

Question Paper Preview

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 :

MATHEMATICAL SCIENCES 10th Sep 2024
Shift 2

Subject Name :

MATHEMATICAL SCIENCES

Creation Date :

2024-09-10 18:24:29

Duration :

180

Total Marks :

300

Display Marks:

Yes

Change Font Color :

No

Change Background Color :

No

Change Theme :

No

Help Button :

No

Show Reports :

No

Show Progress Bar :

No

Group 1

Group Number :

1

Group Id :

26544897

Group Maximum Duration :

0

Group Minimum Duration :

180

Show Attended Group? :

No

Edit Attended Group? :

No

Break time :

0

Group Marks :

300

Paper I

Section Id :

265448193

Section Number :

1

Section type :

Online

Mandatory or Optional :

Mandatory

Number of Questions :

42

Number of Questions to be attempted :

42

Section Marks :	100
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	265448596
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 26544814612 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Which of the following is NOT a common objective of teaching?
ఈ దిగువ వానిలో ఏది సాధారణ బోధనా లక్ష్యం కాదు?

Options :

1. ✖ To develop critical thinking skills
విమర్శనాత్మక ఆలోచనా నైపుణ్యాలను పెంపొందింప చేయుటం
2. ✔ To provide students with travel opportunities
ప్రయాణ అవకాశాలను విద్యార్థులకు ఏర్పాటు చేయటం
3. ✖ To foster a love for learning
అభ్యాసమునకై ప్రేమను పెంపొందించటం
4. ✖ To promote effective communication
సమర్థ సందేశమును ప్రోత్సహించటం

Question Number : 2 Question Id : 26544814613 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Emotional development in adolescents often involves:
యుక్త వయసు వారికి భావోద్వేగ అభివృద్ధి దీనిపై ఆధారపడి ఉంటుంది:

Options :

1. ✖ Consistent emotional regulation and stability
నిలకడతోకూడిన భావోద్వేగ నిబంధన, స్థిరత్వం
2. ✔ Increased independence and exploration of identity
పెరిగిన స్వేచ్ఛ మరియు గుర్తింపుకై అన్వేషణ

Preference for following clear instructions
స్పష్టమైన సూచనలను అమలు పరచుటలో ప్రాధాన్యత
3. ✖

Decreased need for social interaction
సామాజిక పరస్పర చర్యకు తగ్గిన అవసరము
4. ✖

Question Number : 3 Question Id : 26544814614 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A well-equipped classroom with up-to-date technology is an example of a factor affecting teaching related to:

భోదనను ప్రభావితపరిచే కారకాలకు ఉదాహరణగా , “తాజా సాంకేతికతతో చక్కగా సిద్ధము చేసిన తరగతి గది”, ని చెప్పవచ్చు:

Options :

The learner's individual needs
అభ్యాసకుని వ్యక్తిగత అవసరాలు
1. ✖

Instructional facilities
భోదనా సౌకర్యాలు
2. ✔

The teacher's communication skills
భోధకుని సమాచార నైపుణ్యాలు
3. ✖

The institution's leadership
సంస్థ నాయకత్వము
4. ✖

Question Number : 4 Question Id : 26544814615 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

In a learner-centered approach, students are encouraged to:

అభ్యాసక కేంద్రీకృత దృక్పథములో, విద్యార్థులను దీని కొరకై ప్రోత్సహిస్తాము:

Options :

1. ✖ Passively receive information from the instructor
బోధకుని నుండి సమాచారాన్ని నిష్క్రియంగా తీసుకొనుట
2. ✔ Actively participate in discussions and problem-solving
చర్చలలో క్రియాత్మకంగా పాల్గొని, సమస్య పరిష్కరించుట
3. ✖ Focus solely on memorizing facts and figures
విషయాలను, గణాంకాలను గుర్తుపెట్టుకొనుటలో మొత్తం దృష్టి పెట్టుట
4. ✖ Complete assignments independently with minimal guidance
కనిష్ట మార్గదర్శకముతో అసైన్మెంట్లను స్వతంత్రంగా పూర్తిచేయుట

Question Number : 5 Question Id : 26544814616 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A modern teaching support system that allows for multimedia presentations and interactive whiteboards falls under the category of:

మల్టీమీడియా ప్రజంటేషన్లు, ఇంటరాక్టివ్ వైట్ బోర్డుల ఉపయోగాన్ని అనుమతించే ఆధునిక బోధనా సపోర్ట్ వ్యవస్థ ఏ పద్ధతి కింద వస్తుంది?

Options :

1. ✖ Traditional support system
సంప్రదాయ దృక్పథ పద్ధతి
2. ✔ Modern support system with technology integration
సాంకేతిక అనుసంధానంతో నవీన మద్దతు పద్ధతి
3. ✖ Purely ICT-based system with minimal teacher interaction
కనిష్ట బోధకుని ఇంటరాక్షన్ కలిగిన స్వచ్ఛమైన ICT-ఆధారిత పద్ధతి
4. ✖ Collaborative online learning platform
ఆన్లైన్ అభ్యాస సహకార వేదిక

Question Number : 6 Question Id : 26544814617 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following is NOT a common type of research?

ఈ దిగువ వానిలో ఏది సామాన్య పరిశోధనా పద్ధతి కాదు?

Options :

Quantitative research (data-driven)

పరిమాణాత్మక పరిశోధన (దత్తాంశములో నడిచే)

1. ✖

Qualitative research (explorative)

గుణాత్మక పరిశోధన (అన్వేషనాత్మక)

2. ✖

Action research (problem-solving focused)

చర్య పరిశోధన (సమస్య పరిష్కార దృష్టిలో)

3. ✖

Personal opinion-based research

వ్యక్తిగత భావ ఆధారిత పరిశోధన

4. ✔

Question Number : 7 Question Id : 26544814618 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Positivism and post-positivism can be seen as:

పాజిటివిజం మరియు పోస్ట్-పాజిటివిజమ్ ఈ విధంగా చూడవచ్చును:

Options :

Completely opposing and incompatible research approaches

పూర్తిగా వ్యతిరేకించు, అననుకూల పరిశోధనా దృక్పథాలు

1. ✖

Complementary approaches with different strengths and weaknesses

భేదం కలిగిన బలాలు, బలహీనతలు కలిగిన పూరక పంథాలు.

2. ✔

Positivism is outdated and post-positivism is the only valid approach

పాజిటివిజం కాలం చెల్లినది. పోస్ట్ పాజిటివిజం మాత్రమే చెల్లు దృక్పథము

3. ✖

Post-positivism is irrelevant and positivism is sufficient

పోస్ట్ పాజిటివిజం సంబంధం లేనిది. పాజిటివిజం తగినది

4. ✖

Question Number : 8 Question Id : 26544814619 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The primary goal of descriptive research is to:

వివరణాత్మక పరిశోధన ప్రాథమిక లక్ష్యము:

Options :

1. ✖ Test hypotheses about cause-and-effect
కారణాలు, పరిణామాల గురించి పరికల్పనలను పరీక్షించుట
2. ✖ Understand historical events and trends
చారిత్రాత్మక సంఘటనలు, పోకడలను అర్థం చేసుకొనుట
3. ✔ Describe and document characteristics of a population
జనాభా గుణాలను వివరించి భద్రపరచుట
4. ✖ Explore subjective experiences and meanings
ఆత్మాశ్రయమైన అనుభవాలను, అర్థాలను అన్వేషించుట

Question Number : 9 Question Id : 26544814620 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A comprehensive review of previous studies related to your topic falls under the step
of:

మీ అంశము గురించి గత అధ్యయనాల సమగ్ర సమీక్ష ఈ దిగువ దశలో ఉంటుంది:

Options :

1. ✖ Developing research instruments
పరిశోధనా పరికరాలను అభివృద్ధి చేయుట
2. ✔ Reviewing existing literature
ప్రస్తుత సాహిత్యాన్ని సమీక్షించుట
3. ✖ Data collection and analysis
దత్తాంశ సేకరణ మరియు విశ్లేషణ
4. ✖

Disseminating research findings
పరిశోధనా ఫలితాలను వ్యాపింప చేయుట

Question Number : 10 Question Id : 26544814621 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Ethical research requires:
నైతిక పరిశోధనకు ఇది అవసరము:

Options :

1. ✖ Prioritizing personal gain over participant well-being
పాల్గొనే వారి క్షేమం కంటే వ్యక్తిగత లాభానికి ప్రాముఖ్యత నిచ్చుట
2. ✖ Conducting research with minimal oversight or review
తక్కువ పర్యవేక్షణ, సమీక్షలతో పరిశోధన జరుపుట
3. ✔ Upholding the highest standards of honesty and transparency
అత్యధిక ప్రమాణాలు, నిజాయితీ, పారదర్శకతలకు విలువనిచ్చుట
4. ✖ Concealing potential risks or benefits from participants
పాల్గొనే వారి నుండి, సంభావ్య నష్ట భయాలు, ప్రయోజనాలు దాచియుంచుట

Sub-Section Number : 2
Sub-Section Id : 265448597
Question Shuffling Allowed : No

Question Id : 26544814622 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (11 to 15)

Question Label : Comprehension

Note : Answer the questions 11-15 by reading the following passage:

గమనిక: క్రింద ఇవ్వబడిన సమాచారం ఆధారంగా 11-15 ప్రశ్నలకు సమాధానాలు వ్రాయండి.

Our first expedition was by the inland or middle road, which winds up by the bleak hillside till it reaches a beautiful and attractive country. To those unaccustomed to such latitudes, it comes as a surprise to see fertility increasing instead of diminishing with elevation, due to the more constant rain among the hills. Monte and Santa Brigida may be said to be residential neighbourhoods and have comfortable hotels and boarding-houses. There are two principal sights to be visited from there. One is the village of Atalaya, which consists of a zone of cave dwellings, almost encircling the summit of a dome-shaped hill. The eminence falls away on two sides to a deep ravine, over which it commands magnificent views, and is connected with the adjacent hills by a narrow coll. The rock is of consolidated volcanic tuff, in which the dwellings are excavated. The fronts of the houses abut on the pathway, which is about four feet wide, and are unequally placed, following the contour of the ground. Each dwelling consists of two apartments, both about twelve feet square, with rounded angles and a domed roof, the surface of the walls shows the chisel marks. The front apartment is used as a bed-sittingroom, the back one as a store; and in some cases a lean-to outhouse has been built of blocks of the same material, in which cooking is done and the goats kept. Doors and window-sashes are inserted into the solid stone. Both dwellings and surroundings are beautifully clean and neat; the first one exhibited we imagined to be a "show" apartment, till others proved equally neat and orderly. Flowers were planted in crannies of the rock and around the doors and windows, being carefully tended and watered. The industry of the village is making pots by hand without a wheel, the sand being obtained in one direction and the clay in another: the shapes coincide in several instances with those taken from native burial-grounds and now to be seen in the museum at Las Palmas. The occasion of our visit was unfortunately a *fiesta*, and regular work was not going on: an old lady, however, made us a model pot in a few minutes; it was fashioned out of one piece of clay, with the addition of a little extra material if necessary: the pottery is unglazed.

