PU M Sc Statistics

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194 PU_2015_375
The population census period in India is for every:-

- quarterly
- Quinqennial year
- biannual
- Decennial year

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105 PU_2015_375
Which of the following measures is more flexible when compared to other measures?

- Geometric Mean
- Arithmetic Mean
- Harmonic Mean
- Mode

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106 PU_2015_375
In case of two attributes A and B, the class frequency (a B) in terms of other class frequencies can be expressed as:-

- (B) – (AB)
- N – (AB)
- (AB) - (B)
- (B) + (AB)

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148 PU_2015_375
The relationship between μ2 and μ3 in gamma distribution is:-

- $2\mu_3 = 3\mu_2$
- $3\mu_3 = 2\mu_2$
- $\mu 3 = 2\mu_2$
- 2μ3 = μ2

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153 PU_2015_375
which of the following distributions are considered to non similar with respect to the range of its random variable of Fisher's Z distribution:-

- Beta -2 Distribution
- Student's - t distribution

- Gamma distribution
- Double Exponential distribution

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101 PU_2015_375

Five measures summary can be represented with the following diagram:-

- Bar Diagram
- Scattered Plot
- Box-diagram
- Box-Whisker Plot

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210 PU_2015_375

If A is a square matrix, then:-

- $\mathrm{Adj}\,A = |A|\,A^{-1}$
- $\mathrm{Adj}\,A = I \text{ if } A = I$
- $\det\left(A^{-1}\right) = \left(\det A\right)$
- $\left(\mathrm{Adj}\,A\right)^{-1} = \frac{1}{|A|}A$

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119 PU_2015_375

Four students from a composition of 3 college boys, 2 high school boys and 4 middle school boys are selected. The probability that there will be exactly 2 middle school boys is:-

- 2/16
- 5/6
- 10/21
- 1/6

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199 PU_2015_375

$$\text{If } x = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}},\ y = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}},\ \text{then } x^2+xy+y^2 =$$

- 99
- 97
- 100
- 98

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163 PU_2015_375

Which type of estimator does the Neyman factorization theorem provides?

- sufficient
- consistent
- Efficient
- unbiased

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173 PU_2015_375

Non parametric methods are based on:-

- Order statistics
- Sufficient statistics
- Efficient estimates
- Unbiased estimates

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174 PU_2015_375

If population size is infinite, then sample size is:-

- Un restricted
- not necessarily finite
- necessarily finite
- uncountable.

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149 PU_2015_375

B(m,n) is beta function having the following expression:-

- Γ(m+1)Γ(n+1)/Γ(m+n)
- Γ(m)Γ(n)/Γ(m-n)
- Γ(m+n)/Γ(m)Γ(n)
- Γ(m)Γ(n)/Γ(m+n)

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180 PU_2015_375

$$s_c^2 = \frac{C.S.S}{m-1}, s_E^2 = \frac{E.S.S}{(m-1)(m-2)}$$

When the relative efficiency (E) of L.S.D. over R.B.D. when rows are taken as block is:-

- $\frac{s_c^2 + (m+1)s_E^2}{(m-1)s_E^2}$

- $\frac{s_c^2+(m+5)s_E^2}{(m-5)s_E^2}$
- $\frac{s_c^2+(m-1)s_E^2}{ms_E^2}$
- $\frac{s_c^2+(m+1)s_E^2}{(m+3)s_E^2}$

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204 PU_2015_375

The series $\sum_{n=1}^{\infty}\frac{(-1)^n(x+1)^n}{2^n n^2}$ is convergent if:-

- $-2 \le x \le 1$
- $-1 \le x \le 1$
- $-3 \le x \le 1$
- $0 \le x \le 1$

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102 PU_2015_375
Which of the following is not a descriptive statistic?

- Pearson's Mean Square Contingency
- Coefficient of Variation
- Inter quartile Range
- Standard Deviation

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206 PU_2015_375

The sum of the series $\sum_{n=0}^{\infty}\frac{(n^2-n+1)}{n!}$ is:-

- e
- (3/2)e
- 2e
- 3e

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107 PU_2015_375

If in case of two attributes α and β, $(\alpha\beta) < \frac{(\alpha)(\beta)}{N}$, then the attributes are:-

- Independent
- No conclusion
- Positively associated
- Negatively associated

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142 PU_2015_375

Mean and standard deviations are equal for the following probability distribution:-

- Poisson
- Exponential
- Rectangular
- Normal

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123 PU_2015_375

If F is the cumulative distribution function of a discrete random variable, then F(- ∝) and F(+ ∝) are equal to:-

- 1 and 1
- 0 and 0
- 1 and 0
- 0 and 1

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147 PU_2015_375

The stirling's approximation $\lim_{r\to\infty} r! = \sqrt{2\pi}e^{-r}r^{r+\frac{1}{2}}$ is used to get a p.d.f. of a continuous distribution from a particular discrete distribution. what are those discrete and continuous distributions?

- Hyper geometric and half normal distributions
- Geometric and Normal distributions
- Binomial and Normal distributions
- Poisson and Exponential distributions

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109 PU_2015_375

Let $Y = X^2$ and X is a standard normal variate with Mean 0 and variance 1, the Pearson's correlation coefficient between X,Y is:-

- 100% positive

- 50% both positive and negative
- 100% Negative
- No relation

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171 PU_2015_375

Which of the following distribution is considered for median test with small sample sizes?

- Geometric distribution
- Poisson distribution
- Hyper geometric distribution
- Binomial Distribution

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203 PU_2015_375

The series $\frac{1}{2}+\frac{1.3}{2.5}+\frac{1.3.5}{2.5.8}+\ldots$ converges to:-

- 0
- 3/2
- 2/3
- 1

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143 PU_2015_375

Which of the following distribution is non similar regarding the range of their variable?

