

PREVIEW QUESTION BANK

Module Name : STATISTICAL SCIENCE-ENG
Exam Date : 09-Jul-2023 Batch : 10:00-12:00

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	1301	Olsen method is used for phosphorus estimation in : 1. Acidic soil 2. Neutral to alkali soil 3. Saline soils 4. Black soil A1 : 1 A2 : 2 A3 : 3 A4 : 4		4.0
Objective Question				
2	1302	The agency started with the responsibility of buffer stocking is : 1. BSI 2. IFFCO 3. AGMARK 4. Food Corporation of India A1 : 1 A2 : 2 A3 : 3 A4 : 4		4.0
Objective Question				
3	1303	Coating urea with which of the following has been found to increase the yield of crops ? 1. LIME 2. Neem OIL 3. Charcoal 4. Cowdung		4.0

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

4	1304	The headquarters of Food and Agricultural Organisation are located in : 1. Canberra 2. Hyderabad 3. Rome 4. New York A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

5	1305	Parbhat is an early variety of : 1. Wheat 2. Rice 3. Maize 4. Pigeon pea A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

6	1306		4.0
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In which state did Dr. Mansukh Mandaviya inaugurate IFFCO Nano Urea Liquid Plants at Aonla and Phulpur ?

1. Andhra Pradesh
2. Arunachal Pradesh
3. Uttar Pradesh
4. Maharashtra

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

7 1307

Which state became India's top vegetable producer in 2022 ?

4.0

1. Uttar Pradesh
2. Maharashtra
3. West Bengal
4. Madhya Pradesh

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

8 1308

The term 'regur' refers to :

4.0

1. Black cotton soils
2. Red and yellow soils
3. Laterite soils
4. Deltaic alluvial soils

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

9	1309	What is the causal organism of the downy mildew of bajra ? 1. S. graminicola (Sclerospora) 2. C. fusiformis 3. Agrobacterium tumefaciens 4. Erwinia amylovora A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

10	1310	Kisan Credit Card (KCC) was introduced in India in : 1. September 1998 2. October 1998 3. July 1998 4. August 1998 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

11	1311	NABARD was established on the recommendations of : 1. B. Shivaraman Committee 2. Gupta and Kapoor Committee 3. Rai and Bansal Committee 4. Ramasubramanian Committee A1 : 1 A2 : 2 A3 : 3	4.0
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A4 : 4

Objective Question

12 1312

Ginger is propagated by means of :

4.0

1. Rhizomes
2. Corms
3. Tubers
4. Stem

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

13 1313

The harmonic mean of $\{(a)/(1-ab)\}$ and $\{(a)/(1+ab)\}$ is equal to :

4.0

1. (a/b)
2. a
3. $(a)/(1-ab)$
4. $1/a$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

14 1314

If X is random Poisson variate such that $P(X=1) = P(X=2)$. What is the $P(X=4)$?

4.0

1. $(5e^{-2})/6$
2. $(2e^{-2})/2$
3. $(e^{-2})/3$
4. $(2e^{-2})/3$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

15	1315	The mean deviation from the mean m in a normal distribution with variance v^2 is approximately : 1. $(4/5)v$ 2. $(3/5)v$ 3. $(4/9)v$ 4. $(1/5)v$ A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

16	1316	The difference between an estimate and the parameter is called : 1. Sampling error 2. Random error 3. Probability error 4. Non-sampling error A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

17	1317	If n is the number of treatments and r is the number of replications, what is the error degrees of freedom in RBD ? 1. $r-1$ 2. $n-1$ 3. $n*r-1$ 4. $(n-1)*(r-1)$	4.0
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A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

18 1318

What is the probability of getting a head and a tail in a toss of two coins ?

