से नियंत्रित किया जा सकता है ।

Options :

Adequate sample size

1. ✓ उपयुक्त नमूना आकार

Randomisation

2. ✖ यादृच्छीकरण

Blinding

3. ✖ अंधकरण

Representativeness

4. ✖ प्रतिनिधित्व

Question Number : 23 Question Id : 59345215570 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The *correct* definition of h index is :

एच-इंडेक्स की *सही* परिभाषा है :

Options :

Largest number h such that h publications have at least h citations

1. ✔ सबसे बड़ी संख्या h जैसे कि h प्रकाशनों में कम से कम h उद्धरण हों

Lowest number h such that h publications have at least h citations

2. ✖ सबसे कम संख्या h जैसे कि h प्रकाशनों में कम से कम h उद्धरण हों

Total number of citations divided by the total number of publications

3. ✖ उद्धरणों की कुल संख्या को प्रकाशन की कुल संख्या से विभाजित करने पर

Another name for impact factor

4. ✘ प्रभाव कारक का दूसरा नाम

Question Number : 24 Question Id : 59345215571 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which of the following is *not* a reference management tool ?

निम्नलिखित में से कौन संदर्भ प्रबंधन उपकरण *नहीं* है ?

Options :

EndNote

1. ✘ एण्डनोट

Zotero

2. ✘ ज़ोटेरो

Mendeley

3. ✘ मेंडले

Scopus

4. ✔ स्कोपस

Question Number : 25 Question Id : 59345215572 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Mean, Median and Mode are :
माध्य, माध्यिका और बहुलक हैं :

Options :

Measures of dispersion

1. ✘ प्रसरण का मापन

Measures of central tendency

2. ✔ केंद्रीय प्रवृत्ति का मापन

Measures of probability

3. ✘ संभाव्यता का मापन

Sampling methods

4. ✘ प्रतिचयन विधि

Question Number : 26 Question Id : 59345215573 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

What is the appropriate measure of dispersion to report when median is reported as the measure of central tendency for a given set of data ?

रिपोर्ट करने के लिए विचलन का उपयुक्त उपाय क्या है जब माध्यिका को आँकड़ों के एक समूह के लिए केंद्रीय प्रवृत्ति के मापन के रूप में प्रयुक्त किया जाता है ?

Options :

Standard deviation

1. ✘ मानक विचलन

Interquartile range

2. ✓ अंतश्चतुर्थक विस्तार

Variance

3. ✗ विचरण

Coefficient of variance

4. ✗ विचरण का गुणांक

Question Number : 27 Question Id : 59345215574 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Open ended group discussion that promotes discussion among participants is called

विवृतांग (ओपन एंडेड ग्रुप) चर्चा जो प्रतिभागियों के बीच परिचर्चा को बढ़ावा देते हैं, कहलाते हैं

Options :

In-depth discussion

1. ✗ गहन चर्चा

Focus group discussions

2. ✓ फोकस ग्रुप चर्चा

Participant observation

3. ✖ प्रतिभागी अवलोकन

Structured interviews

4. ✖ संरचित साक्षात्कार

Question Number : 28 Question Id : 59345215575 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The ability of a tool to correctly measure what it is supposed to measure is called as :

किसी उपकरण/साधन की 'जिस उद्देश्य के मापन के लिए प्रयोग हो रहा है उसे सही-सही मापने की क्षमता' कहलाती है :

Options :

Validity

1. ✔ वैधता

Reliability

2. ✖ विश्वसनीयता

Consistency

3. ✖ संगति

Accuracy

4. ✖ सटीकता

Question Number : 29 Question Id : 59345215576 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

In an experimental study of the effects of time spent on studying on grade, time spent studying would be the :

ग्रेड पर अध्ययन में व्यतीत समय के प्रभावों के एक प्रायोगिक अध्ययन में, अध्ययन में बिताया गया समय होगा :

Options :

- Control group
- 1. ✘ नियंत्रण समूह
- Independent variable
- 2. ✔ स्वतंत्र चर
- Experimental group
- 3. ✘ प्रायोगिक समूह
- Dependent variable
- 4. ✘ आश्रित चर

Question Number : 30 Question Id : 59345215577 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

A reasoning where we start with certain particular statements and conclude with a universal statement is called :

एक तर्क जहाँ हम कुछ विशिष्ट कथनों से शुरू करते हैं और एक सार्वभौमिक कथन के साथ निष्कर्ष निकालते हैं, कहलाता है :

Options :

Deductive Reasoning

1. ✘ निगमनात्मक तर्क

Inductive Reasoning

2. ✔ आगमनात्मक तर्क

Abnormal Reasoning

3. ✘ असामान्य तर्क

Transcendental Reasoning

4. ✘ प्राशनुभविक तर्क

Question Number : 31 Question Id : 59345215578 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If a distribution is described as platykurtic, then it is :