మా మొదటి యాత్ర దేశంలోనే, మధ్య రోడ్డుపై. అది కొండపక్క అంధకారం వరకు వెడుతుంది. అక్కడ నుండి అందమైన, ఆకర్షణీయమైన దేశానికి చేరుతుంది. అటువంటి అక్షాంశాలు అలవాటులేని వారికి అది, కొండలలోని స్థిరమైన వర్షాల వలన, ఎత్తు వలన తగ్గి పోకుండా, పెరుగుతున్న ఫలదీకరణ ఆశ్చర్యాన్ని కలుగ చేస్తుంది. మొంటి శాంతా, బ్రిగిడా రెండు నివాస పొరుగు ప్రాంతాలు. అక్కడ సౌకర్యవంతమైన హెటక్కు, వసతి గృహాలు ఉన్నాయి. అక్కడ నుండి దర్శించుటకు రెండు ముఖ్య ప్రదేశాలున్నాయి. ఒకటి అటాలయ గ్రామము. అక్కడ గుహ నివాసాలు ఉన్నాయి. అది దాదాపు గోపుర ఆకార కొండను చుట్టి ఉంటాయి. అక్కడ శ్రేష్ఠత రెండువైపులా లోతైన లోయలు ఉన్నాయి. అక్కడ నుండి అద్భుతమైన దృశ్యం ఉంటుంది. దగ్గరి కొండలు ఇరుకైన దారితో కలుపబడి ఉంటాయి. అక్కడి రాయి ఏకీకృత అగ్నిపర్వత భస్మం దీనిని త్రవ్వి నివాసాలు ఏర్పరచుకుంటారు. దాని ముందుభాగం దారివైపు సుమారు 4 అడుగుల వెడల్పు ఉంటుంది. భూమి ఆకృతిని బట్టి సమానంగా ఉండవు. ప్రతీ నివాసంలో రెండు అపార్టుమెంట్లు ఉంటాయి. ఒక్కొక్కటి 12 అడుగుల చతురస్రం. మూలలు గుండ్రంగా చేయబడి ఉంటాయి. పైకప్పు గోపురంలా ఉంటుంది. గోడల ఉపరితలంపై ఉలి గుర్తులు కనుపిస్తాయి. ముందటి అపార్టుమెంటు కూర్చోటానికి, పడుకొనుటకు వాడుతారు వెనుకది స్టోరుగా వాడుతారు. కొన్ని చోట్ల సన్నని ఉపద్రువాలు అదే పదార్థంతో తయారుచేస్తారు. దాంట్లో వంట చేస్తారు గొర్రెలను ఉంచుతారు, తలుపులు కిటికీలు ఆ గట్టి రాయిలో చొప్పిస్తారు. నివాసాలు, పరిసరాలు రెండూ అందంగా శుభ్రంగా చక్కగా ఉంటాయి. మొదటిది ప్రదర్శన అపార్టుమెంటుగా భావిస్తారు కానీ చివరకు అన్నీ సమానంగా శుభ్రంగా క్రమబద్ధంగా ఉంటాయి. పూల మొక్కలను అశీల క్రేనీలలో, తలుపులు, కిటికీల చుట్టూ ఉంచుతారు. నీరు పోస్తూ జాగ్రత్తగా సాకుతారు. ఆ గ్రామ పరిశ్రమ చక్రం లేకుండా కుండలు తయారుచేయడం దానికి ఒక వైపు నుండి ఇసుక, మరోవైపు నుండి మట్టి సేకరిస్తారు. వాటి ఆకారాలు చాలా మటుకు ప్రాంతీయ స్మశానము నుండిలా ఉంటాయి. వాటిని లస్ పల్మాస్ మూజియంలో చూడవచ్చు. దురదృష్టవశాత్తు ఈ సందర్శన ఒక పండుగలో క్రమమైన పని జరుగుటలేదు కాని ఒక ముదుసలి స్త్రీ కొద్ది నిమిషాలలో ఒక కుండ తయారు చేసింది. అది ఒక మట్టి ముద్ద, ఇతర అవసరమైన పదార్థము. ఆకుండ మెర వట్లేదు.

Sub questions

Question Number : 11 Question Id : 26544814623 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

The reason behind rich greenery on the elevated hills is _____.
ఉన్నత కొండలలో గొప్ప పచ్చదనం ఉండుటకు కారణము _____.

Options :

- Wet lands
- 1. ✖ తడి భూములు
- High altitude
- 2. ✖ అధిక ఎత్తులో
- Frequent rains
- తరచు వర్షాలు
- 3. ✔

Less population

4. ✖ తక్కువ జనాభా

Question Number : 12 Question Id : 26544814624 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Cave dwellings are found on the peak of _____ shaped hill.

గుహ నివాసాలు ఈ క్రింది రూపముగల కొండ శిఖరములలో కనిపించును.

Options :

Flat

1. ✖ సమతల

Round

2. ✔ గుండ్రము

Jagged

3. ✖ వంకరబింకర

Conical

4. ✖ శంఖాకార

Question Number : 13 Question Id : 26544814625 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Pick the word from the above paragraph which means 'outline.'

పై పేరా నుండి “అవుట్‌లైన్” కు అర్థమిచ్చే మాటను ఎంచుము.

Options :

Contour

1. ✔ ఆకృతి

Abut

2. ✖ దగ్గరగా

3. ✖

Crannies
క్రేనీలు

4. ✖

Question Number : 14 Question Id : 26544814626 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The main business of the village is _____.

గ్రామ ముఖ్య వ్యాపారము _____.

Options :

Goat- keeping
గొర్రెల పెంపకము

1. ✖

Farming
వ్యవసాయము

2. ✖

Tourism
పర్యాటకం

3. ✖

Pottery
కుండలు చేయుట

4. ✔

Question Number : 15 Question Id : 26544814627 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The author called his visit unfortunate because _____.

రచయిత తన సందర్శనను దురదృష్టం అన్నాడు. ఎందుకంటే _____.

Options :

It was a holiday and shops were closed

1. ✖ ఆ రోజు శెలవు. దుకాణాలు మూసి ఉన్నాయి

2. ✔

The village was celebrating a festival and normal work wasn't going on
ఆ గ్రామము ఒక పండుగ జరుపుకొంటోంది. పనిజరుగుట లేదు

3. ✖ The woman gave him an unglazed pot
ఆ స్త్రీ మెరవని ఒక కుండ యిచ్చినది

4. ✖ The woman made him a pot with just one piece of clay
ఆ స్త్రీ అతనికి ఒక మట్టిముద్దతో మాత్రమే కుండను తయారు చేసింది

Sub-Section Number : 3
Sub-Section Id : 265448598
Question Shuffling Allowed : Yes

Question Number : 16 Question Id : 26544814628 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Closed body language such as avoiding eye-contact may denote

“ఐకాంటాక్ట్” లాంటి వాటిని దూరం చేసే పరిమిత శాబ్దిక భాషను ఈ విధంగా
చెప్పవచ్చు.

Options :

1. ✖ Confidence
విశ్వాసము

2. ✔ Lack of confidence
విశ్వాసము లేకుండుట

3. ✖ Sincerity
చిత్తశుద్ధి

4. ✖ Eagerness to learn
అభ్యాస ఆత్రుత

Question Number : 17 Question Id : 26544814629 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

_____ communication relates to interaction among people from different cultures.

ఈ దిగువ సమాచారము వివిధ సంస్కృతుల నుండి ఉన్న ప్రజల మధ్య పరస్పర చర్యకు సంబంధించినది.

Options :

1. ✖ Intra-cultural
2. ✖ Cross- cultural
3. ✔ Inter-cultural
4. ✔ Intra-national

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 : 18 Question Id : 26544814630 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Persuasive communication in a classroom leads to _____ environment.

తరగతి గదిలో ఒప్పించే సందేశము ఈ పర్యావరణం ఏర్పడుటకు దోహదపడుతుంది.

Options :

1. ✔ Positive
అనుకూల
2. ✖ Aggressive
దూకుడు
3. ✖ Coercive
బలవంతంగా
4. ✖ Unresponsive
స్పందించని

Question Number : 19 Question Id : 26544814631 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A piece of communication that is delayed because it has to pass through hierarchy levels can be considered as _____ barrier.

_____ మధ్య గల ముఖ్య తేడా సోపాన క్రమము ద్వారా వెళ్ళుటలో ఒక సందేశము అలస్యమైతే దానిని ఈ అడ్డంకి అనవచ్చును.

Options :

1. ✖ Physical
భౌతిక
2. ✖ Environmental
పర్యావరణ
3. ✖ Social
సామాజిక
4. ✔ Organizational
వ్యవస్థాపక

Question Number : 20 Question Id : 26544814632 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Face book is an example of _____ media.
ఫేస్బుక్ దీనికి ఉదాహరణ

Options :

1. ✖ Print
ప్రింట్ మాధ్యమము
2. ✔ Social
సామాజిక మాధ్యమము
3. ✖ Traditional
సంప్రదాయ మాధ్యమము

4. ✖

Question Number : 21 Question Id : 26544814633 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Complete the series with next coming number: 289, 256, 225, 196, 169, ____

క్రమములో తరువాత వచ్చే సంఖ్య తో పూరించండి: 289, 256, 225, 196, 169, ____

Options :

1. ✖ 121

2. ✖ 100

3. ✖ 81

4. ✔ 144

Question Number : 22 Question Id : 26544814634 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

How is A's father's brother's wife's daughter related to A?

A యొక్క తండ్రి సోదరుని భార్య కుమార్తె A తో ఏ విధంగా సంబంధం కలిగి ఉన్నది?

Options :

1. ✖ Brother

2. ✔ Cousin

3. ✖ Sister

4. ✖ Aunt

Question Number : 23 Question Id : 26544814635 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A train crosses a telegraph post in 25 seconds. Had it increased its speed by a fifth, it would have crossed a platform of length 50 m in 25 seconds. Find the length of the train.

రైలు 25 సెకన్లలో టెలిగ్రాఫ్ పోస్ట్‌ను దాటుతుంది. అది తన వేగాన్ని ఐదవ వంతు పెంచినట్లయితే, అది 25 సెకన్లలో 50 మీటర్ల పొడవు గల ప్లాట్‌ఫారమ్‌ను దాటేది. అయిన రైలు పొడవును కనుగొనండి.

Options :

- 1. ✖ 150 m
- 2. ✖ 275m
- 3. ✔ 250 m
- 4. ✖ 300 m

Question Number : 24 Question Id : 26544814636 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Of the 3 partners running a hotel the majority shareholder received half of the profit. The partner investing least received one-fourth of the remaining profit. Their investments have been in the business for the whole year with no changes. If they got a profit of Rs. 12,000 after one year, what is the share of the person who invested the maximum amount

హోటల్‌ను నడుపుతున్న ముగ్గురు భాగస్వాములలో మెజారిటీ వాటాదారు లాభంలో సగం పొందారు. కనీస పెట్టుబడి పెట్టిన భాగస్వామి మిగిలిన లాభంలో నాలుగింట ఒక వంతు పొందారు. వారి పెట్టుబడులు ఏడాది పొడవునా ఎలాంటి మార్పులు లేకుండా వ్యాపారంలో ఉన్నాయి. ఒక సంవత్సరం తర్వాత వారికి రూ. 12,000 లాభం వస్తే, గరిష్టంగా పెట్టుబడి పెట్టిన వ్యక్తి వాటా ఎంత?