4.0

1. 0
2. 1
3. 0.25
4. 0.5

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

19 1319

A random variable X has binomial distribution with $n=10$ and $q=0.3$, then variance of X is :

4.0

1. 21
2. 2.1
3. 7
4. 3

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

20 1320

4.0

In the Poisson probability distribution, if the value of λ is integer then the distribution will be :

1. Bimodal
2. Unimodal
3. Positive modal
4. Negative modal

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

21 1321

Chose the correct answer :

1. Reject H_0 when it is false is Type-I error
2. Reject H_0 when it is true is Type-II error
3. Reject H_0 when it is false is Type-II error
4. Reject H_0 when it is true is Type-I error

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

Objective Question

22 1322

Consider a hypothesis H_0 where $\phi_0 = 5$ against H_1 where $\phi_1 > 5$. The test is :

1. Right tailed
2. Left tailed
3. Center tailed
4. Cross tailed

A1 : 1

A2 : 2

A3 : 3

4.0

A4 : 4

Objective Question

23	1323	If I conduct a research and choose for my sample whoever walks by the mall, that is an example of..... : 1. Purposive sampling 2. Snowball sampling 3. Random sampling 4. Convenience sampling A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

24	1324	If the Z-score of normal distribution is 2.5, the mean of the distribution is 45 and the standard deviation is 3, then the value of X for a normal distribution is: 1. 42 2. 52.5 3. 47 4. 3 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

25	1325	For a set of 200 observations on a certain random variable X, the mean and standard deviation are 65.7 and 4.4 respectively. However on scrutinizing the data it is found that two observations, which should be correctly read as 71 and 83, had been wrongly recorded as 91 and 80. Obtain the correct values of the mean and the standard deviation. 1. mean = 65.5 and s.d.= 4.2 2. mean = 65.8 and s.d.= 4.8 3. mean = 65.1 and s.d= 4.4 4. mean = 65.0 and s.d.= 4.2	4.0
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A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

26 1326

4.0

Suppose three dice are rolled. Under the condition that no two show the same face, what is the probability that one of the faces is an ace?

1. $\frac{1}{4}$
2. $\frac{1}{2}$
3. $\frac{1}{3}$
4. $\frac{1}{6}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

27 1327

4.0

Three points are taken at random on the circumference of a circle. What is the probability that they will all lie in a semicircle?

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

28 1328

Let Y be the number of successes in n independent repetitions of a random experiment having probability of success $p = 2/3$. If $n = 3$, compute $P(2 \leq Y)$.

4.0

1. $\frac{20}{27}$

2. $\frac{21}{27}$

3. $\frac{22}{27}$

4. $\frac{23}{27}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

29 1329

Let the moment generating function (m.g.f) of a random variable is of the form $M_X(t) = (0.4e^t + 0.6)^t$. Find the mean and variance of a random variable $Y = 3X + 2$.

4.0

1. $E(Y) = 9.4$ and $V(Y) = 17.28$

2. $E(Y) = 9.6$ and $V(Y) = 17.26$

3. $E(Y) = 9.4$ and $V(Y) = 17.26$

4. $E(Y) = 9.6$ and $V(Y) = 17.28$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

30 1330

4.0

The skewness in a binomial distribution will be zero, if :

1. $p < \frac{1}{2}$
2. $p = \frac{1}{2}$
3. $p > \frac{1}{2}$
4. $p < q$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

31 1331

4.0

Let A and B are any two events and $P(A) = p_1$, $P(B) = p_2$ and $P(A \cap B) = p_3$. What is the value of $P\left(\frac{\bar{A}}{\bar{B}}\right)$?

1. $\frac{1-p_1-p_2+p_3}{1-p_3}$
2. $\frac{p_1}{p_2}$
3. $\frac{1-p_1-p_2+p_3}{1-p_2}$
4. $\frac{1-p_1-p_2+p_3}{1-p_1}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

32 1332

4.0

The probability that both S and T occur, the probability that S occurs and T does not, and the probability that T occurs and S does not are all equal to p . The probability that either S or T occurs is

1. p
2. $2p$
3. $3p$
4. $3p^2$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

33 1333

If X and Y are independent Poisson variates having means 1 and 3 respectively, find the variance of $3X+Y$.

4.0

1. 6
2. 9
3. 12
4. 18

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

34 1334

4.0

Let the m.g.f of a random variable X is of the form $M_x(t) = \exp\{3(e^t - 1)\}$. What is the value of kurtosis coefficient β_2 ?