- Poisson
- Chi-square
- Normal
- Exponential

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200 PU_2015_375

$7^{2n}+3^{n-1}.2^{3n-3}$ is divisible by:-

- 9
- 25
- 13

- 24

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207 PU_2015_375

The sum of the series $1 + \log_e x + (\log_e x)^2/2! + (\log e\ x)^3/3! +$_____ is

- x^{-1}
- log x
- x
- 2x

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108 PU_2015_375

If the change in X & Y is in the same direction. (i.e. X ↑ implies that Y↑ ; X↓ implies that Y↓ and vice versa), then Correlation between X and Y is:-

- No relation
- Negative
- Positive
- Spurious

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202 PU_2015_375

$$\text{Let } a_n = \frac{4n-7}{3n+2} \text{ then } \lim_{n \to \infty} a_n =$$

- 0
- 4/3
- 1
- 7/2

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164 PU_2015_375

For an independent random sample drawn from normal population $N(\mu, \sigma^2)$, to test the significance of mean and variances, the following is considered to be a simple statistical hypothesis:-

- $\mu = \mu_0, \sigma > \sigma_0^2$
- $\mu < \mu_0, \sigma = \sigma_0^2$
- $\mu = \mu_0, \sigma = \sigma_0^2$
- $\mu > \mu_0, \sigma \neq \sigma_0^2$

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172 PU_2015_375

The non parametric test under the assumptions of (i) Measurements are such that the deviations $d_i = x_i - y_i$, can be expressed in terms of the +ve (or) –ve sign; (ii) Variables have continuous distributions; (iii) d_i's are independent is:-

- chi-square test
- Sign Test
- Run Test
- Median Test

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154 PU_2015_375

The cumulant generating function of x^2 - distribution is:-

- $\frac{n}{2}\log(1-2t).$
- $-\frac{n}{2}\log(1-2t).$
- $\frac{n}{2}\log(2t).$
- $\frac{n}{2}\log(1+2t).$

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198 PU_2015_375

The domain of the real valued function $\frac{1}{\sqrt{a^2-x^2}}$ is:-

- $(-a,a)$
- $[-a,a]$
- $(-\infty,-a)\cup(a,\infty)$
- $(-\infty,-a]\cup[a,\infty)$

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152 PU_2015_375

Square of Standard Normal variate follows which probability distribution:-

- Gamma
- Normal
- Chi-square
- Standard Normal

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196 PU_2015_375

The range of real valued function $\frac{1}{2-\cos 3x}$ is:-

- $\left(\frac{1}{3},1\right)$
- $[1,2]$
- $\left[\frac{1}{3},1\right]$
- $(1,2)$

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185 PU_2015_375
Process capability is equal to:-

- 4σ
- 6σ
- 2σ
- 3σ

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141 PU_2015_375
The probability of getting r^{th} success at k^{th} trial can be obtained by applying the probability distribution namely:-

- Binomial
- Negative binomial
- Geometric
- Hypergeometric

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128 PU_2015_375
Which of the following is not true?

- M.G.F. may not exists, moments may exists
- second central moment provide variance
- M.G.F. may exist, but moments may not exist
- moments must be obtained from M.G.F.

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120 PU_2015_375

If C_1, C_2 are two constants, X_1,X_2 are two random variables then $C_1 X_1 + C_2 X_2$ is:-

- Indicator variable
- Non Changing variable
- Complex Variable
- Random variable

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208 PU_2015_375

If the system of equations $3x - 2y + Z = 0, \lambda x - 14y + 15z = 0$ and $x + 2y + 3z = 0$ has a trivial solution, then $\lambda =$

- 13
- -9
- 29
- -2

41 of 100

182 PU_2015_375

A stable pattern of variation (or) a constant cause system which is inherent in the scheme of production and inspection is called:-

- Chance cause
- Dependable cause
- man made cause
- Assignable cause

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121 PU_2015_375

With usual notation of univariate random variables, the relation P (a < x ≤ b) = P (a ≤ x ≤ b) = P (a < x < b) = P (a ≤ x ≤ b) = F (b) - F(a) holds good if the random variable X is:-

- continuous case
- Discrete case
- Both the cases
- either of the cases

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104 PU_2015_375

The grading of students based on their score in examinations is more suitable with the following format scaling:-

- Interval Scale
- Ratio Scale
- Nominal scale
- Ordinal Scale

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205 PU_2015_375

The limits of convergent sequence $a_n = \frac{1}{n+1} + \frac{1}{n+2} + \ldots + \frac{1}{2n}$ limit lies between:-

- 0 and 1/2
- 1/4 and 1
- 1/2 and 1
- 0 and 1

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161 PU_2015_375

Let T_n be an estimator for θ. If $E(T_n)$ tends to θ and $V(T_n)$ tends to zero then the estimator is:-

- Efficient
- Sufficient
- Unbiased.
- Consistent

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162 PU_2015_375

Let 'X' be a Binomial variate such that X~B (n, p), further given (i) E (p)=P, (ii) E(X) = nP; for which,

- (i) is true but (ii) is false
- (i) is false but (ii) is true
- Both (i) and (ii) are true
- both (i) and (ii) are false

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118 PU_2015_375

If a coin is tossed three times then the probability of getting the head and tail are in alternative times is:-

- 1/4
- 2/5
- 1/5
- 1/8

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197 PU_2015_375

The function $f(x)=\frac{3^x+3^{-x}}{3^x-3^{-x}}$ is:-

- an even function
- neither even or nor odd
- an odd function
- both even and odd

49 of 100
201 PU_2015_375
The number of ways that 7 teachers and 6 students can sit around a table so that no two students are together is:-

- $(7!)^2$
- 7!.6!
- (6!)2
- 7!5!