Options :

- 1. ✖ 1,000
- 2. ✖ 3,000
- 3. ✔ 8,000

4. ✖ 11,000

Question Number : 25 Question Id : 26544814637 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If 20 notebooks are bought for Rs. 125 and 16 books are sold at Rs. 110 then what is the profit percentage?

20 నోట్బుక్స్ రూ.125 కు కొని, 16 పుస్తకాలు రూ. 110 కు అమ్మితే లాభం శాతం ఎంత?

Options :

1. ✔ 10%

2. ✖ 12%

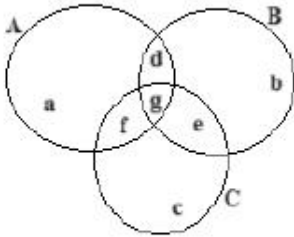
3. ✖ 12.5%

4. ✖ 15%

Question Number : 26 Question Id : 26544814638 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider the Venn diagram with three sets A, B and C like as follows with $a=10$, $b=11$, $c=12$, $d=2$, $e=3$, $f=4$, $g=1$, then $n(B \cup C) = ?$



ఈ క్రింద చూపబడిన A, B, C అనే మూడు సైట్ల వెన్ పటంలో $a=10$,

$b=11$, $c=12$, $d=2$, $e=3$, $f=4$, $g=1$ అయితే $n(B \cup C)$ ఎంత?

Options :

1. ✖ 38

2. ✖ 43

3. ✓ 33

4. ✗ 45

Question Number : 27 Question Id : 26544814639 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Statements:

నివేదికలు:

Some A's are not B's.

కొన్ని A లు, B లు కావు

Some B's are not C's.

కొన్ని B లు, C లు కావు

Some C's are not D's.

కొన్ని C లు, D లు కావు

Conclusions:

ముగింపు అభిప్రాయం

I. Some A's are not D's.

కొన్ని A లు D లు కావు.

II. Some B's are not D's.

కొన్ని B లు, D లు కావు.

III. Some A's are not C's.

కొన్ని A లు, C లు కావు.

IV. Some C's are not A's.

కొన్ని C లు, A లు కావు.

Options :

1. ✗ Conclusion I & II false

2. ✗ Conclusion II & IV false

3. ✗ Conclusion I, II, III false

4. ✓ Conclusion I, II, III and IV false

Question Number : 28 Question Id : 26544814640 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The squirrel is a small animal like a rat' This statement comes under which type of pramanas?

ఉదుత, ఎలుక వలె ఒక చిన్న జంతువు. ఈ నివేదిక ఏ ప్రమాణము?

Options :

- 1. ✖ Pratyaksha
ప్రత్యక్ష
- 2. ✖ Anumana
అనుమాన
- 3. ✔ Upamana
ఉపాసన
- 4. ✖ Shabda
శబ్ద

Question Number : 29 Question Id : 26544814641 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

What does the concept of pramana imply?

ప్రమాణము యొక్క భావన దేనిని తెలుపుతుంది?

Options :

- 1. ✔ Source of knowledge
జ్ఞానము యొక్క వనరు.
- 2. ✖ Abiding the rules
నిబంధనలు పాటించుట
- 3. ✖ Performing duties
విధులు నిర్వహించుట
- 4. ✖ Without knowledge and rules
జ్ఞానము, నిబంధనలు లేకుండుట.

Question Number : 30 Question Id : 26544814642 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If the word 'PLAYER' is coded as 'AELPRY', then how is the word 'MANAGER' coded in that language?

'PLAYER' ను 'AELPRY' గా కోడింగు చేస్తే 'MANAGER' ను ఎలా కోడింగు చేస్తారు?

Options :

1. ✖ AEAGMNR

2. ✖ AAGEMNR

3. ✔ AAEGMNR

4. ✖ AAEGNMR

Sub-Section Number :

4

Sub-Section Id :

265448599

Question Shuffling Allowed :

No

Question Id : 26544814643 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (31 to 35)

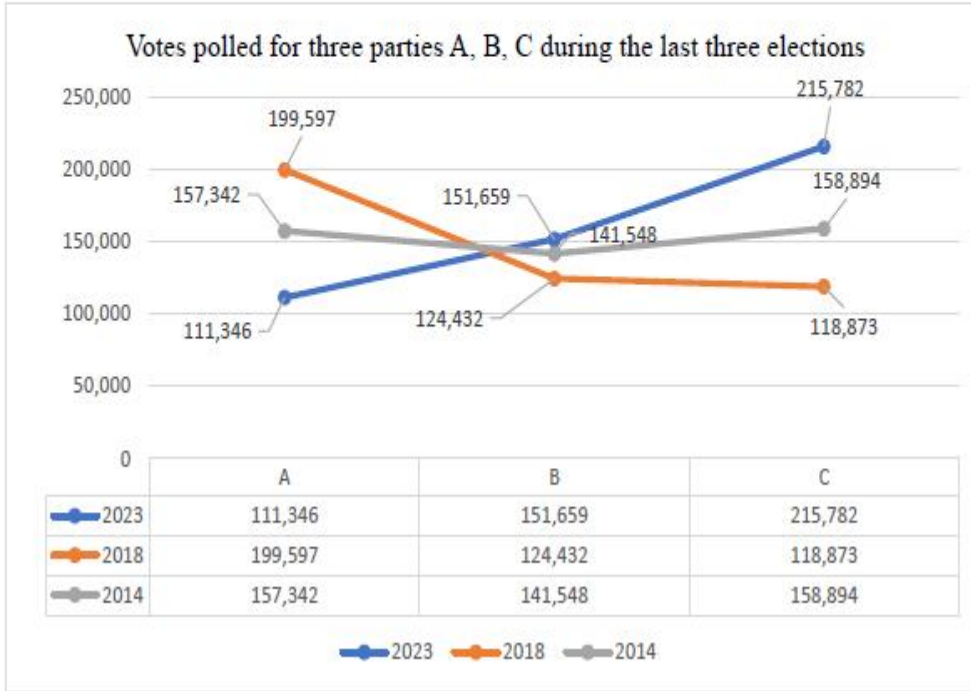
Question Label : Comprehension

Note: Answer the questions Q.31 to Q. 35 on the basis of the information given below.

గమనిక: క్రింద ఇవ్వబడిన సమాచారం ఆధారంగా Q.31 నుండి Q. 35 ప్రశ్నలకు సమాధానాలు వ్రాయండి.

The number of votes polled for three parties A, B, C in a State in the three years 2014, 2018 and 2023 are presented in the following graph

ఒక రాష్ట్రంలో A, B, C అనే మూడు పార్టీలకు మూడు సంవత్సరాలు 2014, 2018 మరియు 2023 లలో పోలైన ఓట్ల సంఖ్య క్రింది గ్రాఫ్ లో అందించబడింది



Sub questions

Question Number : 31 Question Id : 26544814644 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The percentage of increase of votes from 2014 to 2023 for Party-B is
B-పార్టీ కి 2014 నుండి 2023 వరకు పెరిగిన ఓట్ల శాతం ఎంత?

Options :

- ✖ 25
- ✖ 32
- ✔ 48
- ✖ 55

Question Number : 32 Question Id : 26544814645 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The percentage of change of votes from 2018 to 2023 for Party-A is

A-పార్టీ కి 2014 నుండి 2023 వరకు ఓట్ల మార్పు శాతం ఎంత?

Options :

1. ✖ 65

2. ✖ 72

3. ✖ 250

4. ✔ 270

Question Number : 33 Question Id : 26544814646 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The percentage of increase of votes from 2014 to 2023 for Party-C is

C-పార్టీ కి 2018 నుండి 2023 వరకు పెరిగిన ఓట్ల శాతం ఎంత?

Options :

1. ✖ 65

2. ✖ 72

3. ✖ 250

4. ✔ 270

Question Number : 34 Question Id : 26544814647 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The number of more votes polled for Party C in 2023 when compared Party-B is

2023లో పార్టీ-B తో పోల్చినప్పుడు పార్టీ C కి పోలైన అధిక ఓట్ల సంఖ్య ఎంత?

Options :

1. ✖ 17,346

2. ✖ 5,559

3. ✓ 64,123

4. ✗ 10,111

Question Number : 35 Question Id : 26544814648 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The increase of number of votes for Party-B from 2018 to 2023 is

పార్టీ- B కి 2018 నుండి 2023 కి పెరిగిన ఓట్ల సంఖ్య ____

Options :

1. ✗ 10,111

2. ✓ 27,227

3. ✗ 35,885

4. ✗ 96,909

Sub-Section Number :

5

Sub-Section Id :

265448600

Question Shuffling Allowed :

Yes

Question Number : 36 Question Id : 26544814649 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Internet explorer is a type of

అంతర్జాల అన్వేషణ ఈ దిగువ విధమైనది

Options :

1. ✗ Operating System

2. ✗ Compiler

3. ✓

4. ✖ IP address

Question Number : 37 Question Id : 26544814650 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

High level programming language can be converted to machine language using which of the following?

ఈ దిగువ వానిలో ఏది ఉపయోగించి ఉన్నత స్థాయి ప్రోగ్రామింగు భాషను యాంత్రిక భాష గా మార్చవచ్చును?

Options :

1. ✖ Oracle

2. ✔ Compiler

3. ✖ Mat lab

4. ✖ Assembler

Question Number : 38 Question Id : 26544814651 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Providing, managing and maintaining hardware, software, content integrity, security and reliable high speed connection for a website is called:

ఒక వెబ్‌సైటుకు హార్డ్‌వేర్, సాఫ్ట్‌వేరు, విషయ సమగ్రత రక్షణ, నమ్మదగు అత్యంత వేగ కనెక్షన్‌ను ఏర్పాటుచేయుట, యాజమాన్యము చేయుట, నిర్వహించుటను ఇలా పిలుస్తారు.