यदि किसी वितरण को प्लेटिक्यूरटिक (सपाटक कुर्दी) के रूप में वर्णित किया जाता है, तो वह है :

Options :

Peaked

1. ✘ चोटीदार

- Flat
2. ✓ सपाट
- Bimodal
3. ✘ द्विबाहुलकी
- Thin
4. ✘ पतला

Question Number : 32 Question Id : 59345215579 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

In a statistical table the row headings are referred to as :

एक सांख्यिकीय तालिका में, पंक्ति शीर्षकों को कहा जाता है :

Options :

- Source note
1. ✘ स्रोत नोट
- Captions
2. ✘ कैप्शन (अनुशीर्षक)
- Stubs
3. ✓ स्टब्स (टूठ)

Body

4. ✖ शरीर

Question Number : 33 Question Id : 59345215580 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which of the following techniques are used to control extraneous variables in research ?

अनुसंधान में बाह्य चरों को नियंत्रित करने के लिए निम्नलिखित में से किस तकनीक का उपयोग किया जाता है ?

Options :

Change of instrument

1. ✖ साधन का परिवर्तन

Randomization

2. ✔ यादृच्छीकरण

Change the research method

3. ✖ अनुसंधान विधियों में परिवर्तन

Parameterization

4. ✖ पैरामीट्रिजेशन (प्राचलीकरण)

Question Number : 34 Question Id : 59345215581 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which of the following is the information and library network under UGC ?

यूजीसी के तहत निम्नलिखित में से कौन-सा सूचना और पुस्तकालय नेटवर्क है ?

Options :

INFLIBNET

1. ✓ इनफिलिबनेट

NISCAIR

2. ✗ निस्केयर

Association of Indian Universities

3. ✗ भारतीय विश्वविद्यालयों का संघ

NAAC

4. ✗ नैक

Question Number : 35 Question Id : 59345215582 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

A research tool consisting of a series of questions is known as :

प्रश्नों की एक शृंखला से युक्त एक शोध उपकरण को कहा जाता है :

Options :

Observation schedule

1. ✗ अवलोकन अनुसूची

Interview schedule

2. ✘ साक्षात्कार अनुसूची

Questionnaire

3. ✔ प्रश्नावली

Psychological test

4. ✘ मनोवैज्ञानिक परीक्षण

**Question Number : 36 Question Id : 59345215583 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator :
None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On
Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No**

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

What does a good thesis involve ?

एक अच्छी थीसिस में क्या सम्मिलित होता है ?

- (a) Reducing punctuations as well as grammatical errors to minimal level.
विराम-चिन्हों तथा व्याकरण अशुद्धियों को अल्पतम स्तर तक कम करना।
- (b) Correct reference citation.
समुचित सन्दर्भ उद्धरण।
- (c) Consistency in the way of thesis writing.
थीसिस लेखन के तरीके में सुसंगति।
- (d) All of the three
तीनों में सभी

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

नीचे दिये गये कूट में से *सही* उत्तर चुनें :

Codes :

कूट :

Options :

a, b, c and d

1. ✓ a, b, c तथा d

a, c and d

2. ✗ a, c तथा d

a, b and c

3. ✓ a, b तथा c

c, b and d

4. ✘ c, b तथा d

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 37 Question Id : 59345215584 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The difference between the expected value of a sample statistic and the estimated value of parameter is called :

नमूना आंकड़ों के अपेक्षित मूल्य और प्राचल के अनुमानित मूल्य के बीच के अन्तर को कहा जाता है :

Options :

Error

1. ✘ त्रुटि

Bias

2. ✔ पूर्वाग्रह

Contradiction

3. ✘ विरोधाभास

Difference

4. ✘ अंतर

Question Number : 38 Question Id : 59345215585 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Among the following, widely used method for extracting factors is :

निम्नलिखित में से, कारकों को निकालने के लिए व्यापक रूप से इस्तेमाल की जाने वाली विधि है :

Options :