50 of 100
170 PU_2015_375
The test hypothesis dealt with the Wald-Wolfowitz Run Test is:-

- Equality of two population medians
- Equality of two population variances
- Equality of p.d.f. of two populations
- Equality of two population means

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195 PU_2015_375
ISS in Indian administrative services is the acronym for:-

- Indian Service Systems
- Indian Statistical Services
- Indian Social Systems
- Indian Statistical Societies

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184 PU_2015_375
Sampling inspection plans were pioneered by:-

- Pascal & Fermat

- Dodge & Romig
- Neyman & Pearson
- Cramer & Rao

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145 PU_2015_375

Which pair of the following probability distributions will satisfy the memory less property?

- Exponential & Normal distribution
- Geometric & Hypergeometric distributions
- Gamma & Beta distributions
- Geometric and Exponential distributions

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146 PU_2015_375

Which of the following single parameter probability distribution will satisfy the below mentioned properties
i) Mean<Variance as θ>1; ii) Mean>Variance as θ<1; iii) Mean=Variance as θ = 1

- Beta
- Geometric
- Exponential
- Gamma

55 of 100

209 PU_2015_375

The rank of the matrix $A=\begin{bmatrix} -1 & -2 & -3 \\ 3 & 4 & 5 \\ 4 & 5 & 6 \end{bmatrix}$ is:-

- 0
- 1
- 2
- 3

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150 PU_2015_375

The ranges of Beta-1, Beta-2 and Gamma distributions are respectively:-

- (0,1),(0,∞),(0,1)
- (-∞,+∞), (0,1), (0,∞)
- (0,1), (0,n),(0,∞)

- (0,1), (0,∞) (0,∞)

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211 PU_2015_375

The equations $x+2y-z=3, 3x-y+2z=1, 2x-2y+3z=2 \text{ and } x-y+z=-1,$ have

- infinitely many solutions
- more than one but finite number of solutions
- Unique solution
- no solution

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151 PU_2015_375
If X and y are two gamma variates with parameters a,b respectively, then X/(X+Y) is:-

- $\beta_2(a,b)$
- $\gamma(a,b)$
- $\beta_1(a,b)$
- $\beta_1(a+b,a-b)$

59 of 100
124 PU_2015_375

The value of 'k' in the joint p.d.f. f(x,y) =k(a-x-y) ;0≤ x ≤ 2, 2≤ y≤ 4 ; a=6 is:-

- 1/4
- 1/16
- 1/8
- 1/2

60 of 100
144 PU_2015_375
The probability distribution function of negative exponential distribution with parameter '4' is:-

- $1 - 4.e^{-4x}$
- $4 - e^{-4x}$
- $4.e^{-4x}$
- $1 - e^{-4x}$

61 of 100
230 PU_2015_375

If a_1,b_1,a_2,b_2 are real numbers such that $P\left[\left(a_1 < X \le b_1\right) \cap \left(a_2 < Y \le b_2\right)\right] =$

- $F\left(a_1,a_2\right) - F\left(b_1,b_2\right) + F\left(a_1,b_2\right) - F\left(b_1,a_2\right)$
- $F\left(a_1,b_2\right) - F\left(b_1,b_2\right) + F\left(a_1,b_2\right) - F\left(b_1,a_2\right)$
- $F\left(a_1,a_2\right) - F\left(b_1,b_2\right) + F\left(a_1,b_1\right) - F\left(b_2,a_2\right)$
- $F\left(a_1,a_2\right) + F\left(b_1,b_2\right) - F\left(a_1,b_2\right) - F\left(b_1,a_2\right)$

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235 PU_2015_375

If X_1,X_2 are two independent & identical geometric variates such that $P(X_1=K)=q^kp=p(x_2=k)$then the conditional distribution of $X_1/(X_1+X_2)$ is:-

- Geometric variate
- Uniform variate
- Poisson Variate
- Bernoulli variate

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247 PU_2015_375

Which of the following shall be considered as fertility rate?

- Crude Death Rate
- Crude Birth Rate
- Life expectation
- Gender replacement rate

64 of 100

245 PU_2015_375

If the periodicity is an odd number say m=2k+1 then the moving average can be placed against:-

- Between k^{th} & $(k+1)^{th}$ positions
- at K^{th} position
- $(k-1)^{th}$ position
- at $(k+1)^{th}$ position

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236 PU_2015_375

If X and Y are two independent standard normal variates then the continuous distribution of X/Y and X/|Y|are:-

- standard cauchy variates
- Cauchy variates

- Gamma Variates
- Normal Variates

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238 PU_2015_375

For t-distribution the values of pearson's coefficients are:-

- $\beta_1 = 0, \beta_2 = \frac{3}{n-4}$
- $\beta_1 = 0, \beta_2 = \frac{3(n-2)}{n-4}$
- $\beta_1 = 0, \beta_2 = \frac{3n}{n-4}$
- $\beta_1 = 0, \beta_2 = \frac{3n}{n+4}$

67 of 100

248 PU_2015_375

The possible number of five digited numbers that can be divided by 5 with using the digits 0,1,2,3,4 without repetition, are:-

- 120
- 24
- 96
- 72

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239 PU_2015_375

If 'X' is a Bernoulli variate assuming values 1,0 with probabilities θ ,1-θ respectively then $\frac{1}{n(n-1)}\sum_{i=1}^{n} x_i \sum_{i=1}^{n}(x_i - 1)$ is an unbiased estimator of:-

- $(1-\theta)^2$
- θ^2
- (1-θ)
- θ

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231 PU_2015_375

The joint cumulative probability distribution function F(a,b) =P(X≤ a,Y≤ b) is defined as:-

- $\int_{-\infty}^{b}\left[\int_{b}^{a} f(x,y)\,d_y\right]d_x$

- $\int_0^b \left[\int_a^\infty f(x,y)\,dy \right] dx$
- $\int_{-\infty}^a \left[\int_{-\infty}^b f(x,y)\,dy \right] dx$
- $\int_{-\infty}^a \left[\int_a^b f(x,y)\,dy \right] dx$