Options :

1. ✔ Web hosting

2. ✖ Web Browsing

Web Crawling

3. ✖

Navigation

4. ✖

Question Number : 39 Question Id : 26544814652 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

URL stands for

URL అనగా

Options :

Universal Resource Locator

1. ✖

Uniform Resource Locator

2. ✔

Unified Resource Locator

3. ✖

Universal Route Locator

4. ✖

Question Number : 40 Question Id : 26544814653 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Domain names used by commercial establishments usually have the suffix

వాణిజ్య సంస్థలు వాడు అధికార పరిధి పేర్లకు చివర ఈ దిగువ ప్రత్యయం ఉంటుంది

Options :

.org

1. ✖

.com

2. ✔

.ac.in

3. ✖

.gov.in

4. ✖

Question Number : 41 Question Id : 26544814654 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A source of renewable power which can be development with minimum cost is:

కనిష్ట వ్యయంతో నవీకరణ శక్తి వనరును అభివృద్ధి చేయగలిగినది

Options :

Biomass power

బయోమాస్ శక్తి

1. ✓

Tidal power

టైడల్ శక్తి

2. ✗

Wind mills

గాలి మరలు

3. ✗

Geothermal energy

ఉష్ణసంబంధ శక్తి

4. ✗

Question Number : 42 Question Id : 26544814655 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

An earthquake of a magnitude in the range of 6.0 – 6.9 on the Richter Scale is considered

రిక్టర్ స్కేలుపై 6.0 – 9.0 ప్రాంతంలో పరిమాణంతో కలుగు భూకంపాన్ని

Options :

Moderate

మోడరేట్ అంటారు

1. ✗

Strong

బలమైనది అంటారు

2. ✓

Major

పెద్దది అంటారు

3. ✗

4. ✗

Great
గొప్పది అంటారు

Question Number : 43 Question Id : 26544814656 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following is not a water-borne disease?

ఈ దిగుల వానిలో ఏది నీటి ద్వారా కలిగే వ్యాధి కాదు

Options :

1. ✖ Typhoid

2. ✖ Hepatitis

3. ✖ Cholera

4. ✔ Dengue

Question Number : 44 Question Id : 26544814657 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following is the largest source of water pollution in major rivers of India?

భారతదేశంలోని పెద్ద నదులలో ఈ దిగువ వానిలో ఏది అత్యంత నీటి కల్మషకారిగా

పేర్కొంటారు

Options :

1. ✔ Untreated sewage
శుద్ధి చేయని మురుగునీరు

2. ✖ Agriculture run-off
వ్యవసాయం నుండి బయటకు పోవునది

3. ✖ Unregulated small scale industries
క్రమబద్ధంకాబడని చిన్న తరహా పరిశ్రమలు

Religious practices

మతపర ఆచరణలు

4. ✖

Question Number : 45 Question Id : 26544814658 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

India's contribution to total global carbon dioxide emissions is about...

ప్రపంచ కార్బన్ డై ఆక్సైడ్ ఉద్గారాలలో ఇండియా వంతు

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

Options :

1. ~15%
2. ~3%
3. ~6%
4. ~10%

Question Number : 46 Question Id : 26544814659 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which is the largest Open University in India?

ఇండియాలో పెద్ద సార్వత్రిక విశ్వవిద్యాలయం

Options :

1. ✓ Indira Gandhi National Open University
2. ✖ Dr. B.R. Ambedkar Open University

3. ✖

4. ✖

Question Number : 47 Question Id : 26544814660 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The best way of providing value education is through....

విలువ విద్య అందించటానికి ఈ క్రింది వానిలో ఏది ఉత్తమమైన పద్ధతి?

Options :

Discussions on scriptural texts

వ్రాతపూర్వకమైన గ్రంథాలపై చర్చలు

1. ✖

Lectures / discourses on values

విలువలపై, ఉపన్యాసాలు / ప్రసంగాలు

2. ✖

Seminars / symposia on values

విలువలపై సదస్సులు / గోష్టులు

3. ✖

Mentoring / reflective sessions on values

విలువలపై మార్గదర్శక / ప్రతిబింబ సమావేశాలు

4. ✔

Question Number : 48 Question Id : 26544814661 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following universities has adopted the Meta University concept?

ఈ దిగువ విశ్వవిద్యాలయాలలో ఏది మెటా విశ్వవిద్యాలయ భావనను స్వీకరించింది

Options :

Assam University

1. ✖

Delhi University

2. ✔

3. ✓

4. ✗

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 : 49 Question Id : 26544814662 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

What is the key difference between non-formal and formal environmental education?

నియత, అనియత పర్యావరణ విద్యల మధ్యగల ముఖ్య తేడా?

Options :

Formal education focuses on traditional subjects, while non-formal education focuses on the environment.

నియత విద్య సంప్రదాయం విషయాలపైనా, అనియత విద్య పర్యావరణంపైనా దృష్టి

1. ✗ సారిస్తుంది

Formal education is structured, while non-formal education is not structured.

నియత విద్య నిర్మాణాత్మకమైనది, అనియతవిద్య నిర్మాణాత్మకమైనది కాదు

2. ✓

Non-formal education is carried out in a formal classroom setting.

అనియత విద్య అధికారిక తరగతి గదుల ఆచ్ఛాదనలో జరుపుతారు

3. ✗

Non-formal education is only for young learners, while formal education is for all age groups.

అనియత విద్య కేవలం చిన్న వయసు గల అభ్యాసకులకే కాని నియత విద్య అన్ని వయసు సమూహములకు.

4. ✗

Question Number : 50 Question Id : 26544814663 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Who rejected the principles of administration as 'myths' and 'proverbs'?

పరిపాలనా సూత్రములను పుక్కుటి పురాణాలు, సామెతలు అని తిరస్కరించినది:

Options :

W. F. Willoughby

1. ✖

2. ✖ Chester Barnard

3. ✔ Herbert Simon

4. ✖ L. D. White

Paper II

Section Id :	265448194
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	200
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	265448601
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 26544814664 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Let $a_n \geq 0$ for all $n \geq 1$. Suppose that $\sum_{n=1}^{\infty} a_n$ is convergent.

Consider the following statements.

(I) $\sum_{n=1}^{\infty} \frac{\sqrt{a_n}}{n}$ is also convergent

(II) $\sum_{n=1}^{\infty} \sqrt{a_n a_{n+1}}$ is also convergent

(III) $\sum_{n=1}^{\infty} a_n^2$ is divergent

Choose the correct option from the following.

Options :

1. ✓ I and II are true but III is false
2. ✗ I and III are true
3. ✗ II and III are true
4. ✗ All the three statements are true

Question Number : 52 Question Id : 26544814665 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

$$\lim_{n \rightarrow \infty} (n+1) \int_0^1 x^n e^x \frac{(x+2)^2}{(x+3)} dx =$$

Options :

1. ✗ $\frac{4e}{9}$
2. ✗ $\frac{9e}{8}$
3. ✓ $\frac{9e}{4}$
4. ✗ $\frac{4e}{3}$

Question Number : 53 Question Id : 26544814666 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following statements is FALSE?

Options :

1. ✖ If $f: [0,1] \rightarrow [0,1]$ is a continuous mapping, then there exists at least one $x \in [0,1]$ such that $f(x) = x$.
2. ✔ Every continuous open mapping $f: \mathbb{R} \rightarrow \mathbb{R}$ need not be a monotonic function.
3. ✖ If f is a continuous mapping of a metric space X into a metric space Y , then $f(\overline{E}) \subseteq \overline{f(E)}$ for every set $E \subseteq X$.
4. ✖ A uniformly continuous function of a uniformly continuous function is uniformly continuous

Question Number : 54 Question Id : 26544814667 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider the following statements.

- (I) $e^\pi > \pi^e$.
- (II) $(e-x)^{e+x} < (e+x)^{e-x}$ for $x \in (0, e)$.

Choose the correct option from the following.

Options :

1. ✖ Only I is true
2. ✖ Only II is true
3. ✖ Both I and II are false
4. ✔ Both I and II are true

Question Number : 55 Question Id : 26544814668 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

On $[0,1]$, consider the sequences of functions $f_n(x) = \frac{1}{1+(nx-1)^2}$, $g_n(x) = x^n(1-x)$.

Choose the correct option from the following.

Options :

Both $\{f_n\}$ and $\{g_n\}$ converge uniformly.

1. ✖

$\{f_n\}$ converges uniformly while $\{g_n\}$ converges point wise.

2. ✖

$\{f_n\}$ converges point wise while $\{g_n\}$ converges uniformly.

3. ✔

Both $\{f_n\}$ and $\{g_n\}$ converge point wise.

4. ✖

Question Number : 56 Question Id : 26544814669 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

$$\int_0^{\infty} \frac{1 - \cos 3x}{x} e^{-x} dx =$$

Options :

$$\frac{1}{2} \log_e 3$$

1. ✖

$$\frac{1}{2} \log_e 10$$

2. ✔

$$\frac{1}{4} \log_e 28$$

3. ✖

$$\frac{1}{8} \log_e 4$$

4. ✖

Question Number : 57 Question Id : 26544814670 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Which of the following statements is TRUE?

Options :

1. ✖ If the Lebesgue outer measure of a set is zero, then the set is countable.
2. ✖ If a function is uniformly continuous, then it is absolutely continuous.
3. ✔ If a function is absolutely continuous, then it is of bounded variation.
4. ✖ Let $E \subseteq \mathbb{R}$ and $\alpha \in \mathbb{R}$. If E is a Lebesgue measurable set, then $E + \alpha$ need not be a Lebesgue measurable set.

Question Number : 58 Question Id : 26544814671 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

$$\text{Let } \phi: [0,3] \rightarrow \mathbb{R} \text{ be defined as } \phi(x) = \begin{cases} \frac{1}{2}, & 0 \leq x < 1 \\ -\frac{3}{2}, & 1 \leq x < \frac{5}{2} \\ 5, & \frac{5}{2} \leq x \leq 3 \end{cases}$$

$$\text{Then } \int_{[0,3]} \phi =$$

Options :

1. ✖ $\frac{9}{4}$
2. ✖ $\frac{7}{4}$
3. ✖ $\frac{5}{4}$

4. ✓ $\frac{3}{4}$

Question Number : 59 Question Id : 26544814672 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If $f: [1,5] \rightarrow \mathbb{R}$ is defined as $f(x) = x^2 + 4x + 3$, then the total variation of f on $[1,5]$ is

Options :

1. ✗ 80

2. ✗ 20

3. ✓ 40

4. ✗ 10

Question Number : 60 Question Id : 26544814673 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Let $f: \mathbb{R}^2 \rightarrow \mathbb{R}$ be defined by $f(0,0) = 0$ and

$$f(x,y) = \begin{cases} x \sin\left(\frac{1}{x}\right) + y \sin\left(\frac{1}{y}\right) & \text{if } x \neq 0 \text{ and } y \neq 0 \\ x \sin\left(\frac{1}{x}\right) & \text{if } x \neq 0 \text{ and } y = 0 \\ y \sin\left(\frac{1}{y}\right) & \text{if } y \neq 0 \text{ and } x = 0 \end{cases}.$$

Choose the correct option from the following.

Options :

1. ✗ f is not continuous at $(0,0)$.

2. ✖ $f_x(0,0)$ and $f_y(0,0)$ exist.

3. ✔ f is continuous at $(0,0)$ but $f_x(0,0)$ and $f_y(0,0)$ do not exist.

4. ✖ Neither f is continuous at $(0,0)$ nor $f_x(0,0)$, $f_y(0,0)$ exist.