1. $\frac{1}{3}$
2. $\sqrt{\frac{1}{3}}$
3. $\sqrt{\frac{10}{3}}$
4. $\frac{10}{3}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

35 1335

The list of all sampling units in the population is known as :

1. Frame
2. Cluster
3. Strata
4. Sub population

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

Objective Question

36 1336

Completely randomized designs are suitable in the situation(s) when :

1. all experimental units are homogeneous
2. the units are likely to be destroyed during experimentation
3. all experimental units are heterogeneous
4. experimental units are in different slope

4.0

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

37 1337

Uniformity trials are conducted to :

4.0

1. Estimate the standard error of the treatment means
2. Reduce the experimental error
3. Have an idea about nature and extent of fertility gradient
4. To reduce the chance of bias in the experiment

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

38 1338

In the field layout of a randomized block design, the blocks are formed in the direction :

4.0

1. parallel to fertility gradient
2. perpendicular to fertility gradient
3. diagonally to fertility gradient
4. in a random manner

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

39 1339

4.0

Replication in an experiment provides :

1. the estimate of experimental error
2. impetus to the treatments
3. check to the variation in soil fertility
4. Bias reduction

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

40 1340

In a completely randomized design, there are five treatments T_1, T_2, T_3, T_4 and T_5 . T_1, T_2, T_3 and T_4 are replicated 3, 4, 5 and 6 times respectively. If the error degrees of freedom is 19, then T_5 is replicated :

1. 3 times
2. 4 times
3. 5 times
4. 6 times

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

41 1341

In case of a randomized block design with 5 treatments, the mean sum of squares due to error is 2 and the F-value for testing significance of treatment differences is 12.5, then the treatment sum of squares will be :

1. 25
2. 50
3. 75
4. 100

A1 : 1

A2 : 2

4.0

4.0

A3 : 3

A4 : 4

Objective Question

42 1342

An experiment is conducted in a Randomized block design with five treatments in four replications, the standard error of the difference between two treatments means are (MSE is the error mean square)

4.0

1. $\sqrt{\frac{MSE}{2}}$
2. $\sqrt{\frac{MSE}{4}}$
3. $\sqrt{\frac{5MSE}{4}}$
4. $\sqrt{\frac{5MSE}{2}}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

43 1343

In a layout of a randomized block design with 7 treatments, each replicated 5 times, the needed 35 experimental units will be grouped into :

4.0

1. 7 blocks of 5 plots each
2. 5 blocks of 7 plots each
3. 35 blocks of 1 plot each
4. 1 block containing 35 plots

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

44 1344

4.0

If a constant 35 is added to each of the value of X and Y, the regression coefficient is :

1. increased by 35
2. $\frac{1}{35}$ th of the original regression coefficient
3. reduced by 35
4. same as the original regression coefficient

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

45 1345

In a normal distribution 10.03% of the items are under 35kg weight and 89.97% of the items are under 80kg weight. What are the mean and standard deviation of the distribution ?

1. mean= 47.5 and sd= 17.57
2. mean= 47.5 and sd = 21.48
3. mean=52.5 and sd=17.57
4. mean=52.5 and sd=21.48

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

46 1346

The point of inflexion of Normal (μ, σ^2) curve are :

1. $\mu \pm \sigma$
2. $\mu \pm 2\sigma$
3. $\mu \pm 3\sigma$
4. $\mu \pm 0.3\sigma$

A1 : 1

A2 : 2

4.0

4.0

A3 : 3

A4 : 4

Objective Question

47 1347

In a normal curve, 99% of the observations are included in the range

4.0

1. $\bar{x} \pm 0.67$

2. $\bar{x} \pm 1.96$

3. $\bar{x} \pm 2.0$

4. $\bar{x} \pm 2.58$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

48 1348

In Simple Random Sampling with replacement (SRSWR) the variance of $\bar{y}_n$ (with standard notation) is given by :

4.0

1. $\frac{N-1}{nN} S^2$

2. $\frac{N-n}{nN} S^2$

3. $\frac{N-1}{N} S^2$

4. $\frac{N-n}{N} S^2$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

49 1349

4.0

In a Poisson Distribution, if mean = e , then $P(x)$ is given by _____.

1. $\exp(x-e)/x!$
2. $\exp(e-x)/e!$
3. $\exp(x-e)/e!$
4. $\exp(-x-e)/x!$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

50 1350

When Viswanath plays chess, he wins with probability 0.80, loses with probability 0.20. Assume independence, find the probability that Viswanath's first win happens when he plays his third game.