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237 PU_2015_375

If $X \sim N(\mu, \sigma^2)$ then $\frac{1}{2}\left(\frac{X-\mu}{\sigma}\right)^2 \sim$

- $\beta_1\left(\frac{1}{2},\frac{1}{2}\right)$
- $\beta_2\left(\frac{1}{2},\frac{1}{2}\right)$
- $\gamma\left(1+\frac{1}{2}\right)$
- $\gamma\left(\frac{1}{2}\right)$

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249 PU_2015_375

In a set of ‘n’ things, ‘r’ things are similar and the remaining are different. Then the number of circular arrangements of those ‘n’ things are:-

- $(n-1)!r!$
- $\frac{(n-1)!}{r!}$
- $r(n-1)!$
- $\frac{(n-1)!}{r}$

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232 PU_2015_375

A box contain 2^n tickets among which n_{ci} tickets bares the number ‘I’ ; I=0, 1,2,_____, n. A group of ‘m’ tickets is drawn. Then the expectation of sum of the number is:-

- $\frac{mn}{2}$

- $\frac{m/n}{2}$
- $\frac{m+n}{2}$
- $\frac{m-n}{2}$

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241 PU_2015_375

In order to test the randomness among sample observations, we may use the following test as most suitable option

- Run Test
- Median Test
- Sign Test
- chi-square test

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233 PU_2015_375

The fourth central moment in terms of cumulants is:-

- $\mu_4 = k_4 + 3k_3^2$
- $\mu_4 = k_4 - k_2^2$
- $\mu_4 = k_4 + 3k_2^2$
- $\mu_4 = k_4 - 3k_2^2$

75 of 100

243 PU_2015_375

What are the values of x,y and z from the following ANOVA table :-

Source of variation	D.F.	S.S.	M.S.
Blocks	$x-1$	90	30
Treatments	4	y	25
Total	19	--	--

- x=4; y=100; z=10
- x =3,y=100; z=12
- x=4; y=100; z=12
- x=4; y=90; z=12

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242 PU_2015_375

Regarding the comparison of efficiencies of sampling methods, the following relation holds good:-

- $V(\bar{y}_{srs}) \leq V(\bar{y}_{sys}) \leq V(\bar{y}_{st})$
- $V(\bar{y}_{srs}) \geq V(\bar{y}_{sys}) \geq V(\bar{y}_{st})$
- $V(\bar{y}_{n})_{SRSWR} \leq V(\bar{y}_{n})_{SRSWOR} \leq V(\bar{y}_{sys})$
- $V(\bar{y}_{sys}) \leq V(\bar{y}_{st})_{Prop} \leq V(\bar{y}_{st})_{Opt}$

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240 PU_2015_375

The lemma is based on H_0: $\theta = \theta_0$ against H1 : $\theta = \theta_1$, if Wand W_1 are 2 critical regions with sizes α and α_1 respectively such that $\alpha_1 \leq \alpha$ then:-

- $1-\beta < 1-\beta_1$
- $\alpha (1-\beta) < 1-\beta_1$
- $1-\beta > 1-\beta_1$
- $\alpha (1-\beta) > 1-\beta_1$

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246 PU_2015_375

Value of money will be calculated with the following index numbers (i) Cost of Living index, (ii) Whole sale price Index, (iii) Laspeyre's Price Index Number:-

- only (ii),(ii)
- all (i),(ii),(iii)
- only (i),(iii)
- only (i),(ii),

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244 PU_2015_375

In quality control charts, the level of standard and the level of variability can be studied with the charts respectively are:-

- Range and number defectives
- Average and Range charts
- Range and fraction defectives
- Range and Average charts

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234 PU_2015_375

Let $A_1, A_2, A_3 \ldots\ldots$ be a sequence of events on the probability space (Ω,B,P) and let $A = \underset{n\to\infty}{Lim\ Sup}\{A_n\}$, if $\sum_{n=1}^{\infty} P(A_n) < \infty$, then P(A) =0 is zero-one law due to

- Cauchy –Schwartz Lemma
- Neyman –Pearson Lemma
- Borel –Cantelli Lemma
- Chebychev's Bienayme Lemma

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267 PU_2015_375

The odds in favour of a certain event are 5:4 and odds against another event are 4:3. the chance that at least one of them will happen by assuming the events are independent is:-

- 47/63
- 51/63
- 15/63
- 7/63

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277 PU_2015_375

If $X_1,X_2,\text{-----},X_n$ is an independent random sample drawn from a Cauchy population with p.d.f. f(x) = $\frac{1}{\prod[1+(x-\theta)^2]}$ then the sufficient estimator of 'θ' is:-

- $\prod_{i=1}^{n} x_i$
- $\sum_{i=1}^{n} x_i$
- $\sum_{i=1}^{n} (x_i-\theta)^2$
- whole set $(X_1,X_2,\_\_\_\_\_,X_n)$

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275 PU_2015_375

Let X~ $\beta_1(m,n)$ and Y ~ γ (λ , m+n), be independent random variables such that m,n, λ >0 Then X*Y ~

- $\beta_2(m,n)$
- $\beta_1(m-n,m=n)$
- γ (λ ,m)

- γ (m,n)

84 of 100

268 PU_2015_375

Let F denote bivariate probability distribution functions, then $F(-\infty,-\infty)$; $F(+\infty,+\infty)$ $F(-\infty,+\infty)$ and $F(+\infty,-\infty)$ are equal to

- 0,1,0 and 0
- 0,0,0 and 1
- 1,0,0 and 0
- 0,0,1 and 0

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291 PU_2015_375

The sequence $\{s_n\}$ of real numbers, is said to be non-decreasing if:-

- $s_n \leq s_{n+1} \forall n$
- $s_n > s_{n+1} \forall n$
- $s_n \geq s_{n+1} \forall n$
- $s_n < s_{n+1} \forall n$