Question Number : 61 Question Id : 26544814674 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Let V be the vector space of 3×3 matrices over the field of real numbers and

$A = \begin{bmatrix} 0 & 0 & -4 \\ 1 & 0 & -5 \\ 0 & 1 & -7 \end{bmatrix}$. Let T be the linear operator on V defined by $T(B) = AB$ for any

$B \in V$. Then the minimal polynomial for T is

Options :

1. ✖ $x^3 + 4x^2 + 5x + 7$

2. ✖ $x^3 - 4x^2 - 5x - 7$

3. ✖ $x^3 + 4x^2 + 7x + 5$

4. ✔ $x^3 + 7x^2 + 5x + 4$

Question Number : 62 Question Id : 26544814675 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following matrix is not diagonalizable?

Options :

1. ✔ $\begin{bmatrix} 2 & 2 \\ 0 & 2 \end{bmatrix}$

2. ✖ $\begin{bmatrix} 3 & 1 \\ 0 & 2 \end{bmatrix}$

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

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

Question Number : 63 Question Id : 26544814676 Question Type : MCQ Option Shuffling : No
 Display Question Number : Yes
 Correct Marks : 2 Wrong Marks : 0

Which of the following statements is FALSE?

Options :

1. ✖ Every matrix A such that $A^2 = A$ is similar to a diagonal matrix.

2. ✔ If the characteristic polynomials are same, then the matrices are similar.

3. ✖ The characteristic polynomial of an $n \times n$ nilpotent matrix is x^n .

4. ✖ The minimal polynomial of the matrix $A = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{bmatrix}$ is x^3 .

Question Number : 64 Question Id : 26544814677 Question Type : MCQ Option Shuffling : No
 Display Question Number : Yes
 Correct Marks : 2 Wrong Marks : 0

Let V be a finite dimensional vector space and $T: V \rightarrow V$ be a linear operator. Also let W be an invariant subspace for T .

Consider the following statements.

(I) The characteristic polynomial of the restriction operator T_w divides the characteristic polynomial for T .

(II) The minimal polynomial for T divides the minimal polynomial for T_w .

Choose the correct option from the following.

Options :

1. ✖ Both I and II are true
2. ✖ I is false while II is true
3. ✔ I is true while II is false
4. ✖ Both I and II are false

Question Number : 65 Question Id : 26544814678 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The Jordan canonical form of the matrix $A = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 0 & 2 & 2 & 0 \\ 0 & 0 & 2 & 0 \\ -1 & 1 & 0 & 3 \end{bmatrix}$ is

Options :

1. ✖ $\begin{bmatrix} 2 & 1 & 0 & 0 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 2 & 1 \\ 0 & 0 & 0 & 2 \end{bmatrix}$

2. ✔ $\begin{bmatrix} 2 & 1 & 0 & 0 \\ 0 & 2 & 1 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 2 \end{bmatrix}$

3. ✖

$$\begin{bmatrix} 2 & 1 & 0 & 0 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 2 \end{bmatrix}$$

4. ✖

$$\begin{bmatrix} 2 & 1 & 0 & 0 \\ 0 & 2 & 1 & 0 \\ 0 & 0 & 2 & 1 \\ 0 & 0 & 0 & 2 \end{bmatrix}$$

Question Number : 66 Question Id : 26544814679 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

For any $n \times n$ matrix A , let $tr(A)$ denote the trace of the matrix A . Then which of the following statements is FALSE?

Options :

1. ✖

If A, B are any two $n \times n$ matrices, then $tr(AB) = tr(BA)$.

2. ✖

If $A = A^2$, then the rank of A is trace of A .

3. ✖

If A, B, C are $n \times n$ matrices, then $tr(ABC) = tr(BCA) = tr(CAB)$.

4. ✔

There exist two $n \times n$ matrices A, B such that $AB - BA = I$ (Here $n \geq 2$).

Question Number : 67 Question Id : 26544814680 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If a 7×5 matrix A has rank 2, then the dimension of the null space of A is

Options :

1. ✖

2

2. ✖ 5

3. ✔ 3

4. ✖ 4

Question Number : 68 Question Id : 26544814681 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The dimension of the subspace W of $\mathbb{R}^4$ spanned by the vectors $(1, -4, -2, 1)$, $(1, -3, -1, 2)$, $(3, -8, -2, 7)$ is

Options :

1. ✖ 1

2. ✖ 3

3. ✖ 4

4. ✔ 2

Question Number : 69 Question Id : 26544814682 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If the linear operator $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$ is defined as

$T(x, y, z) = (x - 3y - 2z, y - 4z, z)$, then $T^{-1}(1, 3, 2) =$

Options :

1. ✖ $(38, 2, 11)$

2. ✔ $(38, 11, 2)$

3. ✖ (11,2,38)

4. ✖ (2,3,1)

Question Number : 70 Question Id : 26544814683 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

The rank of the quadratic form $6x_1^2 + 17x_2^2 + 3x_3^2 - 20x_1x_2 - 14x_2x_3 + 8x_3x_1$ is

Options :

1. ✖ 0

2. ✖ 3

3. ✔ 2

4. ✖ 1

Question Number : 71 Question Id : 26544814684 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

The number of positive integers less than or equal to 400 which are not divisible by 2, 3 or 5 is

Options :

1. ✔ 106

2. ✖ 107

3. ✖ 108

4. ✖ 109

Question Number : 72 Question Id : 26544814685 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Let S_n be the symmetric group on n symbols.

Consider the following statements.

(I) The number of 4 cycles in S_6 is 180.

(II) The number of conjugates of $(1,2,3,\dots,n)$ in S_n is $(n-1)!$.

Choose the correct option from the following.

Options :

1. ✓ Only II is true
2. ✗ Only I is true
3. ✗ Both I and II are true
4. ✗ Both I and II are false

Question Number : 73 Question Id : 26544814686 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

The order of the Sylow-3 subgroup of the general linear group $GL_4(\mathbb{Z}_3)$ of 4×4 matrices with entries from the field $\mathbb{Z}_3$ is

Options :

1. ✗ 81
2. ✗ 243
3. ✓ 729
4. ✗ 2187

Question Number : 74 Question Id : 26544814687 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

Which of the following statements is FALSE?

Options :

1. ✖ If H is a subgroup of a group G , and if $N(H) = \{g \in G \mid gHg^{-1} = H\}$, then $N(H)$ is the largest subgroup of G in which H is normal.
2. ✖ If N, M are normal subgroups of a group G , then NM is also a normal subgroup of G .
3. ✖ The alternating group A_4 has no subgroup of order 6.
4. ✔ The Sylow-5 subgroup of the group G of order 30 is not a normal subgroup.

Question Number : 75 Question Id : 26544814688 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

The degree of the splitting field of $f(x) = x^4 - 2$ over the field of rational numbers is

Options :

1. ✖ 4
2. ✖ 6
3. ✔ 8
4. ✖ 12

Question Number : 76 Question Id : 26544814689 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

If $\phi_n(x)$ denotes the n^{th} cyclotomic polynomial, then $\phi_6(x) =$

Options :

1. ✖ $x^2 + x + 1$

2. ✖ $x^2 + 1$

3. ✖ $x^4 + 1$

4. ✔ $x^2 - x + 1$

Question Number : 77 Question Id : 26544814690 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following statements is TRUE?

Options :

1. ✖ Every principal ideal domain is a Euclidean domain.

2. ✔ In the ring $\mathbb{Z}[\sqrt{5}]$, 2 is irreducible but not prime.

3. ✖ $\mathbb{Z}[\sqrt{-3}]$ is a principal ideal domain.

4. ✖ In an integral domain, every irreducible is always a prime.

Question Number : 78 Question Id : 26544814691 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The units digit in (the decimal expansion of) $17^{17^{17}}$ is

Options :

1. ✓ 7

2. ✗ 3

3. ✗ 5

4. ✗ 1

Question Number : 79 Question Id : 26544814692 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A horizontal lever is in static equilibrium under the application of vertical forces F_1 at a distance l_1 from the fulcrum and F_2 at a distance l_2 from the fulcrum. The equilibrium for the above quantities can be obtained if

Options :

1. ✓ $F_1 l_1 = F_2 l_2$

2. ✗ $2 F_1 l_1 = F_2 (l_2 + 10)$

3. ✗ $F_1 l_2 = 2 F_2 (l_2 + 10)$

4. ✗ $F_1 l_1 < F_2 l_2$

Question Number : 80 Question Id : 26544814693 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The Hamilton equations of motion for one dimensional harmonic oscillator are

Options :

1. ✗ $\dot{x} + \ddot{x} = p, \quad \dot{x} + mk = 0$

2. ✗

$$p = m\dot{x}, \quad m\ddot{x} + k = 0$$

3. ✓ $p = m\dot{x}, \quad m\ddot{x} + kx = 0$

4. ✗ $\ddot{x} + p\dot{x} + mx = 0, \quad \ddot{x} + kx = 0$

Question Number : 81 Question Id : 26544814694 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The integral equation $y(x) = \lambda \sin x \int_0^x y(t) \cos t \, dt + \lambda \cos x \int_x^\pi y(t) \sin t \, dt$ is equivalent to the boundary value problem

Options :

1. ✗ $y'' - \lambda y = 0, \quad y(0) = 0, \quad y'(\pi) = 0$

2. ✗ $y'' + (\lambda - 1)y = 0, \quad y'(\pi) = 0, \quad y'(0) = 0$

3. ✓ $y'' - (\lambda - 1)y = 0, \quad y(\pi) = 0, \quad y'(0) = 0$

4. ✗ $y'' + \lambda y = 0, \quad y(\pi) = 0, \quad y'(0) = 0$

Question Number : 82 Question Id : 26544814695 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If the integral equation $y(x) = \lambda \int_0^{\pi/4} \sin^2 x \, y(t) \, dt$ has a non-zero solution, the $\lambda =$

Options :

1. ✗ $\frac{2}{\pi - 2}$

2. ✓

$$\frac{8}{\pi - 2}$$

3. ✖ $\frac{4}{\pi - 2}$

4. ✖ $\frac{1}{\pi - 2}$

Question Number : 83 Question Id : 26544814696 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If $y(x)$ satisfies the integral equation $y(x) = 1 + x + \int_0^x e^{-2(x-t)} y(t) dt$, then $y(4) =$

Options :

1. ✖ 8

2. ✖ 6

3. ✖ 7

4. ✔ 9

Question Number : 84 Question Id : 26544814697 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The variation of the functional $I[y(x)] = \int_0^\pi y' \sin y dx$ is

Options :

1. ✔ $\int_0^\pi (y' \cos y \delta y + \sin y \delta y') dx$

2. ✖

$$\int_0^{\pi} (y' \sin y \delta y + \cos y \delta y') dx$$

3. ✖ $\int_0^{\pi} (y' \delta y + \sin y \delta y') dx$

4. ✖ $\int_0^{\pi} (\sin y \delta y + \cos y \delta y') dx$

Question Number : 85 Question Id : 26544814698 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The extremals of the functional $I[y(x)] = \int_a^b 2024 y \sqrt{1 + y'^2} dx$ are

Options :