Path analysis

1. ✖ पथ विश्लेषण

Discriminant analysis

2. ✖ विभेदक विश्लेषण

Group analysis

3. ✖ समूह विश्लेषण

Principle component analysis

4. ✔ प्रमुख-घटक विश्लेषण

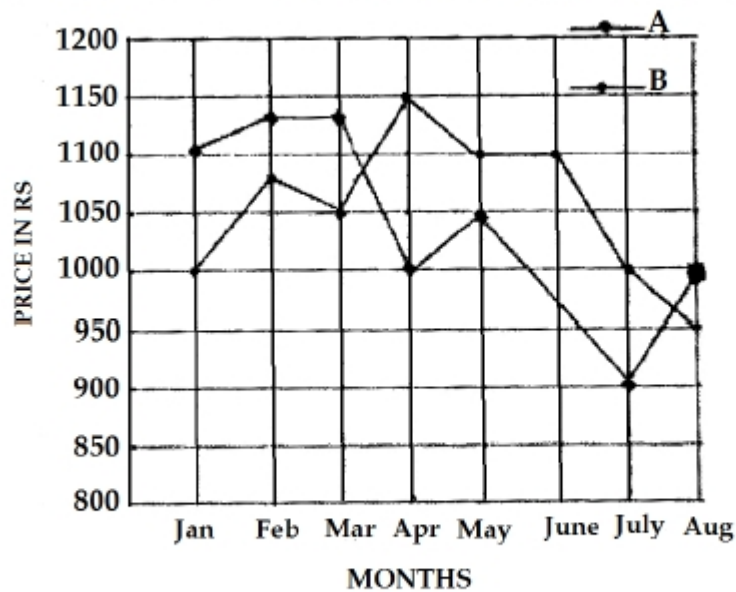
Question Number : 39 Question Id : 59345215586 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Study the following given graph and answer the question :

निम्नलिखित ग्राफ का अध्ययन कीजिए तथा प्रश्न का उत्तर दीजिए :



What was the price difference between commodity A and B in the month of April ?

अप्रैल के महीने में सामग्री A और B के बीच मूल्य का अन्तर क्या था ?

Options :

1. ✘ 250
2. ✔ 150
3. ✘ 100
4. ✘ 90

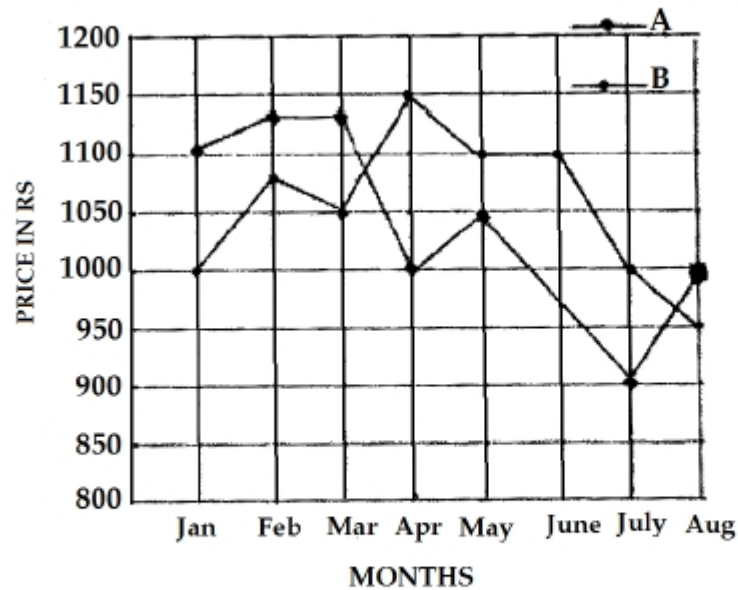
Question Number : 40 Question Id : 59345215587 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Study the following given graph and answer the question :

निम्नलिखित ग्राफ का अध्ययन कीजिए तथा प्रश्न का उत्तर दीजिए :



What was the difference in average price between commodity A and B from April to August ?

अप्रैल से अगस्त तक सामग्री A और B के औसत मूल्य में कितना अन्तर था ?

Options :

1. ✘ 90

2. ✘ 86

3. ✘ 95

4. ✔ 75

Subject_&_Area Concerned

Section Id :	593452276
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	60
Number of Questions to be attempted :	60
Section Marks :	180
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	593452304
Question Shuffling Allowed :	Yes

Question Number : 41 Question Id : 59345215588 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The number of subgroups of order 2 of the group $Z_2 \oplus Z_2 \oplus Z_2$ is :

Options :

1. ✘ 6

2. ✔ 7

3. ✘ 8

4. ✘ 9

Question Number : 42 Question Id : 59345215589 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let A_5 denote the alternating group of order $5!$. Then :

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. it has a subgroup of order 12
2. it has no subgroup of order 12
3. it has a subgroup of order 15
4. it has a subgroup of order 20

Question Number : 43 Question Id : 59345215590 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let d be a positive integer. Then $\mathbb{Q}[\sqrt{d}] = \{a + b\sqrt{d} : a, b \in \mathbb{Q}\}$ is :

Options :

1. ✘ a division ring but not a field

2. ✘ an integral domain but not a field
3. ✘ a ring but not an integral domain
4. ✔ a field

Question Number : 44 Question Id : 59345215591 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The ideal $\langle x \rangle$ in $\mathbb{Z}[x]$ is :

Options :

1. ✘ maximal
2. ✔ prime
3. ✘ neither prime nor maximal
4. ✘ $\langle x \rangle = \mathbb{Z}[x]$

Question Number : 45 Question Id : 59345215592 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $f(x) \in \mathbb{Z}_p[x]$ and assume that $f(a) = 0$, then :

Options :