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279 PU_2015_375

When there are two samples for testing the randomness, Wald-Wolfowitz test is to test whether 2 samples being drawn from the same population or not; Let U be the number of runs then the values of mean: E (U) and variance: V (U) are equal to:-

- $\frac{n+1}{n}, \frac{n(n+2)}{4(n-1)}$
- $\frac{n-2}{2}, \frac{n(n+2)}{4(n+1)}$
- $\frac{n+2}{2}, \frac{n(n-2)}{4(n-1)}$
- $\frac{n-1}{2}, \frac{n(n+2)}{4(n+5)}$

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292 PU_2015_375

The series $1+\frac{1}{1.2}+\frac{1}{1.2.3}+\frac{1}{1.2.3.4}+.....$

- converges to 1
- converges to 0
- converges to -1
- converges to 1/2

88 of 100

297 PU_2015_375

If $\int_0^\infty e^{-x^2}dx=\frac{\sqrt{\pi}}{2}$ then $\int_0^\infty e^{-ax^2}dx=$

- $\sqrt{\frac{\pi}{2a}}$
- $\frac{\sqrt{\pi}}{2a}$
- $\frac{\sqrt{\pi}}{2}$
- $\frac{1}{2}\sqrt{\frac{\pi}{a}}$

89 of 100

294 PU_2015_375

If a,b,c are different and $\begin{vmatrix} a & a^2 & a^3-1 \\ b & b^2 & b^3-1 \\ c & c^2 & c^3-1 \end{vmatrix}=0,$ then

- ab+bc+ac=0
- abc=1
- a+b+c=1
- a+b+c=0

90 of 100

290 PU_2015_375

The geometric series $\sum_{n=1}^{\infty} a r^{n-1}$ converges to $\frac{a}{1-r}$ if :-

- $0 < r < 1$
- $-1 < r < 0$
- $-1 < r < 1$
- $r < 0 \ \& r > 1$

91 of 100

299 PU_2015_375

If $\frac{d}{dx} f(x) = g(x)$ then $\int_a^b f(x) g(x) dx =$

- $\frac{f(b) - f(a)}{2}$
- $\frac{f^2(b) - f^2(a)}{2}$
- $\frac{f^2(a) - f^2(b)}{2}$
- $\frac{f(a) - f(b)}{2}$

92 of 100

278 PU_2015_375

In an experiment of Bernoulli population with 5 coins tossing problem with parameter P, and H_0:P = ½ Vs H_1: ¾, then H_0 is rejected if more than 3 heads obtained, then values of α , β are respectively:-

- 5/16, 27/128
- 10/15, 19/128
- 11/16, 81/128
- 3/16, 47/128

93 of 100

266 PU_2015_375

If E1,E2, … En are mutually disjoint events such that P(Ei) are not equal to zeros and let A be any arbitrary event such that P(A) > 0, Then the Bayes theorem is defined as:-

- $P(A / E_i) = \frac{\sum_{i=1}^{n} P(A).P(E_i / A)}{P(A).P(E_i / A)}$
- $P(E_i / A) = \frac{P(A).P(E_i / A)}{\sum_{i=1}^{n} P(A).P(E_i)}$

- $P(A/E_i)=\frac{P(A).P(E_i/A)}{\sum_{i=1}^{n}P(A).P(E_i/A)}$
- $P(E_i/A)=\frac{P(E_i).P(A/E_i)}{\sum_{i=1}^{n}P(E_i).P(A/E_i)}$

94 of 100

265 PU_2015_375

If the correlation coefficient of 20 observations is 0.685 and later a constant 6 is added to all the numbers of series X, all the numbers of series Y are multiplied with a constant 5; then the new correlation coefficient is:-

- 0.685
- 5*0.685
- 0.685 + 0.30
- 0.685 - 0.30

95 of 100

296 PU_2015_375

If $\Delta_1=\begin{vmatrix}1 & a & bc\\ 1 & b & ca\\ 1 & c & ab\end{vmatrix},\Delta_2=\begin{vmatrix}1 & a & a^2\\ 1 & b & b^2\\ 1 & c & c^2\end{vmatrix}$ then:-

- $\Delta_1=\Delta_2^2$
- $\Delta_1=2\Delta_2$
- $2\Delta_1=\Delta_2$
- $\Delta_1=\Delta_2$

96 of 100

276 PU_2015_375

If χ_1^2 and χ_2^2 are two independent χ^2 variate with (n_1,n_2) d.f respectively then,

- $\frac{\chi_1^2}{\chi_1^2+\chi_2^2}\sim\gamma\left(\frac{n_1}{2},\frac{n_2}{2}\right)$
- $\frac{\chi_1^2}{\chi_2^2}\sim\gamma\left(\frac{n_1}{2},\frac{n_2}{2}\right)$
- $\frac{\chi_1^2}{\chi_1^2+\chi_2^2}\sim\beta_1\left(\frac{n_1}{2},\frac{n_2}{2}\right)$
- $\frac{\chi_1^2}{\chi_1^2+\chi_2^2}\sim\beta_2\left(\frac{n_1}{2},\frac{n_2}{2}\right)$

97 of 100

295 PU_2015_375

If $A=\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$ then $I+A^2+A^3+.....\infty=$

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

98 of 100

269 PU_2015_375

If X and Y are two random variables then they are said to be stochastically independent when, (i) $P_{x,y}(x,y) = P_x(x)\, P_y(y)$; (ii). $P_{X/Y}(x/y) = P_X(x)$ or $P_{Y/X}(y/x) = P_Y(y)$;

- (i) is true (ii) is false
- (i) is false (ii) is true
- both (i) and (ii) are true
- both (i) and (ii) are false