1. ✔ Catenaries

2. ✖ Cycloids

3. ✖ Circles

4. ✖ Straight lines

Question Number : 86 Question Id : 26544814699 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The extremum of the functional $I[y(x)] = \int_0^1 (y^2 + x^2 y') dx$, $y(0) = 0$, $y(1) = 1$, is achieved on the curve

Options :

1. ✖ $y = x^2$

2. ✓ $y = x$

3. ✗ $y^2 = x^3$

4. ✗ $y^2 = x$

Question Number : 87 Question Id : 26544814700 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If the function $f(x, y) = (y + y^2) \frac{\cos x}{x^2}$ satisfies Lipchitz condition on

$$R = \left\{ (x, y) : |x - 1| \leq \frac{1}{2}, |y| \leq 1 \right\}, \text{ then the Lipchitz constant } K =$$

Options :

1. ✗ 6

2. ✗ 8

3. ✓ 12

4. ✗ 10

Question Number : 88 Question Id : 26544814701 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The functions x^4 and $x^3|x|$ are linearly independent on

Options :

1. ✗ $[-4, 0]$

2. ✗ $[0, 4]$

3. ✗

[2,8]

4. ✓ [-4,4]

Question Number : 89 Question Id : 26544814702 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Let $y_1(x)$ and $y_2(x)$ be two linearly independent solutions of $y'' + a(x)y = 0$ such that $y_1(0) = 1, y_1'(0) = 0, y_2(0) = 0, y_2'(0) = 1$. Then the Wronskian $W(y_1, y_2)(4) =$

Options :

1. ✓ 1

2. ✗ 4

3. ✗ 16

4. ✗ 2

Question Number : 90 Question Id : 26544814703 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

The eigen values of the BVP $y'' + (\lambda - 1)y = 0, y(\pi) = 0, y'(0) = 0$ are

Options :

1. ✓ $1 + \left(n + \frac{1}{2}\right)^2$, where n is any integer

2. ✗ $1 - \left(n - \frac{1}{2}\right)^2$, where n is any integer

3. ✗

$$1 - \left(n + \frac{1}{2}\right)^2, \text{ where } n \text{ is any integer}$$

$$1 + \left(n - \frac{1}{2}\right)^2, \text{ where } n \text{ is any integer}$$

4. ✖

Question Number : 91 Question Id : 26544814704 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If the Green's function of the BVP $y'' = 0, y(0) = y'(1)$ and $y'(0) = y(1)$ is

$$G(x, t) = \begin{cases} a_1 x + a_2, & x \leq t \\ b_1 x + b_2, & x \geq t \end{cases}, \text{ then } a_2 + b_1 =$$

Options :

1. ✖ t

2. ✔ $2t - 2$

3. ✖ $t - 1$

4. ✖ $2t$

Question Number : 92 Question Id : 26544814705 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The integral surface of the equation $z_x + z_y = 1$ passing through the curves $x = 0$ and $z = y^2$ is

Options :

1. ✖ $y^2 = z - x$

2. ✖ $(y + x)^2 = z + x$

3. ✖ $y^2 + x = z$

4. ✔ $(y - x)^2 = z - x$

Question Number : 93 Question Id : 26544814706 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The partial differential equation $(1 + y)z_{xx} + 2xz_{xy} + (1 - y)z_{yy} = 0$ is elliptic in the region

Options :

1. ✔ $\{(x, y) : x^2 + y^2 < 1\}$

2. ✖ $\{(x, y) : x^2 + y^2 > 1\}$

3. ✖ $\{(x, y) : x^2 + y^2 = 1\}$

4. ✖ $\{(x, y) : x^2 + y^2 \leq 1\}$

Question Number : 94 Question Id : 26544814707 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If $u(x, t)$ is the solution of $u_t = 4u_{xx}$ under the conditions $u(0, t) = u(\pi, t) = 0$ and

$u(x, 0) = \sin x, 0 < x < \pi, t > 0$, then $u\left(\frac{\pi}{2}, 2\right) =$

Options :

1. ✖ e^{-4}

2. ✖ 1

3. ✔

$$e^{-8}$$

4. ✖ 0

Question Number : 95 Question Id : 26544814708 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The rate of convergence of the method $x_{n+1} = \frac{x_n}{2}(3 - x_n^2)$, $n = 0, 1, 2, \dots$, is

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 4

4. ✖ 1.412

Question Number : 96 Question Id : 26544814709 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider the system of equations $x - ay = k_1$ and $-ax + y = k_2$, where a is a real constant. Then the spectral radius of the Gauss-Seidel iteration matrix is

Options :

1. ✖ a

2. ✖ $a^2 - 1$

3. ✖ $2a$

4. ✔ a^2

Question Number : 97 Question Id : 26544814710 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If $f(0)=1$, $f(1)=3$ and $f(3)=55$, then $f(2)=$

Options :

1. ✖ 32

2. ✖ 43

3. ✔ 21

4. ✖ 39

Question Number : 98 Question Id : 26544814711 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

A differentiation rule is of the form $f'(x_0) = a_0 f_0 + a_1 f_1 + a_2 f_2$, $x_n = x_0 + nh$, is given. Then the value of $a_0 + a_1 + a_2$ so that the rule is exact for a polynomial of degree ≤ 2 is

Options :

1. ✔ 0

2. ✖ $\frac{1}{2h}$

3. ✖ $\frac{4}{h}$

4. ✖ $\frac{3}{2h}$

Question Number : 99 Question Id : 26544814712 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Let $X = \mathbb{R}$ be with cofinite topology on it. Then which of the following is open in X ?

Options :

1. ✖ The set of rationals
2. ✖ $(0,1)$
3. ✖ $\{1,2,3,4\}$
4. ✔ The set of all reals which do not lie in the set $\{n \in \mathbb{N} : n \text{ is even} \leq 2^{2024}\}$

Question Number : 100 Question Id : 26544814713 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Let T be the topology on $\mathbb{R}$ generated by the interval $[a,b)$ and let T^* be the topology on $\mathbb{R}$ induced by the collection of all linear functions $f: \mathbb{R} \rightarrow (\mathbb{R}, T)$ defined by $f(x) = ax + b$, $a, b \in \mathbb{R}$. Then T^* is

Options :

1. ✖ indiscrete topology
2. ✔ discrete topology
3. ✖ co-finite topology
4. ✖ co-countable topology

Question Number : 101 Question Id : 26544814714 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider the following three statements.

(I) The components of a totally disconnected spaces are its points.

(II) A Hausdorff space is totally disconnected if it has an open base whose sets are also closed.

(III) The product of a non-empty class of locally connected spaces is locally connected.

Which of the following options is correct?

Options :

1. ✖ All I, II and III are true
2. ✖ I, II are true and III is false
3. ✔ I is true and II, III are false
4. ✖ I, II are false and III is true

Question Number : 102 Question Id : 26544814715 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider $\mathbb{R}$ with discrete topology on it. Then which of the following sets is compact in $\mathbb{R}$?

Options :

1. ✔ $\{2, 4, 6, 8, \dots, 2024\}$
2. ✖ $[1, 4]$
3. ✖ The set of rational numbers
4. ✖ $\left\{ \frac{n}{n+1} : n \in \mathbb{N} \right\}$

Question Number : 103 Question Id : 26544814716 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

If $z^{-(i-1)} = 4$, then $z =$

Options :

1. ✖ $e^{i[\ln 2 + n\pi]}, n \in \mathbb{Z}$
2. ✖ $2e^{n\pi} e^{i\ln 2}, n \in \mathbb{Z}$
3. ✖ $e^{-n\pi} e^{i[\ln 2 - n\pi]}, n \in \mathbb{Z}$
4. ✔ $2e^{-n\pi} e^{i[\ln 2 + n\pi]}, n \in \mathbb{Z}$

Question Number : 104 Question Id : 26544814717 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

If $f(z)$ is an analytic function such that $\operatorname{Re}[f'(z)] = 3x^2 - 4y - 3y^2$ and $f(1+i) = 0$,
then $f(i) =$

Options :

1. ✖ $2 + 5i$
2. ✔ $6 - 5i$
3. ✖ 0
4. ✖ $-6 + 5i$

Question Number : 105 Question Id : 26544814718 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

If the function $f(z)$ is analytic inside and on a simple closed contour C containing the point $z = z_0$ inside it, then $\int_0^{2\pi} e^{-i\theta} f(z_0 + e^{i\theta}) d\theta =$

Options :

1. ✖ $2\pi i f'(z_0)$

2. ✖ $\pi i f'(z_0)$

3. ✔ $2\pi f'(z_0)$

4. ✖ $\frac{\pi}{2} f'(z_0)$

Question Number : 106 Question Id : 26544814719 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

The radius of convergence of the Maclaurin's series of $f(z) = \frac{z^6 + 4z^2 + 5}{1 - \cos z}$ is

Options :

1. ✔ 2π

2. ✖ π

3. ✖ 1

4. ✖ 2

Question Number : 107 Question Id : 26544814720 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 2 Wrong Marks : 0

The value of the integral $\int_{|z|=\frac{1}{2}} (1+z+3z^2) \left(e^{\frac{2}{z}} + e^{\frac{1}{z-1}} + e^{\frac{1}{z-2}} + e^{\frac{1}{z-3}} \right) dz$ is

Options :

1. ✖ 0
2. ✖ $8\pi i$
3. ✖ $12\pi i$
4. ✔ $16\pi i$

Question Number : 108 Question Id : 26544814721 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following is not a real part of an analytic function?

Options :

1. ✖ $\sin x \cos y$
2. ✔ $x^2 + y$
3. ✖ $x^3 - 3xy^2 - 2x$
4. ✖ $e^x(x \sin y + y \cos y)$

Question Number : 109 Question Id : 26544814722 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The principal value of the integral $\int_{-\infty}^{\infty} \frac{x \sin x}{x^2 + 4} dx$ is

Options :

1. ✖ πe^2

2. ✖ $2\pi e^{-1}$

3. ✔ πe^{-2}

4. ✖ πe

Question Number : 110 Question Id : 26544814723 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Let C be the circle $C: z = 4e^{i\theta}, -\pi \leq \theta \leq \pi$. Then $\left| \int_C \frac{dz}{z^2 + 24} \right| \leq$

Options :

1. ✖ $\frac{2\pi}{3}$

2. ✖ $\frac{7\pi}{8}$

3. ✖ $\frac{8\pi}{9}$

4. ✔ π

Question Number : 111 Question Id : 26544814724 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Suppose a population of 3 units has the values, 2, 4 and 6. Two units are drawn from the population using simple random sampling without replacement and M denotes the mean. Which of the following statements are true?