1. ✘ $f(a^p) \neq 0$
2. ✔ $f(a^p) = 0$
3. ✘ $f(a^p) = 1$
4. ✘ $f(a^p) = p - 1$

Question Number : 46 Question Id : 59345215593 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

For $b > 1$, the sequence $(b^n/n!)$:

Options :

1. ✘ converges to b
2. ✔ converges to 0
3. ✘ does not converge
4. ✘ none of the three

Question Number : 47 Question Id : 59345215594 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $I = [0, 1]$ and $f: I \rightarrow \mathbb{R}$ be continuous on I . Then the set $f(I)$ is :

Options :

1. ✘ closed set but not an interval
2. ✘ a closed and bounded set but not an interval
3. ✔ a closed and bounded interval
4. ✘ none of the three

Question Number : 48 Question Id : 59345215595 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The derivative of the function $f(x) = (\sin(x^m))^n$, for $m, n \in \mathbb{N}$ is :

Options :

1. ✘ $mnx^{m-1}(\cos x^m (\sin x^n)^{n-1})$
2. ✔ $mnx^{m-1}(\cos x^m (\sin x^m)^{n-1})$
3. ✘ $mnx^{m-1}(\cos x^n (\sin x^m)^{n-1})$
4. ✘ $mnx^{m-1}(\cos x^m (\sin x^m)^{m-1})$

Question Number : 49 Question Id : 59345215596 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let f be a function which is bounded and that there is a finite set A such that f is continuous at every point of $[a, b] \setminus A$. Then :

Options :

1. ✓ f is Riemann integrable on $[a, b]$
2. ✗ f is not Riemann integrable on $[a, b]$
3. ✗ f is Lebesgue integrable but not Riemann integrable on $[a, b]$
4. ✗ f is neither Lebesgue nor Riemann integrable on $[a, b]$

Question Number : 50 Question Id : 59345215597 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $z = x + iy$, with $i = \sqrt{-1}$. Then the function $f(z) = |z|^2$ defined on (\mathbb{C}) is :

Options :

1. ✗ an entire function
2. ✗ analytic but not entire function
3. ✗ differentiable but not analytic function

4. ✓ differentiable only at $z = 0$

Question Number : 51 Question Id : 59345215598 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The value of the integral $\int_C \operatorname{Re}(z^2) dz$, where C is the unit circle taken counter clockwise,

is :

Options :

1. ✗ $-i$

2. ✓ 0

3. ✗ 1

4. ✗ i

Question Number : 52 Question Id : 59345215599 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The series $\sum_{n=0}^{\infty} \frac{(100+75i)^2}{n!}$ is :

Options :

1. ✓ convergent
2. ✘ divergent
3. ✘ neither convergent nor divergent
4. ✘ none of the three

Question Number : 53 Question Id : 59345215600 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let z be a complex number such that $\operatorname{Re}(z) \geq 0$ and $\operatorname{Re}(\bar{z}^2) \geq 0$. Then :

Options :

1. ✘ $\operatorname{Re}(z) \geq \operatorname{Im}(z) \geq 0$
2. ✘ $0 \leq \operatorname{Re}(z) \leq \operatorname{Im}(z)$.
3. ✘ $0 \leq |\operatorname{Re}(z)| \leq |\operatorname{Im}(z)|$
4. ✓ $|\operatorname{Re}(z)| \geq |\operatorname{Im}(z)| \geq 0$

Question Number : 54 Question Id : 59345215601 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The image of the complex number $2 + 3i$ under the stereographic projection is :

Options :

1. ✘ $\left(\frac{3}{7}, \frac{2}{7}, \frac{6}{7}\right)$

2. ✔ $\left(\frac{2}{7}, \frac{3}{7}, \frac{6}{7}\right)$

3. ✘ $\left(\frac{6}{7}, \frac{2}{7}, \frac{3}{7}\right)$

4. ✘ $\left(\frac{2}{7}, \frac{6}{7}, \frac{3}{7}\right)$

Question Number : 55 Question Id : 59345215602 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $f(z)$ be an analytic function whose power series expansion is $\sum_{n=0}^{\infty} e^n z^{n^2}$. Then the

domain of analyticity of $f(z)$ is :

Options :

1. ✘ $\{z : |z| < e\}$

2. ✘ $\{z : |z| < 1/e\}$

3. ✓ $\{z : |z| < 1\}$

4. ✘ $\{z : |z| < e^2\}$

Question Number : 56 Question Id : 59345215603 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $f(z) = \text{Log } z$, where $\text{Log } z$ denotes the principal branch of $\log z$. Then $z = 0$ is a :

Options :

1. ✘ pole of $f(z)$

2. ✘ removable singularity of $f(z)$

3. ✘ essential isolated singularity of $f(z)$

4. ✓ non - isolated singularity of $f(z)$

Question Number : 57 Question Id : 59345215604 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $X = \{0, 1\}$ and $\mathfrak{S} = \{\emptyset, \{0\}, X\}$. Then with respect to the topology \mathfrak{S} , we have :