1. 0.8
2. 0.2
3. 0.032
4. 0.512

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

Objective Question

51 1351

In the straight line graph of the linear equation $Y = a + bX$, slope is horizontal if :

1. $b \neq 0$
2. $b = 1$
3. $b = 0$
4. $a = b$

A1 : 1

A2 : 2

A3 : 3

4.0

A4 : 4

Objective Question

52 1352

Which of the following is not a characteristic of the normal distribution ?

4.0

1. the mean is always zero
2. the area under the curve equals one
3. the mean, median and mode are equal
4. it is a symmetrical distribution

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

53 1353

In simple linear regression, the number of unknown constants are :

4.0

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

54 1354

A multiple-choice test has 30 questions. There are 4 choices for each question. A student who has not studied for the test decides to answer all the questions randomly by guessing the answer to each question. Which of the following probability distributions can be used to calculate the student's chance of getting at least 20 questions right ?

4.0

1. Uniform distribution
2. Exponential distribution
3. Poisson distribution
4. Binomial distribution

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

55 1355

Which of the following p-values will lead us to reject the null hypothesis if the significance level of the test is 5% ?

4.0

1. 0.15

2. 0.10

3. 0.06

4. 0.046

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

56 1356

The probability of selecting an item in probability sampling, from the population is :

4.0

1. Equal to zero

2. Size of population

3. Size of sample

4. Between zero and one

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

57 1357

4.0

The method of least squares dictates that we choose a regression line where the sum of the square of deviations of the points from the line is :

1. Maximum
2. Minimum
3. Zero
4. Negative

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

58 1358

Increasing the sample size has the following effect upon the sampling error :

4.0

1. It increases the sampling error
2. It increases the standard error of the estimate
3. It decreases the sampling error
4. It has no effect

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

59 1359

A variable that can assume any value between two given points is called :

4.0

1. Uncertain random variable
2. Irregular random variable
3. Discrete random variable
4. Continuous random variable

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

60	1360	How often does the Census Bureau take a complete population count ? 1. Every ten years 2. Every five years 3. Every two years 4. Every year A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

61	1361	Which of the following is the sequence alignment tool ? 1. BLAST 2. PRINT 3. PROSITE 4. PIR A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0
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Objective Question

62	1362	Which of the following is not a bioinformatics tool ? 1. BLAST 2. ClustalW 3. PCR 4. Phylip A1 : 1 A2 : 2 A3 : 3	4.0
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A4 : 4

Objective Question

63 1363

Which of the following is used between CPU and RAM to speed up the processing power of a CPU?

4.0

1. Virtual Memory
2. Cache Memory
3. DRAM
4. Flash Memory

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

64 1364

What do you call a computer on a network that requests files from another computer ?

4.0

1. A client
2. A host
3. A router
4. A web server

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

65 1365

"www" stands for :

4.0

1. World Wide Web
2. World Wide Wares
3. World Wide Wait
4. World Wide War

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

66 1366

A program that neither replicates or copies itself, but does damage or compromises the security of the computer. Which 'Computer Virus' is it ?

4.0

1. Joke Program
2. Worm
3. Trojan
4. Hoax

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

67 1367

Microsoft Word is a _____.

4.0

1. Computer Hardware Program
2. Computer Non-application Program
3. Computer Application Program
4. Website

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

68 1368

Which of the following command is NOT present in Quick Access Toolbar ?

4.0

1. Draw Table
2. E-mail
3. Print Preview
4. Prepare

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

69 1369

To select text by shading as you drag the mouse arrow over the text is known as :

4.0

1. Clip art
2. To highlight
3. To fetch
4. To decode

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

70 1370

'.BAT' extension refers usually to what kind of file ?

4.0

1. Compressed Archive file
2. System file
3. Audio file
4. Backup file

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

71 1371

4.0

A personal computer's primary memory, commonly known as its main memory, consists of ?

1. RAM
2. ROM
3. Both RAM and ROM
4. Cache Memory

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

72 1372

The file type _____ indicates the file is a Word document.

4.0

1. msw
2. wrd
3. wor
4. doc

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

73 1373

Let a and b be two real numbers with $a, b > 0$ and $a < b$, then which of the following is true

4.0

1. $\sqrt{a} < \sqrt{b}$
2. $\sqrt{b} < \sqrt{a}$
3. $b^2 < a^2$
4. $a^2 - b^2 > 0$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

74 1374

If c is any real number and $0 < c < 1$, then :

4.0

1. $c < c^2$
2. $c^2 < c$
3. $c^2 < c^3$
4. $c^3 = 1$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

75 1375

Let (a_n) and (b_n) are two convergent sequences of real numbers, then which of the following is always true ?