99 of 100

298 PU_2015_375

$\int_0^{\frac{\pi}{2}} \sin^6 x \cos^3 x \, dx =$

- $\frac{63}{2}$
- $\frac{2}{63}$
- $\frac{16}{63}$

- $\frac{22}{63}$

100 of 100

293 PU_2015_375

The sum of the series $\sum_{n=1}^{\infty} 5\left(\frac{-2}{7}\right)^{n-1}$ is:-

- 35/9
- 36/8
- 37/7
- 38/6

375 PU M Sc Statistics

1 of 100
193 PU_2016_375_E
For the following 2x2 contingency table for two attributes the value of chi-square is:-

	A	A
B	20	30
B	10	40

- 20/36
- 10/38
- 100/21
- 10/18

2 of 100
120 PU_2016_375_E
If the values of the 1st and 3rd quartiles are 20 and 30 respectively, then the value of inter quartile range is:-

- 10
- 0
- 25
- 5

3 of 100
123 PU_2016_375_E
Which of the following distributions are involved in median test?

- Poisson, Beta and Power series
- Geometric, Exponential and Normal
- Lognormal, Binomial and Normal
- Hyper geometric, Normal and Chi square

4 of 100
127 PU_2016_375_E
What is the module in Analyze, the item of menu bar for performing statistical parametric tests of hypothesis in SPSS?

- Compare Means
- Non - Parametric Tests
- General Linear Model
- Data Reduction

5 of 100

192 PU_2016_375_E
The Yule's coefficient of association assumes:-

- only negative value
- only positive value
- only zero value
- positive, negative or zero values

6 of 100

191 PU_2016_375_E
In a 2x2 contingency table it is given that (A) = 56; (b) = 48; (AB) = 35; N=100 What is the value of (aB)?

- 17
- 27
- 35
- 21

7 of 100

217 PU_2016_375_E
A discrete random variable X takes the values 1, 2, 3 and 4 such that 3P(X=1) = 2P(X=2) = 5P(X=3) = P(X = 4). Then P(X = 3) is equal to:-

- 3/61
- 1/61
- 2/61
- 6/61

8 of 100

166 PU_2016_375_E
Which of the following is NOT a difference between a confidence interval and a prediction interval?

- Confidence interval uses the standard error of estimate and the prediction interval does not
- Addition of "1" under the radical for the prediction interval
- Confidence interval is narrower than the prediction interval
- Prediction interval refers to a specific case

9 of 100

169 PU_2016_375_E
The coefficient of determination measures the proportion of:-

- error variation relative to total variation
- explained variation relative to total variation
- variation due to the relationship among variables
- variation due to regression

10 of 100
195 PU_2016_375_E
The factor reversal test is satisfied by:-

- Paasche's index
- Laspeyre's index
- Simple aggregate index
- Fisher's index

11 of 100
124 PU_2016_375_E
100% inspection is possible when:-

- Samples are easy to obtain
- Testing is destructive
- Measurement is not possible
- More time is allotted for inspection

12 of 100
199 PU_2016_375_E
A hypothesis is rejected at the level of significance α = 5% by a test. Then which one of the following statements is true regarding the p-value of the test?

- p > 5%
- p < 5%
- p = 5%
- Any one of the above three can be true

13 of 100
190 PU_2016_375_E
In the usual notations, two attributes S and T at 2 levels each are said to be positively associated if:-

- $(ST) < \frac{(S)(T)}{N}$
- $(ST) = (st)$
- $(ST) = \frac{(S)(T)}{N}$
- $(ST) > \frac{(S)(T)}{N}$

14 of 100
125 PU_2016_375_E
Double Sampling Inspection Plan for attributes, a second sample is taken:-

- Always

- When the number of defectives in the first sample is in between two pre-assigned numbers
- When the first sample contains only one defective item
- When the first sample does not contain any defective items

15 of 100

218 PU_2016_375_E

Which one of the following in a linear contrast of the treatment effects T_1, T_2, T_3, T_4?

- $T_1 + T_2 + T_3 - T_4$
- $3T_1 + T_2 - 3T_3 + T_4$
- $-3T_1 - T_2 + T_3 + 3T_4$
- $T_1 + 3T_2 - 3T_3 + T_4$

16 of 100

213 PU_2016_375_E

The value of $lim_{x\to\infty}\left(\frac{x^2+5x+3}{x^2+x+2}\right)^x$ is :-

- e^3
- e
- e^2
- e^4

17 of 100

147 PU_2016_375_E

Let $f(x) = a_0 + a_1x^2 + a_2x^4 + \cdots + a_nx^{2n}$ be a polynomial in $x \in \mathbb{R}$ with $0 < a_0 < a_1 < \cdots < a_n$ then $f(x)$ has:-

- only one minimum
- only one maximum
- one maximum and one minimum
- neither a maximum nor a minimum

18 of 100

184 PU_2016_375_E

Population census in India are undertaken at one of the given intervals:-

- Twelve years
- Fifteen years
- Ten years
- Eight years

19 of 100

168 PU_2016_375_E
In multiple regression analysis, when the independent variables are highly correlated, it is called:-

- Autocorrelation
- Multicollinearity
- Homoscedasticity
- Curvilinearity

20 of 100
111 PU_2016_375_E

The value of $\int x^{16}(1+x^{17})^4 dx$ is equal to:-

- $\frac{1}{85}\frac{(1+x^{17})^6}{5}+c$
- $\frac{1}{85}(1+x^{17})^5+c$
- $\frac{1}{85}\frac{(1+x^{16})^5}{5}+c$
- $\frac{x^{17}}{85}+c$

21 of 100
162 PU_2016_375_E
Which of the following statements regarding the coefficient of correlation is true?