Options :

1. ✘ $\{\bar{0}\} = \{0\}$ and $\{\bar{0}\} = \{0\}$ $\{\bar{1}\} = \{1\}$

2. ✔ $\{\bar{0}\} = X$ and $\{\bar{1}\} = \{1\}$

3. ✘ $\{\bar{0}\} = X$ and $\{\bar{1}\} = X$

4. ✘ $\{\bar{0}\} = \{0\}$ and $\{\bar{1}\} = X$

Question Number : 58 Question Id : 59345215605 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let X be the set of real numbers and \mathfrak{S} denote the lower limit topology on X . Then (X, \mathfrak{S}) is :

Options :

1. ✔ separable but not second countable

2. ✘ second countable but not separable

3. ✘ both second countable and separable

4. ✘ neither second countable nor separable

Question Number : 59 Question Id : 59345215606 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Every finite Housdorff space is :

Options :

1. ✘ an indiscrete space
2. ✘ a non - compact space
3. ✔ a compact space
4. ✘ a connected space

Question Number : 60 Question Id : 59345215607 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If in a topological space every convergent net converges to a unique point, then it is :

Options :

1. ✘ Not T_1
2. ✔ T_2
3. ✘ T_3
4. ✘ T_4

Question Number : 61 Question Id : 59345215608 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let m denotes the Lebesgue measure on the set of real numbers \mathbb{R} . Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be defined as $f(x) = \begin{cases} 1, & \text{when } x \text{ is irrational} \\ x, & \text{when } x \text{ is rational} \end{cases}$. Then $\|f\|_\infty$ is :

Options :

1. ✓ 1
2. ✘ zero
3. ✘ 2
4. ✘ ∞

Question Number : 62 Question Id : 59345215609 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $C^1[0, 1]$ be the vector space of all continuously differentiable functions on $[0, 1]$.

For $f \in C^1[0, 1]$, let $\|f\| = \int_0^1 |f'(x)| dx$. Then $\|f\|$ is :

Options :

1. ✘ a norm on $C^1[0, 1]$

2. ✓ a semi - norm on $C^1 [0, 1]$
3. ✘ not a semi - norm on $C^1 [0, 1]$
4. ✘ None of the three

Question Number : 63 Question Id : 59345215610 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

l^p space ($1 \leq p \leq \infty$) is a Hilbert space for :

Options :

1. ✘ $p \geq 1$
2. ✘ $p = 1$
3. ✘ $p = \infty$
4. ✓ $p = 2$

Question Number : 64 Question Id : 59345215611 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If H is a Hilbert space and E is a non - empty subset of H , then :

Options :

1. ✘ $H = E \oplus E^\perp$

2. ✔ $H = E^\perp \oplus E^{\perp\perp}$

3. ✘ $H = E \oplus E^{\perp\perp}$

4. ✘ $H = E \oplus E^{\perp\perp\perp}$

Question Number : 65 Question Id : 59345215612 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If atlas of a manifold M is containing only a single chart, then M may not be :

Options :

1. ✘ Euclidean space

2. ✔ closed subset of an Euclidean space

3. ✘ open subset of an Euclidean space

4. ✘ open interval in \mathbb{R}

Question Number : 66 Question Id : 59345215613 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If (U, φ) is a chart about a point p in a manifold M of dimension n , then the differential φ_{*p} is :

Options :

1. ✘ bijective but not linear
2. ✘ linear but not bijective
3. ✘ not a homomorphism
4. ✔ an isomorphism

Question Number : 67 Question Id : 59345215614 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Two charts (U, φ) and (V, ψ) on a manifold M are compatible if the transition functions $\varphi \circ \psi^{-1}$ and $\psi \circ \varphi^{-1}$ of the charts are :

Options :

1. ✘ bijective

2. ✘ continuous
3. ✔ differentiable
4. ✘ homeomorphism

Question Number : 68 Question Id : 59345215615 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let F be a smooth map from a manifold N to a manifold M . Then a point p in N is a regular point of F if :

Options :

1. ✘ the mapping F is injective
2. ✘ the mapping F is surjective
3. ✘ the differential F_{*p} is injective
4. ✔ the differential F_{*p} is surjective

Question Number : 69 Question Id : 59345215616 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $M = GL(n, \mathbb{R})$ be the set of all non-singular $n \times n$ matrices. Then M is a manifold of dimension :

Options :

1. ✘ $2n$

2. ✔ n^2

3. ✘ $n/2$

4. ✘ n

Question Number : 70 Question Id : 59345215617 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $X = x^2 d/dx$ be the vector field on the Euclidean space \mathbb{R} . Then integral curve $x(t)$ of X starting at point $x = 2$ is :

Options :