4.0

1. $(a_n) + (b_n)$ is convergent
2. $\frac{(a_n)}{(b_n)}$ is always divergent
3. $\frac{(b_n)}{(a_n)}$ is always convergent
4. $(a_n) - (b_n)$ is not convergent

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

76 1376

4.0

Let x and y be two real numbers, then which of the following is always true ?

1. $|x - y| \leq |x| - |y|$
2. $|x - y| \leq |x| + |y|$
3. $|x + y| \leq |x| - |y|$
4. $|x + y| \geq |x| + |y|$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

77 1377

4.0

Let $(a_n) = n^2$ and $(b_n) = 1 + \frac{1}{n^2}$ be sequence of real numbers, then :

1. Both (a_n) and (b_n) are convergent
2. Both (a_n) and (b_n) are divergent
3. (a_n) is convergent and (b_n) is divergent
4. (a_n) is divergent and (b_n) is convergent

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

78 1378

4.0

Let $(a_n) = \frac{1}{n^2}$ be sequence of real numbers, then the sequence is :

1. Convergent and limit is 1
2. Convergent and limit is 0
3. Divergent
4. Convergent and limits are 0 and 1

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

79 1379

4.0

Let $\sum_{n=1}^{\infty} (-1)^n a_n = \sum_{n=1}^{\infty} (-1)^n \frac{1}{\sqrt{n}}$ be a series, then :

1. $\sum_{n=1}^{\infty} (-1)^n a_n$ is divergent
2. $\sum_{n=1}^{\infty} (a_n)^2$ is absolutely convergent
3. $\sum_{n=1}^{\infty} (a_n)^3$ is convergent
4. $\sum_{n=1}^{\infty} a_n$ is convergent series

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

80 1380

4.0

Let $\sum_{n=1}^{\infty} a_n$ be any series of real numbers, then which of the following statement is true ?

1. If $\sum_{n=1}^{\infty} a_n$ is absolutely convergent then it is convergent
2. If $\sum_{n=1}^{\infty} a_n$ is convergent then it is absolutely convergent
3. If $\sum_{n=1}^{\infty} a_n$ is absolutely convergent then it is conditionally convergent
4. If $\sum_{n=1}^{\infty} a_n$ is conditionally convergent then it is absolutely convergent

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

81 1381

4.0

The sum of $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{9 \times 10}$ is :

1. $\frac{10}{9}$
2. $\frac{9}{10}$
3. $\frac{5}{6}$
4. $\frac{6}{5}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

82 1382

Let z_1 and z_2 be two complex numbers, then :

1. $\left| \frac{z_1}{z_2} \right| < \frac{|z_1|}{|z_2|}$ for $|z_2| \neq 0$
2. $\left| \frac{z_1}{z_2} \right| \neq \frac{|z_1|}{|z_2|}$
3. $|z_1 z_2| = |z_1| |z_2|$
4. $|z_1 z_2| < |z_1| |z_2|$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

Objective Question

83 1383

4.0

Polar form of the complex number $z = -4 + i4\sqrt{3}$ is :

1. $8 \left(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3} \right)$
2. $8 \left(\cos \frac{\pi}{6} + i \sin \frac{\pi}{6} \right)$
3. $8 \left(\cos \frac{2\pi}{3} + i \sin \frac{2\pi}{3} \right)$
4. $8 \left(\cos \frac{5\pi}{6} + i \sin \frac{5\pi}{6} \right)$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

84 1384

Let A and B be two non-empty sets, then $(A \cup B)^c$ is equal to :

1. $(A \cap B)^c$
2. $A^c \cap B^c$
3. $A^c \cup B^c$
4. $A \cup B$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

Objective Question

85 1385

Let A and B be two matrices and γ be any scalar, then :

1. $(A^T)^T = A^T$
2. $(AB)^T = A^T B$
3. $(rA)^T = r^T A$
4. $(A + B)^T = A^T + B^T$

A1 : 1

A2 : 2

4.0

A3 : 3

A4 : 4

Objective Question

86 1386

Let A and B be two invertible matrices, then which of the following is true ?