- | | |
|---------------------|--------------------------|
| (i) $E(M) = 4$ | (ii) $\text{Var}(M) = 1$ |
| (iii) $E(M^2) = 17$ | (iv) $E(M^3) = 72$ |

Options :

1. ✖ (i) and (ii)
2. ✖ (i) and (iii)
3. ✔ (i) and (iv)
4. ✖ (ii) and (iv)

Question Number : 112 Question Id : 26544814725 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose C_x and C_y are coefficients of variance of auxiliary variable X and study variable Y respectively, ρ is the correlation between X and Y, then the ratio estimator is more efficient than simple mean per unit estimator if

Options :

1. ✖ $\rho < \frac{1}{2} \frac{C_x}{C_y}$
2. ✔ $\rho > \frac{1}{2} \frac{C_x}{C_y}$
3. ✖ $\rho = \frac{1}{2} \frac{C_x}{C_y}$
4. ✖ $\rho = 1 - \frac{1}{2} \frac{C_x}{C_y}$

Question Number : 113 Question Id : 26544814726 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Let $\bar{y}$ and $\bar{y}^{st}$ be the estimates of population mean under simple random sampling and stratified sampling respectively. Suppose the estimates of their variances are $\hat{V}(\bar{y}) = 291$ and $\hat{V}(\bar{y}^{st}) = 379$. The estimate of the relative gain in efficiency due to stratification is given by

Options :

1. ✖ 10%
2. ✖ 13%
3. ✖ 20%
4. ✔ 30%

Question Number : 114 Question Id : 26544814727 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following methods are used to obtain samples under probability proportional to size sampling scheme?

- (i) Lottery method (ii) Cumulative total method
(iii) Lahiri's method

Options :

1. ✗ only (i)
2. ✗ both (i) and (ii)
3. ✓ Both (ii) and (iii)
4. ✗ only (iii)

Question Number : 115 Question Id : 26544814728 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Each face of a 10 inch cube is painted. The cube is cut into 1000 one inch cubes. The 1000 cubes are mixed and one cube is drawn at random. What is the probability that the cube has exactly one painted face?

Options :

1. ✓ 0.384

2. ✗ 0.467

3. ✗ 0.5

4. ✗ 0.616

Question Number : 116 Question Id : 26544814729 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Candidates A and B are applying for a job. The probability that A applies for a job is $\frac{1}{4}$, the probability that A applies for the job given that B applies for the job is $\frac{1}{2}$ and the probability that B applies for the job given that A applies for the job is $\frac{1}{3}$. What is the probability that A does not apply for the job given that B does not apply for the job?

Options :

1. ✗ $\frac{11}{12}$

2. ✗ $\frac{1}{2}$

3. ✗ $\frac{2}{3}$

4. ✓ $\frac{4}{5}$

Question Number : 117 Question Id : 26544814730 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Let X be a random variable with the probability function $f(x) = \begin{cases} 0.2 & \text{if } |x| < 1 \\ 0.1 & \text{if } 1 < |x| < 4 \\ 0 & \text{o.w} \end{cases}$

What is the $P(0.5 < X < 5)$?

Options :

1. ✖ 0.3

2. ✔ 0.4

3. ✖ 0.5

4. ✖ 0.8

Question Number : 118 Question Id : 26544814731 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose $E[X]$, $E[Y]$ and $E[X]+E[Y]$ exist, then which of the following statements is not true?

Options :

1. ✖ $E(CX) = C E [X]$

2. ✖ $X \geq Y \text{ a.s} \Rightarrow E[X] \geq E[Y]$

3. ✖ $X \text{ is integrable} \Leftrightarrow |X| \text{ is integrable}$

4. ✔ $|X| \leq Y, X \text{ is integrable} \Rightarrow Y \text{ is integrable}$

Question Number : 119 Question Id : 26544814732 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following is a characteristic function corresponding to $f(x) = e^{-x}, x \geq 0$?

Options :

1. ✓ $(1 - iu)^{-1}$

2. ✗ $e^{-u^2/2}$

3. ✗ $e^{-|u|}$

4. ✗ $\frac{1 - \cos u}{u^2}$

Question Number : 120 Question Id : 26544814733 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose $P(X_n = 1) = \frac{1}{2} = P(X_n = 0)$ and X_n 's are independent. What is the distribution of $Z = \sum X_n 2^{-n}$?

Options :

1. ✗ $N(0,1)$

2. ✗ $N\left(\frac{1}{2}, 1\right)$

3. ✓ $U(0,1)$

4. ✗ $U\left(\frac{1}{2}, 1\right)$

Question Number : 121 Question Id : 26544814734 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose $i \in S$ of a Markov chain, which of the following statements is true?

Options :

1. ✖ i is recurrent iff $\sum_{n=0}^{\infty} p_{ij}^{(n)} < \infty$

2. ✔ i is transient iff $\sum_{n=0}^{\infty} p_{ij}^{(n)} < \infty$

3. ✖ i is transient iff $\sum_{n=0}^{\infty} p_{ii}^{(n)} = \infty$

4. ✖ if i is recurrent, then $\mu_i < \sum_{n=1}^{\infty} n f_{ii}^{(n)}$

Question Number : 122 Question Id : 26544814735 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider three state Markov Chain having tpm $\begin{pmatrix} 0 & \frac{2}{3} & \frac{1}{3} \\ \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} & 0 \end{pmatrix}$. Which of the following is the limiting distribution of the given tpm?

Options :

1. ✖ $\begin{pmatrix} \frac{1}{3} & \frac{1}{3} & \frac{1}{3} \end{pmatrix}$

2. ✖ $\begin{pmatrix} \frac{1}{2} & \frac{1}{4} & \frac{1}{4} \end{pmatrix}$

$$\left(\frac{8}{27} \quad \frac{8}{27} \quad \frac{11}{27} \right)$$

3. ✖

$$\left(\frac{1}{3} \quad \frac{10}{27} \quad \frac{8}{27} \right)$$

4. ✔

Question Number : 123 Question Id : 26544814736 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider a Markov Chain $X_0, X_1, X_2, \dots$ with state space S . Suppose $i, j \in S$ are two states which communicate with each other, then which of the following statements is not true?

Options :

$$\lim_{n \rightarrow \infty} P(X_n = j \mid X_0 = i) = \lim_{n \rightarrow \infty} P(X_n = j \mid X_0 = j)$$

1. ✖

$$\lim_{n \rightarrow \infty} P(X_n = i \mid X_0 = k) = \lim_{n \rightarrow \infty} P(X_n = j \mid X_0 = k) \forall k \in S$$

2. ✔

i is recurrent iff j is recurrent

3. ✖

period of i = period of j

4. ✖

Question Number : 124 Question Id : 26544814737 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If passengers arrive singly at a taxi stand in accordance with Poisson process with parameter λ_1 and taxis arrive in accordance with a Poisson process with parameter λ_2 , then the mean and variance of $N(t)$ that give the excess of passengers over taxis in an interval t are given by

Options :

1. ✓ $(\lambda_1 - \lambda_2) t$ and $(\lambda_1 + \lambda_2) t$

2. ✗ $(\lambda_1 - \lambda_2) t$ and $(\lambda_1 - \lambda_2) t$

3. ✗ $(\lambda_1 + \lambda_2) t$ and $(\lambda_1 - \lambda_2) t$

4. ✗ $(\lambda_1 + \lambda_2) t$ and $(\lambda_1 + \lambda_2) t$

Question Number : 125 Question Id : 26544814738 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following statements are correct?

(i) If $X \sim G(\alpha, n)$ then for $\alpha < 1$, mean > variance

(ii) If $X_1 \sim \chi_{n_1}^2$ and $X_2 \sim \chi_{n_2}^2$ are two independent χ^2 variates then

$$\frac{X_1}{X_1 + X_2} \sim \beta_1\left(\frac{n_1}{2}, \frac{n_2}{2}\right)$$

(iii) If $X_1 \sim G(n_1)$ and $X_2 \sim G(n_2)$ are two independent Gamma variates then

$$\frac{X_1}{X_1 + X_2} \sim \beta_1(n_1, n_2)$$

(iv) If $X \sim \beta_1(m, n)$ such that $m < 1$ and $n < 1$ then the distribution of X has mode at $x = 0$

Options :

1. ✗ i & iv

2. ✗ i, ii & iii

3. ✗ i, iii & iv

4. ✓ ii & iii

Question Number : 126 Question Id : 26544814739 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Let $X_1, \dots, X_n$ be a random sample from normal distribution with mean θ and variance σ^2 . What is the distribution of $(n-1)\hat{\sigma}^2$, where $\hat{\sigma}^2$ is an unbiased estimator of σ^2 ?

Options :

1. ✖ Chisquare distribution with $1df$
2. ✖ Chisquare distribution with $(n-1)df$
3. ✔ Scaled Chisquare distribution with $(n-1)df$
4. ✖ Scaled Chisquare distribution on with $n df$

Question Number : 127 Question Id : 26544814740 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Suppose $X_{(1)}, X_{(2)}, \dots, X_{(n)}$ is order statistics for a random sample from a continuous distribution with cdf $F(x)$, then the marginal density of $v_j = F(X_{(j)})$, $1 \leq j \leq n$

follows beta distribution with parameters α and β given by

Options :

1. ✖ j and $n+j$
2. ✔ j and $n-j+1$
3. ✖ j and $n-j$
4. ✖ j and $n-j-1$

Question Number : 128 Question Id : 26544814741 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

In a linear model $\underline{y} = A\underline{\beta} + \underline{e}$ where $\underline{y} = (y_1, \dots, y_n)^1$, $\underline{\beta} = (\beta_1, \dots, \beta_p)^1$, $\underline{e} = (e_1, \dots, e_n)^1$. A is $(n \times p)$ matrix and $\underline{e} \sim N(0, \sigma^2 I)$, suppose $\lambda^1 \underline{\beta}$ is estimable, its best estimate is given by $\lambda^1 \underline{\hat{\beta}}$ where $\underline{\hat{\beta}}$ is any solution of the equations

Options :

1. ✖ $AA' \underline{\beta} = A\underline{y}$

2. ✔ $A'A \underline{\beta} = A'\underline{y}$

3. ✖ $AA' \underline{\beta} = A'\underline{y}$

4. ✖ $A'A \underline{\beta} = A\underline{y}$

Question Number : 129 Question Id : 26544814742 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose d is the difference between two treatments means to be detected, S is an estimate of the error mean square and t_α is the t value at α level of significance for df associated with S^2 , then the number of replications is given by

Options :

1. ✖ $r = \frac{2t_\alpha S}{d}$

2. ✖ $\frac{t_\alpha^2 S^2}{d^2}$

3. ✔

$$r = \frac{2t_a^2 S^2}{d^2}$$

4. ✖ $\frac{\sqrt{2}t_a S^2}{d^2}$

Question Number : 130 Question Id : 26544814743 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

What type of outcome variable does logistic regression typically modelled?

Options :

1. ✖ Categorical with more than two categories
2. ✖ Continuous
3. ✖ Ordinal
4. ✔ dichotomous

Question Number : 131 Question Id : 26544814744 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The following lay out

A B C D
A C B D
B A C C
A A B C

Meets the requirement of a

Options :

1. ✔ Completely randomized design

2. ✖ BIBD
3. ✖ Randomized block design
4. ✖ Latin square design

Question Number : 132 Question Id : 26544814745 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following statements are true?