1. ✔ $x(t) = 2/(1 - 2t)$

2. ✘ $x(t) = 2(1 - 2t)$

3. ✘ $x(t) = 2/(1 + 2t)$

4. ✘ $x(t) = 2(1 + 2t)$

Question Number : 71 Question Id : 59345215618 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $X = y\frac{\partial}{\partial x} - x\frac{\partial}{\partial y}$ and $Y = \frac{\partial}{\partial x}$ be vector fields on a C^∞ -manifold M . Then the value of $[X, Y]$:

Options :

1. ✘ $\frac{\partial}{\partial x}$

2. ✔ $\frac{\partial}{\partial y}$

3. ✘ $\frac{\partial}{\partial x} + \frac{\partial}{\partial y}$

4. ✘ $\frac{\partial}{\partial x} - \frac{\partial}{\partial y}$

Question Number : 72 Question Id : 59345215619 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let (M, g) be a Riemannian manifold. Then which one is not the property of Riemannian metric g :

Options :

1. ✘ g is positive definite
2. ✘ g is bilinear
3. ✘ g is symmetric
4. ✔ g is indefinite

Question Number : 73 Question Id : 59345215620 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let (M, g) be a Riemannian manifold and N be a submanifold equipped with the induced metric h . Then N is totally geodesic in M if :

Options :

1. ✘ mean curvature vector field of N in M is zero
2. ✔ second fundamental form of N in M is zero
3. ✘ N is minimal in M
4. ✘ geodesic in N is not a geodesic in M

Question Number : 74 Question Id : 59345215621 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let (M, g) be a Riemannian manifold and R be the curvature tensor of the Riemannian manifold (M, g) . Then R is a smooth tensor field of type :

Options :

1. ✘ (2, 1)
2. ✘ (0, 3)
3. ✘ (1, 2)
4. ✔ (1, 3)

Question Number : 75 Question Id : 59345215622 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If A is a tensor of type $(1, 2)$ and B is a tensor of type $(3, 1)$ then their inner product is a tensor of type :

Options :

1. ✘ (2, 3)
2. ✘ (4, 3)
3. ✔ (3, 2)
4. ✘ (3, 3)

Question Number : 76 Question Id : 59345215623 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let (M, g) be a Riemannian manifold and ∇ be a connection on tangent bundle TM . Then for any vector fields X, Y on M , the torsion tensor T of connection ∇ on M is given by :

Options :

1. ✓ $T(X, Y) = \nabla_x Y - \nabla_y X - [X, Y]$
2. ✗ $T(X, Y) = \nabla_x Y + \nabla_y X - [X, Y]$
3. ✗ $T(X, Y) = \nabla_x Y - \nabla_y X + [X, Y]$
4. ✗ $T(X, Y) = \nabla_x Y + \nabla_y X + [X, Y]$

Question Number : 77 Question Id : 59345215624 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which fluid during motion does *not* experience shearing stress ?

Options :

1. ✓ Ideal fluid
2. ✗ Pseudoplastic fluid

3. ✘ Dilatant fluid

4. ✘ Viscous fluid

Question Number : 78 Question Id : 59345215625 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

A fluid is having rotational motion, then :

Options :

1. ✘ velocity potential exists

2. ✔ velocity potential does not exist

3. ✘ stream lines become straight lines

4. ✘ stream lines become ellipses

Question Number : 79 Question Id : 59345215626 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The image of a sink outside a circle with respect to the same circle is :

Options :

1. ✘ a source of equal strength at the inverse point and a source of same strength at the center of the circle.

2. ✘ a sink of equal strength at the inverse point and a sink of same strength at the center of the circle.

3. ✔ a sink of equal strength at the inverse point and a source of same strength at the center of the circle.

4. ✘ a source of equal strength at the inverse point and sink of same strength at the center of the circle.

Question Number : 80 Question Id : 59345215627 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The complex potential of the uniform flow U making an angle α with x -axis is :

Options :

1. ✘ $Ue^{i(\pi+\alpha)}z$

2. ✔ $Ue^{i(\pi-\alpha)}z$

3. ✘ $-Ue^{i(\pi+\alpha)}z$

4. ✘ $-Ue^{i(\pi-\alpha)}z$

Question Number : 81 Question Id : 59345215628 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If the stress components at P are given by $\tau_{ij} = \begin{bmatrix} 7 & 0 & -2 \\ 0 & 5 & 0 \\ -2 & 0 & 4 \end{bmatrix}$, then the stress vector on

the plane at P whose unit normal is $\hat{n} = \frac{2}{3}\hat{i} - \frac{2}{3}\hat{j} + \frac{1}{3}\hat{k}$ is :

Options :

1. ✘ $\tau_n = \frac{4}{3}\hat{i} - 10\hat{j}$

2. ✘ $\tau_n = 4\hat{i} - \frac{10}{3}\hat{j} + \frac{7}{3}\hat{k}$

3. ✘ $\tau_n = \frac{4}{3}\hat{i} - \frac{10}{3}\hat{j} + 7\hat{k}$

4. ✔ $\tau_n = 4\hat{i} - \frac{10}{3}\hat{j}$

Question Number : 82 Question Id : 59345215629 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If a rigid body is rotating with an angular velocity about a fixed point in it then, in general, the angular momentum vector is :