4.0

1. A^{-1} may not invertible
2. $(A^{-1})^{-1} = A$
3. $(AB)^{-1} = A^{-1}B$
4. $(A^{-1})^{-1} = A^{-1}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

87 1387

Let $A = \begin{bmatrix} 1 & 2 & 0 & -1 \\ 2 & 6 & -3 & -3 \\ 3 & 10 & -6 & -5 \end{bmatrix}$, then rank of matrix A is :

4.0

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

88 1388

Let W_1 and W_2 are two subspaces of a vector space V over the field F , then :

4.0

1. $W_1 + W_2$ not subspace of V
2. $W_1 \cup W_2$ is always subspace of V
3. $W_1 \cap W_2$ is always subspace of V
4. W_1 and W_2 are always orthogonal

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

89 1389

4.0

Let $B = \begin{bmatrix} 5 & -9 & 6 \\ 0 & 2 & 3 \\ 0 & 0 & 7 \end{bmatrix}$, then its reduced echelon form is :

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

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

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

4. $\begin{bmatrix} 1 & -9 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

90 1390

4.0

The eccentricity of the parabola is :

1. 1

2. 0

3. Less than 1

4. Greater than 1

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

91 1391

4.0

Let $x^2 = \frac{25}{2}y$ the equation of a parabola, then the equation of its directrix is given by

1. $y = \frac{25}{2}$

2. $y = -\frac{25}{4}$

3. $y = -\frac{25}{8}$

4. $y = \frac{25}{8}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

92 1392

4.0

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

1. Convergent

2. Divergent

3. Absolutely Convergent

4. Conditionally Convergent

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

93 1393

4.0

Let z_1 and z_2 be two complex numbers, then dot product of z_1 and z_2 is :

1. $|z_1||z_2|$
2. $|z_1||z_2|\sin\theta$
3. $|z_1||z_2|\cos\theta$
4. $|z_1||z_2|\tan\theta$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

94 1394

The value of $\frac{5+5i}{3-4i} + \frac{20}{4+3i}$ is given by :

1. $3 - i$
2. $1 + i$
3. $\frac{5}{2} - \frac{i}{2}$
4. $-2 + 9i$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

Objective Question

95 1395

Let $\mathbb{R}^n = V$ is a vector space over the field of real numbers, then which of the following is a subspace ?

1. $W = \{(a_1, a_2, \dots, a_n) \mid \sum_{i=1}^n a_i = 0\}$
2. $W = \{(a_1, a_2, \dots, a_n) \mid a_1 a_n > 0\}$
3. $W = \{(a_1, a_2, \dots, a_n) \mid \frac{a_1}{a_2} = \lambda; \lambda \in \mathbb{R}\}$
4. $W = \{(a_1, a_2, \dots, a_n) \mid a_i \geq 0 \forall i = 1, 2, 3, \dots, n\}$

A1 : 1

A2 : 2

4.0

A3 : 3

A4 : 4

Objective Question

96 1396

4.0

The necessary condition of a convergent sequence is :

1. Bounded
2. Having more than one limit
3. Monotonic
4. Not Cauchy

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

97 1397

4.0

If $\lim_{x \rightarrow -a} \frac{x^9 + a^9}{x + a} = 9$, then the possible values of a are given by :

1. $a = \pm 1$
2. $a = \pm 9$
3. $a = \pm 3$
4. $a = \pm 8$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

98 1398

4.0

The vertical asymptote for $f(x) = \frac{3x+5}{7-x}$ is given by :

1. $x = 7$
2. $x = 3$
3. $x = 5$
4. $x = -1$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

99 1399

4.0

A toy manufacturer produces an inexpensive doll (flopsy) and an expensive doll (mopsy) in units of x hundreds and y hundreds respectively. Suppose it is possible to produce the doll in such a way that $y = \frac{82-10x}{10-x}$, $0 \leq x \leq 8$ and that the company receives twice as much for selling a mopsy doll as for selling a flopsy doll. The level of production for both flopsy and mopsy dolls for which the total revenue derived from selling these dolls is maximized is given by :