- It measures the strength of the relationship between two variables
- A value of 0.00 indicates two variables are not related
- It ranges from -1.0 to +1.0 inclusive
- All of the above

22 of 100
164 PU_2016_375_E
A hypothesis test is conducted at the .05 level of significance to test whether or not the population correlation is zero. If the sample consists of 25 observations and the correlation coefficient is 0.60, then what is the computed value of the test statistic?

- 2.94
- 3.60
- 1.96

- 2.07

23 of 100

197 PU_2016_375_E

Algebraic sum of deviations from arithmetic mean is equal to:-

- 2
- 3
- 1
- 0

24 of 100

181 PU_2016_375_E

Let ${}_nD_x$ be the number of deaths in the age group (x, x+n) and ${}_nP_x$ be the total population of the age group x to x+n, then the age specific death rate for the age group x to x+n (${}_nm_x$) is given by:-

- $\frac{{}_nP_x}{{}_nD_x} X1000$
- $\frac{{}_nP_x}{{}_nD_x} X100$
- $\frac{{}_nD_x}{{}_nP_x} X100$
- $\frac{{}_nD_x}{{}_nP_x} X1000$

25 of 100

165 PU_2016_375_E

Which of the following is true about the standard error of estimate?

- It is based on squared vertical deviations between Y and $\hat{Y}$
- It is a measure of the accuracy of the prediction
- It cannot be negative
- All of the above

26 of 100

148 PU_2016_375_E

If $y = \frac{7+4x}{3+2x}$ then $\frac{d^2y}{dx^2}$ is:-

- $\frac{16}{(3+2x)^3}$

- $\frac{-8}{(3+2x)^3}$
- $\frac{8}{(3+2x)^3}$
- $\frac{-16}{(3+2x)^3}$

27 of 100

121 PU_2016_375_E

In order to test the randomness among sample observations, we may use the following test as most suitable option:-

- Run Test
- Chi-Square test
- Sign Test
- Median Test

28 of 100

143 PU_2016_375_E

Let $X_1, X_2, \ldots\ldots, X_n$ be a random sample from B(1, p), then a consistent estimator of p(1-p) is:-

- $\overline{X}(1-\overline{X})$
- $n.\overline{X}$
- $\overline{X}$
- $\overline{X}^2$

29 of 100

122 PU_2016_375_E

The exact distribution of the number of defectives in a single sampling plan is:-

- Hyper geometric
- Poisson
- Geometric
- Binomial

30 of 100

110 PU_2016_375_E

If $D=diag(d_1,d_2,d_3)$, where each of d_1,d_2,d_3 is non zero, then D^{-1} is:-

- Zero matrix
- $diag(d_1^{-1}, d_2^{-1}, d_3^{-1})$
- I_3
- D

31 of 100

149 PU_2016_375_E

If $X_i \sim N(\mu_i, \sigma_i^2)$ then the distribution of $Z_i^2 = \left(\frac{X_i - \mu i}{\sigma i}\right)^2$ is:-

- Cauchy Distribution
- Gamma Distribution
- Chi-square Distribution
- Beta Distribution

32 of 100

113 PU_2016_375_E

Let $a_n = \frac{2n-7}{3n+2}$ then $\lim_{n \to \infty} a_n =$

- 0
- 1
- 7/2
- 2/3

33 of 100

160 PU_2016_375_E

Arithmetic Mean (A.M.) of 'n' numbers of a series is $\overline{X}$. After calculations, it was observed that two number 'a' and 'b' are misread in the place of 'c' and 'd'. What is the corrected mean value?

- $\frac{n\overline{X} - (a+b) + (c+d)}{(n-1)}$
- $\frac{n\overline{X} - (a+b) + (c+d)}{(n+1)}$
- $\frac{\overline{X} - (a+b) + (c+d)}{n}$
- $\frac{n\overline{X} - (a+b) + (c+d)}{n}$

34 of 100

183 PU_2016_375_E

The central mortality rate m_x in terms of q_x is given by the formula:-

- $q_x/(2+q_x)$
- $q_x/(2-q_x)$
- $2q_x/(2-q_x)$
- $2q_x/(2+q_x)$

35 of 100

219 PU_2016_375_E

Probability of getting two aces when two cards are drawn from the well shuffled pack of cards is:-

- 219/221
- 11/221
- 1/221
- 220/221

36 of 100

161 PU_2016_375_E

If U= aX - bY, a=8, b=9, V(X)=16, V(Y) = 25, X and Y are independent data sets, then the standard deviation of U is:-

- 25
- 77
- 16
- 12

37 of 100

144 PU_2016_375_E

If T_1 is an UMVUE of $\gamma(\theta); \theta \in \Theta$ and T_2 is any other unbiased estimator of $\gamma(\theta)$ with efficiency e_θ, the correlation coefficient between T_1 & T_2, say ρ_θ, equals:-

- $\frac{1}{\sqrt{e_\theta}}$
- $\sqrt{e_\theta}$
- e_θ^2
- e_θ

38 of 100

112 PU_2016_375_E

If $\frac{x+1}{(x-a)(x-3)} = \frac{2}{(x-a)} + \frac{b}{(x-3)}$, then the value of (a, b):-

- (4,1)
- (7, -1)
- (-4, 1)
- (-4, -1)

39 of 100

146 PU_2016_375_E

If $\begin{vmatrix} 1+x & 1-x & 1-x \\ 1-x & 1+x & 1-x \\ 1-x & 1-x & 1+x \end{vmatrix} = 0$, then the solution set is:-

- (0, 3)
- (1, 3)
- -1, 3
- (0, 1)

40 of 100

167 PU_2016_375_E

In regression analysis, a transformation is used when:-

- the correlation is near zero
- the confidence interval is wider than a prediction interval
- the relationship between dependent and independent variables is not linear
- two variables are not independent

41 of 100

142 PU_2016_375_E

Let a linear model be Y = Xβ + ε, where X is a n x (p + 1) matrix of rank (p + 1) < n.Then the Best Linear Unbiased Estimator (BLUE) of β is:-

- $\hat{\beta} = (X^T X)^{-1} X^T Y$
- $\hat{\beta} = (X^T X)^{-1} X^{-1} Y$
- $\hat{\beta} = (X^T X) X^T Y$
- $\hat{\beta} = (X^{-1} X) X^T Y$

42 of 100

212 PU_2016_375_E

Product control is achieved through:-

- Control Charts
- A study of assignable causes of variation in quality
- A study of tolerance limits
- Acceptance Sampling Plans

43 of 100

129 PU_2016_375_E

From which Excel ribbon, we can place header and footer for a excel document?