Options :

1. ✓ neither coincident nor parallel to the angular velocity vector
2. ✘ either coincident or parallel to the angular velocity vector
3. ✘ perpendicular to the angular velocity vector
4. ✘ parallel to the angular velocity vector

Question Number : 83 Question Id : 59345215630 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The degrees of freedom of a rigid rod moving in a plane is :

Options :

1. ✘ 1
2. ✘ 2
3. ✓ 3
4. ✘ 4

Question Number : 84 Question Id : 59345215631 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The Hamilton-Jacobi equations of motion of a rigid body are (notations are in usual meaning) :

Options :

1. ✓ $\frac{\partial S}{\partial t} + H\left(q_r, \frac{\partial S}{\partial q_r}, t\right) = 0, r = 1, 2, \dots, n$

2. ✘ $\frac{\partial S}{\partial t} + H\left(\dot{q}_r, \frac{\partial S}{\partial \dot{q}_r}, t\right) = 0, r = 1, 2, \dots, n$

3. ✘ $\frac{\partial S}{\partial t} + H\left(p_r, \frac{\partial S}{\partial p_r}, t\right) = 0, r = 1, 2, \dots, n$

4. ✘ $\frac{\partial S}{\partial t} + H\left(\dot{p}_r, \frac{\partial S}{\partial \dot{p}_r}, t\right) = 0, r = 1, 2, \dots, n$

Question Number : 85 Question Id : 59345215632 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The general solution of the differential equation $(1 + y^2) + (x - e^{-\tan^{-1} y}) \frac{dy}{dx} = 0$ is :

Options :

1. ✘ $xe^{-\tan^{-1} y} = -\tan^{-1} y + c$, c being an arbitrary constant.
2. ✘ $xe^{-\tan y} = -\tan y + c$, c being an arbitrary constant.
3. ✔ $xe^{\tan^{-1} y} = \tan^{-1} y + c$, c being an arbitrary constant.
4. ✘ $xe^{\tan y} = \tan y + c$, c being an arbitrary constant.

Question Number : 86 Question Id : 59345215633 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Which of the following statements is true for a singular solution of an ordinary differential equation ?

Options :

1. ✘ It is a part of c -discriminant relation, but not a part of p -discriminant relation.
2. ✘ It is a part of p -discriminant relation, but not a part of c -discriminant relation.
3. ✘ It is neither a part of c -discriminant relation nor a part of p -discriminant relation.

4. ✓ It is a part of c -discriminant relation and also a part of p -discriminant relation.

Question Number : 87 Question Id : 59345215634 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The value of $\frac{1}{D^3 + 1} e^{2x} \sin x$, $D \equiv \frac{d}{dx}$ is :

Options :

1. ✘ $\frac{e^{2x}}{130} (3 \sin x + 11 \cos x)$

2. ✓ $\frac{e^{2x}}{130} (3 \sin x - 11 \cos x)$

3. ✘ $\frac{e^{2x}}{120} (11 \cos x + 3 \sin x)$

4. ✘ $\frac{e^{2x}}{120} (11 \cos x - 3 \sin x)$

Question Number : 88 Question Id : 59345215635 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

If u and v be two linearly independent solutions of $\frac{d^2y}{dx^2} + 2x\frac{dy}{dx} - y = 0$, then the Wronskian $W(u, v)$ is given by :

Options :

1. ✘ $W(u, v) = A/x^2$, A being a constant.
2. ✘ $W(u, v) = Ae^{x^2}$, A being a constant.
3. ✘ $W(u, v) = Ax^2$, A being a constant.
4. ✔ $W(u, v) = A/e^{x^2}$, A being a constant.

Question Number : 89 Question Id : 59345215636 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The partial differential equation $y\frac{\partial^2u}{\partial x^2} + x\frac{\partial^2u}{\partial y^2} = 0$ is hyperbolic in :

Options :

1. ✔ The second and fourth quadrants
2. ✘ The first and second quadrants
3. ✘ The second and third quadrants

4. ✖ The first and third quadrants

Question Number : 90 Question Id : 59345215637 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The partial differential equation $\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2} + u$ can be transformed to $\frac{\partial v}{\partial t} = \frac{\partial^2 v}{\partial x^2}$ for :

Options :

1. ✔ $v = e^{-t}u$

2. ✖ $v = e^t u$

3. ✖ $v = tu$

4. ✖ $v = -tu$

Question Number : 91 Question Id : 59345215638 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let a, b, c, d be four differentiable functions defined on \mathbb{R}^2 . Then the partial differential equation $\left(a(x, y) \frac{\partial}{\partial x} + b(x, y) \frac{\partial}{\partial y} \right) \left(c(x, y) \frac{\partial}{\partial x} + d(x, y) \frac{\partial}{\partial y} \right) u = 0$ is :

Options :

1. ✘ always hyperbolic
2. ✘ always parabolic
3. ✔ never elliptic
4. ✘ never parabolic

Question Number : 92 Question Id : 59345215639 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

For the Cauchy problem

$$u_t - uu_x = 0, x \in \mathbb{R}, t > 0$$

$$u(x, 0) = x, x \in \mathbb{R}$$

Which of the following statement is true ?