1. Flopsy: 40 and Mopsy: 70
2. Flopsy: 700 and Mopsy: 400
3. Flopsy: 400 and Mopsy: 700
4. Flopsy: 70 and Mopsy: 40

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

100 1400

4.0

If $x = a(\cos t + t \sin t)$ and $y = a(\sin t - t \cos t)$, then the value of $\frac{d^2y}{dx^2}$ is given by :

1. $\frac{at}{\cos^3 t}$
2. $\frac{1}{at \cos^3 t}$
3. $\frac{at}{\sin^3 t}$
4. $\frac{1}{at \sin^3 t}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

101 1401

4.0

If $\theta = t^n e^{-\frac{r^2}{4t}}$, then the value of n that will make $\frac{1}{r^2} \frac{\partial}{\partial r} \left(r^2 \frac{\partial \theta}{\partial r} \right) = \frac{\partial \theta}{\partial t}$ is given by :

1. 0
2. 1
3. $-\frac{1}{2}$
4. $-\frac{3}{2}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

102 1402

4.0

If $z = f(x, y)$ and $x = e^u + e^{-v}$ and $y = e^{-u} - e^v$, then :

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

103 1403

4.0

The value of $\int \cos^{-1}(2x)dx$ is given by :

1. $x\cos^{-1}(2x) - \frac{1}{2}\sqrt{1-4x^2} + C$
2. $x\sin^{-1}(2x) - \frac{1}{2}\sqrt{1-4x^2} + C$
3. $x\cos^{-1}(2x) + \frac{1}{2}\sqrt{1-4x^2} + C$
4. $x\sin^{-1}(2x) + \frac{1}{2}\sqrt{1-4x^2} + C$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

104 1404

4.0

The area under the curve $y = \cos x$ on $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$ is given by :

1. $\frac{1}{2}$ square units
2. 2 square units
3. π square units
4. $\frac{\pi}{4}$ square units

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

105 1405

4.0

The value of $\iint_R y^2 x \, dy \, dx$ over the rectangle $R = \{(x, y) : -3 \leq x \leq 2, 0 \leq y \leq 1\}$ is given by :

1. $-\frac{1}{6}$
2. $-\frac{1}{2}$
3. $-\frac{5}{6}$
4. $\frac{5}{6}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

106 1406

The solution of the differential equation $\cos(x + y)dx + [3y^2 + 2y + \cos(x + y)]dy = 0$ is given by :

1. $\sin(x + y) + y^3 + y^2 = C$
2. $\sin(x - y) + y^3 + y^2 = C$
3. $\sin(x + y) + x^3 + x^2 = C$
4. $\sin(x - y) + x^3 + x^2 = C$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

Objective Question

107 1407

The solution of the differential equation $xy'' + y' = 4x$ is given by :

1. $y = x^3 + C_1 \ln x + C_2$
2. $y = x^2 + C_1 \ln x + C_2$
3. $y = e^x + C_1 \ln x + C_2$
4. $y = e^{-x} + C_1 \ln x + C_2$

A1 : 1

4.0

A2 : 2

A3 : 3

A4 : 4

Objective Question

108 1408

4.0

The solution of the differential equation $\frac{d^2x}{dt^2} + 6\frac{dx}{dt} + 9x=0$ is given by :

1. $x = (C_1 + C_2t)e^{3t}$
2. $x = (C_1 + C_2t)e^{-3t}$
3. $x = (C_1 + C_2t)e^{5t}$
4. $x = (C_1 + C_2t)e^{-5t}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

109 1409

4.0

If Δ and ∇ be the first forward difference and first backward difference operator respectively, then the expression $(1 + \Delta)(1 + \nabla)$ is equivalent to :

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

110 1410

4.0

The process of evaluating a definite integral from a set of tabulated values of the integrand is called:

1. Numerical Integration
2. Extrapolation
3. Finite Difference
4. Interpolation

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

111 1411

The formula to solve simple non-linear equation $f(x) = 0$ by Newton's Raphson Method is given by :

4.0

1. $x_{n+1} = x_n - \frac{f'(x_n)}{f(x_n)}$
2. $x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$
3. $x_{n+1} = f(x_n) - \frac{f''(x_n)}{f'(x_n)}$
4. $x_{n+1} = f(x_n) - \frac{f'(x_n)}{f''(x_n)}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

112 1412

4.0

If A is any real number and r is positive rational number, then the value of $\lim_{x \rightarrow +\infty} \frac{A}{x^r}$ is