- i. For a fixed effect model $y_{ij} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \epsilon_{ij}$, $\sum \alpha_i = 0$, $\sum \beta_j = 0$ & $\sum (\alpha\beta)_{ij} = 0$
- ii. $T_1 + 2T_2 - T_3$ is not a contrast among three treatments
- iii. The information from an experiment stabilizes when error degrees of freedom is atleast 10
- iv. An experimental design which is devoid of any randomization process is known as a systematic design

Options :

1. ✖ i& ii
2. ✖ i, ii & iii
3. ✔ i, ii & iv
4. ✖ iii & iv

Question Number : 133 Question Id : 26544814746 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If the interactions AB and BC are confounded with incomplete blocks in a 2^n factorial Experiment, then automatically confounded effect is

Options :

1. ✖ A

2. ✖ C

3. ✔ AC

4. ✖ ABC

Question Number : 134 Question Id : 26544814747 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose $\underline{X}$ with p components has multivariate normal distribution, $N(\underline{\mu}, \Sigma)$, then $\underline{y} = C\underline{X}$ with C as a nonsingular matrix is distributed as

Options :

1. ✔ $N(C\underline{\mu}, C\Sigma C')$

2. ✖ $N(C\underline{\mu}, C' \Sigma C)$

3. ✖ $N(C\underline{\mu}, C\Sigma^{-1}C')$

4. ✖ $N(C\underline{\mu}, C' \Sigma^{-1}C)$

Question Number : 135 Question Id : 26544814748 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Let X be distributed according to $N_p(\mu, \Sigma)$. Let $X = \begin{pmatrix} X^{(1)} \\ X^{(2)} \end{pmatrix}$, $\Sigma = \begin{pmatrix} \Sigma_{11} & \Sigma_{12} \\ \Sigma_{21} & \Sigma_{22} \end{pmatrix}$ and β be the i^{th} row of $\Sigma_{12}\Sigma_{22}^{-1}$ ($i = 1, \dots, q$). Of all linear combinations $\alpha X^{(2)}$, the combination that minimizes the variance of $X_i - \alpha X^{(2)}$ and that maximizes the correlation between X_i and $\alpha X^{(2)}$ is the linear combination $\beta X^{(2)}$. The multiple correlation coefficient between X_i and $X^{(2)}$ is

Options :

1. ✖ $\sigma_{(i)} \Sigma_{22}^{-1} \sigma'_{(i)} / \sigma_{ii}$

2. ✔ $\left[\sigma_{(i)} \Sigma_{22}^{-1} \sigma'_{(i)} / \sigma_{ii} \right]^{\frac{1}{2}}$

3. ✖ $\left[\sigma_{(i)} \Sigma_{11}^{-1} \sigma'_{(i)} / \sigma_{ii} \right]^{\frac{1}{2}}$

4. ✖ $\sigma_{(i)} \Sigma_{11}^{-1} \sigma'_{(i)} / \sigma_{ii}$

Question Number : 136 Question Id : 26544814749 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Let $Z = a'X$ be a principal component which is uncorrelated with first k principal components. In such case, the variance of Z will be maximum if it is ____ principal component of X .

Options :

1. ✔ $(k+1)^{\text{th}}$

2. ✖ k^{th}

3. ✖ $(k-1)^{\text{th}}$

4. ✖ 1^{st}

Question Number : 137 Question Id : 26544814750 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose $\bar{F}(x) = 1 - F(x)$, where F is the life distribution of a unit, the corresponding conditional reliability of the unit of age t is

Options :

1. ✖ $\bar{F}(x|t) = \frac{F(t)}{\bar{F}(t+x)}$

2. ✔ $\bar{F}(x|t) = \frac{\bar{F}(t+x)}{\bar{F}(t)}$ if $\bar{F}(t) > 0$

3. ✖ $\bar{F}(x|t) = \bar{F}(t+x)F(t)$

4. ✖ $\bar{F}(x|t) = \frac{\bar{F}(t+x)}{F(t)}$ if $F(t) > 0$

Question Number : 138 Question Id : 26544814751 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Which of the following statements is not true?

Options :

1. ✖ The exponential distribution is the only life distribution with constant failure rate function

2. ✖ A used exponential component is essentially 'as good as new'

3. ✔ If U is uniform random variable on $[0,1]$, then $y = \log_e U$ has exponential distribution

If the survival probability $\bar{G}$ of a non degenerate non negative random ity variable satisfies $\bar{G}(t+x) = \bar{G}(t)\bar{G}(x), \forall t \geq 0, x \geq 0$, then G is an exponential

4. ✖ distribution

Question Number : 139 Question Id : 26544814752 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

In a series system with component reliabilities $R_1 = 0.90$ and $R_2 = 0.85$, what is the probability that the system will fail?

Options :

1. ✖ 0.944

2. ✖ 0.765

3. ✖ 0.5

4. ✔ 0.235

Question Number : 140 Question Id : 26544814753 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If the observed and theoretical cumulative distribution functions are

observed							
cdf	0.038	0.066	0.093	0.177	0.288	0.316	0.371

theoretical							
cdf	0.036	0.042	0.129	0.159	0.203	0.235	0.238

The value of Kolmogorov-Smirnov test statistic D_n is

Options :

1. ✔ 0.133

2. ✖ 0.297

3. ✖ 0.043

4. ✖ 0.002

Question Number : 141 Question Id : 26544814754 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

If U is Mann-Whitney statistic and W is Wilcoxon rank sum statistic, then which of the following statements establish a relation between W and U ?

Options :

1. ✖ $W = U - \frac{n(n+1)}{2}$

2. ✖ $W = U - \frac{n(n-1)}{2}$

3. ✔ $W = U + \frac{n(n+1)}{2}$

4. ✖ $W = U + \frac{n(n-1)}{2}$

Question Number : 142 Question Id : 26544814755 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

In Bayesian paradigm, the 'evidence' or marginal likelihood refers to

Options :

1. ✖ posterior probability of the hypothesis

2. ✖ prior probability of the hypothesis

3. ✖ the likelihood of the data given the hypothesis
4. ✔ the probability of the data under all possible hypothesis

Question Number : 143 Question Id : 26544814756 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

Suppose $X_1, \dots, X_n$ is a random sample of size n from $N(0, \sigma^2)$, the sufficient statistic for σ^2 is given by

Options :

1. ✔ $\sum_{i=1}^n X_i^2$
2. ✖ $\sum_{i=1}^n X_i$
3. ✖ $\left(\sum_{i=1}^n X_i, \sum_{i=1}^n X_i^2 \right)$
4. ✖ $(\bar{X}^{-1}, S^2)$

Question Number : 144 Question Id : 26544814757 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Correct Marks : 2 Wrong Marks : 0

If the density function of a variable X is $f(x, \theta) = \theta e^{-\theta x}$, $0 < x < \infty$. The 95% central confidence limits for large sample n are

Options :

1. ✖ $\left(1 \pm \frac{1.96}{\sqrt{n}} \right) \bar{X}$

2. ✖ $\left(\frac{1 \pm 1.96}{\sqrt{n}}\right) \frac{1}{\bar{X}}$

3. ✖ $\left(1 \pm \frac{1.96}{\sqrt{n}} \bar{X}\right) \frac{1}{\bar{X}}$

4. ✔ $\left(1 \pm \frac{1.96}{\sqrt{n}}\right) \frac{1}{\bar{X}}$

Question Number : 145 Question Id : 26544814758 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose a sample of size n is taken from $U(-\theta, \theta)$. The MLE of θ is given by

Options :

1. ✔ $Max(|X_1|, \dots, |X_n|)$

2. ✖ $\bar{X}$

3. ✖ $Min(X_1, \dots, X_n)$

4. ✖ $Med(X_1, \dots, X_n)$

Question Number : 146 Question Id : 26544814759 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

The method that is useful for testing null hypothesis (simple or composite) against a composite alternative hypothesis when UMP test fails is

Options :

1. ✖ Mann-Whitney-Wilcoxon test

2. ✖ Sequential probability ratio test

3. ✔ Likelihood ratio test

4. ✖ Most powerful test

Question Number : 147 Question Id : 26544814760 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Nine determinations of copper in certain solution yielded a sample mean of 8.3 percent with standard deviation of 0.025 percent. If μ is mean of the population of such determinations, which of the following statements based on an appropriate test statistic is used to test $H_0: \mu = 8.42$ against $H_1: \mu < 8.42$ at α level of significance?

Options :

1. ✖
$$\bar{x} \leq \mu_0 + \frac{s}{\sqrt{n}} t_{(n-1), \alpha}$$

2. ✔
$$\bar{x} \leq \mu_0 + \frac{s}{\sqrt{n}} t_{(n-1), (1-\alpha)}$$

3. ✖
$$\bar{x} \geq \mu_0 + \frac{s}{\sqrt{n}} t_{(n-1), \alpha}$$

4. ✖
$$\bar{x} \geq \mu_0 + \frac{s}{\sqrt{n}} t_{(n-1), (1-\alpha)}$$

Question Number : 148 Question Id : 26544814761 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose a LPP is given by

$$\text{Max } Z = 3x_1 + 2x_2$$

$$x_1 - x_2 \leq 1$$

$$\text{S.t } x_1 + x_2 \geq 3$$

$$x_1, x_2 \geq 0$$

The optimal solution to the problem is

Options :

1. ✖ unique solution existing at the point (2,1)
2. ✖ infinite number of solutions
3. ✖ infeasible solution
4. ✔ unbounded solution

Question Number : 149 Question Id : 26544814762 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Consider (M|M|1) : (∞ / FIFO) queuing system. The arrival and departure rates of the customers is respectively λ and μ . The average number of customers in the system is

Options :

1. ✖ $\left(\frac{\lambda}{\mu}\right)^n \left(1 - \frac{\lambda}{\mu}\right)$
2. ✔ $\left(\frac{\lambda}{\mu - \lambda}\right)$
3. ✖ $\left(\frac{\lambda}{\mu}\right)^n$
4. ✖

$$\left(\frac{\lambda^2}{\mu(\mu - \lambda)} \right)$$

Question Number : 150 Question Id : 26544814763 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 2 Wrong Marks : 0

Suppose r is the demand rate taking discrete values, in a single period model with discontinuous or instantaneous demand and time independent costs, the equation that yields optimum value of stock level Z is (C_1 is holding cost / unit/ unit time and C_2 is shortage cost / unit / unit time)

Options :

1. ✓ $\sum_{r=0}^{Z-1} p(r) < \frac{C_2}{C_1 + C_2} < \sum_{r=0}^Z p(r)$

2. ✗ $\sum_{r=0}^{Z-1} p(r) < \frac{C_1}{C_1 + C_2} < \sum_{r=0}^Z p(r)$

3. ✗ $\sum_{r=0}^{Z-1} p(r) < \frac{C_1 + C_2}{C_2} < \sum_{r=0}^Z p(r)$

4. ✗ $\sum_{r=0}^{Z-1} p(r) < \frac{C_1 + C_2}{C_1} < \sum_{r=0}^Z p(r)$