Options :

1. ✘ The solution u exists for all $t > 0$
2. ✘ The solution u exists for $t < \frac{1}{2}$ and break down at $t = \frac{1}{2}$
3. ✔ The solution u exists for $t < 1$ and break down at $t = 1$

4. ✘ The solution u exists for $t < 2$ and break down at $t = 2$

Question Number : 93 Question Id : 59345215640 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The maximum and minimum values of $5x + 7y$, when $|x| + |y| \leq 1$ are :

Options :

1. ✘ 5 and -5

2. ✘ 5 and -7

3. ✘ 7 and -5

4. ✔ 7 and -7

Question Number : 94 Question Id : 59345215641 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $f(x) = x^2 + 2x + 1$ and the derivative of f at $x = 1$ is approximated by using the central-difference formula $f'(1) \approx \frac{f(1+h) - f(1-h)}{2h}$ with $h = \frac{1}{2}$. Then the absolute value of the error in the approximation of $f'(1)$ is equal to :

Options :

1. ✘ 1

2. ✘ $\frac{1}{2}$

3. ✔ 0

4. ✘ $\frac{1}{12}$

Question Number : 95 Question Id : 59345215642 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Let $f(x)$ be a polynomial of unknown degree taking the values :

x	0	1	2	3
$f(x)$	2	7	13	16

All the fourth divided differences are $-1/6$. Then the coefficient of x^3 is :

Options :

1. ✔ $1/3$

2. ✘ $-2/3$

3. ✘ 16

4. ✘ -1

Question Number : 96 Question Id : 59345215643 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

The iterative method $x_{n+1} = g(x_n)$ for the solution of $x^2 - x - 2 = 0$ converges quadratically in a neighbourhood of the root $x = 2$ if $g(x)$ equals :

Options :

$$x^2 - 2$$

1. ✘

$$(x - 2)^2 - 6$$

2. ✘

$$1 + \frac{2}{x}$$

3. ✘

$$\frac{x^2 + 2}{2x - 1}$$

4. ✔

Question Number : 97 Question Id : 59345215644 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On

Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Consider the initial value problem $\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0$, $u(0, y) = 4e^{-2y}$. Then the value of

$u(1, 1)$ is :

Options :

1. ✘ $4e^{-2}$

2. ✔ $4e^2$

3. ✘ $2e^{-4}$

4. ✘ $2e^4$

Question Number : 98 Question Id : 59345215645 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Consider the variables $x_1 \geq 0$ and $x_2 \geq 0$ satisfying the constraints $x_1 + x_2 \geq 5$, $4x_1 - x_2 \leq 15$ and $4x_2 - x_1 \leq 15$. Which of the following statement is *correct* ?

Options :

1. ✘ The maximum value of $3x_1 + 2x_2$ is 27.

2. ✘ $3x_1 + 2x_2$ has no finite minimum.

3. ✘ $3x_1 + 2x_2$ has no finite maximum.

4. ✔ The minimum value of $3x_1 + 2x_2$ is 11.

Question Number : 99 Question Id : 59345215646 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Consider the following linear programming problem : Maximize $3x_1 + 2x_2$

Subject to $x_1 + x_2 \geq 1$, $x_1 + x_2 \leq 5$, $2x_1 - 3x_2 \leq 6$ and $-2x_1 + 3x_2 \leq 6$ with $x_1 \geq 0$, $x_2 \geq 0$

The problem has :

Options :

1. ✘ An unbounded solution

2. ✔ Exactly one optimal solution

3. ✘ More than one optimal solution

4. ✘ No feasible solution

Question Number : 100 Question Id : 59345215647 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Allowed Progression : Yes Number of Replay : 999 Play On Load : No Control Enable : Yes Time interval to replay(In Seconds) : 0 Allow Volume Control : No

Correct Marks : 3 Wrong Marks : 1

Question Label : Multiple Choice Question

Consider the linear programming problem: Minimize $z = -2x - 5y$

Subject to $3x + 4y \geq 5$, $x \geq 0$, $y \geq 0$. Which of the following is *correct* ?

Options :

1. ✘ Set of feasible solution is empty
2. ✔ Set of feasible solution non-empty
3. ✘ Optimal value is attained at $\left(0, \frac{5}{4}\right)$
4. ✘ Optimal value is attained at $\left(\frac{5}{3}, 0\right)$