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

113 1413

Suppose the function f is continuous at the point $P(c, f(c))$. Then, the graph of f has a vertical tangent at P if :

4.0

1. $\lim_{x \rightarrow c^-} f'(x) = +\infty$ and $\lim_{x \rightarrow c^+} f'(x) = +\infty$
2. $\lim_{x \rightarrow c^-} f'(x) = +\infty$ and $\lim_{x \rightarrow c^+} f'(x) = -\infty$
3. $\lim_{x \rightarrow c^-} f'(x) = -\infty$ and $\lim_{x \rightarrow c^+} f'(x) = +\infty$
4. $\lim_{x \rightarrow c^-} f'(x) = 0$ and $\lim_{x \rightarrow c^+} f'(x) = +\infty$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

114 1414

4.0

The value of $\lim_{x \rightarrow +\infty} \sqrt[3]{\frac{3x+5}{6x-8}}$ is given by :

1. $\sqrt[3]{\frac{1}{3}}$
2. $\sqrt[3]{\frac{1}{5}}$
3. $\sqrt[3]{\frac{1}{7}}$
4. $\sqrt[3]{\frac{1}{2}}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

115 1415

If the function $f(x, y)$ has mixed second order partial derivatives f_{xy} and f_{yx} that are continuous in an open disk containing (x_0, y_0) , then :

4.0

1. $f_{yx}(x_0, y_0) \neq f_{xy}(x_0, y_0)$
2. $f_{yx}(x_0, y_0) = f_{xy}(x_0, y_0)$
3. $f_{yx}(x_0, y_0) > f_{xy}(x_0, y_0)$
4. $f_{yx}(x_0, y_0) < f_{xy}(x_0, y_0)$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

116 1416

4.0

Suppose f is continuous on $[a, b]$ and differentiable on (a, b) . If $f(a) = f(b)$, then there exists at least one number c between a and b such that $f'(c) = 0$ is the statement of

1. Lagrange's mean value theorem
2. Rolle's Theorem
3. Fundamental theorem of calculus
4. Fundamental theorem of algebra

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

117 1417

If f is continuous on an open interval containing a value x_0 , and if f changes the direction of its concavity at the point $(x_0, f(x_0))$, then f has :

4.0

1. a relative maximum at x_0
2. a relative minimum at x_0
3. an inflection point at x_0
4. a saddle point at x_0

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

118 1418

The value of $\int_0^6 f(x)dx$ if $f(x) = \begin{cases} x^2, & x < 2 \\ 3x-2, & x \geq 2 \end{cases}$ is given by :

4.0

1. 1
2. 0
3. $\frac{1}{3}$
4. $\frac{128}{3}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

119 1419

4.0

Let f be a function such that f and all its derivatives exist in an open interval I containing c , then the Taylor's series of f at $x = c$ is given by :

1. $f(c) + \frac{f'(c)}{1!}x + \frac{f''(c)}{2!}x^2 + \dots$
2. $f(c) - \frac{f'(c)}{1!}(x-c) + \frac{f''(c)}{2!}(x-c)^2 + \dots$
3. $f(c) + \frac{f'(c)}{1!}(x-c) + \frac{f''(c)}{2!}(x-c)^2 + \dots$
4. $f(c) - \frac{f'(c)}{1!}x + \frac{f''(c)}{2!}x^2 - \dots$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

120 1420

4.0

If $\Gamma(n) = \int_0^{\infty} e^{-x} x^{n-1} dx$, ($n > 0$), then the value of $\int_0^{\pi/2} \sin^n x dx$ is given by :

1. $\frac{\Gamma\left(\frac{n+1}{2}\right)}{\Gamma\left(\frac{n+2}{2}\right)} \frac{\sqrt{\pi}}{2}$

2. $\frac{\Gamma\left(\frac{n}{2}\right)}{\Gamma\left(\frac{n+1}{2}\right)} \frac{\sqrt{\pi}}{2}$

3. $\frac{\Gamma\left(\frac{n+2}{2}\right)}{\Gamma\left(\frac{n+1}{2}\right)} \frac{\sqrt{\pi}}{2}$

4. $\frac{\Gamma(n)}{\Gamma(n+1)} \frac{\sqrt{\pi}}{2}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4