- View
- Insert
- Data

- Page Layout

44 of 100

216 PU_2016_375_E

The fourth central moment in terms of cumulants is:-

- $\mu_4 = k_4 + 3k_2^2$
- $\mu_4 = k_4 - k_2^2$
- $\mu_4 = k_4 - 3k_2^2$
- $\mu_4 = k_4 + 3k_3^2$

45 of 100

211 PU_2016_375_E

Probabilities of Accepting true H_0, and Rejecting the false H_0 are referred as:-

- Level of significance and size of the critical region
- Confidence coefficient and size of type two error
- Confidence coefficient and Power of the test
- Size of the critical region and power of the test

46 of 100

141 PU_2016_375_E

If X is a random variable and for any real number k > 0, then the inequality denoted by $P\{|X|^r \geq k^r\} \leq \frac{E|X|^r}{k^r}$ is called:-

- Holder's Inequality
- Chebychev's Inequality
- Markov's Inequality
- Jensen's Inequality

47 of 100

180 PU_2016_375_E

In partial confounding experiment, the confounded interaction effects:-

- can never be recovered if the total number of replications is 4
- can be recovered from all the replications
- can be recovered from those replications in which they are not confounded
- can never be recovered

48 of 100

128 PU_2016_375_E

The full form of SPSS is:-

- Software Programs for Statistical Sciences
- Statistical Programs for Systems Sciences

- Statistical Packages for Social Sciences
- Software Packages for Statistical Sciences

49 of 100

215 PU_2016_375_E

Which of the following functions is the solution of the given differential equation $\frac{dy}{dx} = \frac{2y^4 + x^4}{xy^3}$?

- $y = x^8 - x^4$
- $y = (x^8 - x^4)^{1/4}$
- $y = \sqrt{x^8 - x^4}$
- $y = x$

50 of 100

214 PU_2016_375_E

If the roots of the equation $x^2 - bx + c=0$ are two consecutive integers then $b^2 - 4ac$ is equal to:-

- 1
- 4
- 2
- 3

51 of 100

182 PU_2016_375_E

If P_1 and P_2 are the population at an interval of 10 years, the population just after five years will be:-

- $\sqrt{P_1 + P_2}$
- $\sqrt{(P_1 + P_2)}$
- $\frac{1}{2}\left(\frac{1}{P_1} + \frac{1}{P_2}\right)$
- $\frac{1}{2}(P_1 + P_2)$

52 of 100

126 PU_2016_375_E

For what purpose is the 'variable view' in IBM SPSS's data editor used?

- Writing syntax
- Viewing output from data analysis
- Defining characteristics of variables
- Entering data

53 of 100

198 PU_2016_375_E

If σ_1^2 and σ_2^2 are the variances of n_1 and n_2 observations respectively, then the combined variances is:-

- $n_1(\sigma_12-d_1^2)+n_2(\sigma_2^2-d_2^2)$
- $(\sigma_1^2+\sigma_2^2)/(n_1+n_2)$one
- $n_1\sigma_1^2+n_2\sigma_2^2/n_1+n_2$
- $n_1(\sigma_12+d_1^2)+n_2(\sigma_2^2+d_2^2)/n_1+n_2$

54 of 100

196 PU_2016_375_E

The mean of a random sample of 16 observations for $N(\mu,\sigma^2 = 4)$ distribution is 25 The 95% confidence interval for μ is approximately equal to:-

- (24.5,25.5)
- (21,29)
- (23,27)
- (24,26)

55 of 100

145 PU_2016_375_E

$$\int_0^{\frac{\pi}{2}} \sin^5 x \cos x dx =$$

- 1/3
- 3/2
- 1/6
- 2/3

56 of 100

140 PU_2016_375_E

The probability of choosing a random number that is divisible by 6 or 8 from among numbers 1 to 90 is:-

- 1/30
- 23/90
- 11/90
- 5/30

57 of 100

194 PU_2016_375_E

If a null hypothesis is rejected at 5% level then which one of the following is a true statement?

- The alternate hypothesis will be accepted at 95% level
- The null hypothesis will be rejected at 4% level

- The null hypothesis will be rejected at 6% level
- The null hypothesis was not selected properly

58 of 100

209 PU_2016_375_E

If X~ $N(\mu,\sigma^2)$, and μ is assumed to be known, then M.L.E of σ^2 is :-

- $(1/n-1)\sum_{i=n}^{n}(x_i-\mu)$
- $(1/n)\sum_{i=1}^{n}(x_i-\mu)$
- $\frac{1}{n-1}\sum_{i=1}^{n}(x_i-\mu)^2$
- $(1/n)\sum_{i=1}^{n}(x_i-\mu)^2$

59 of 100

210 PU_2016_375_E

If X is a random variable that has Uniform/Rectangular distribution with parameters α,β such α>β, then the Maximum Likelihood Estimator of β is:-

- Median $\{X_i\}$
- Sum $\{X_i\}$
- Max$\{X_i\}$
- Min $\{X_i\}$

60 of 100

163 PU_2016_375_E

What can we conclude if the coefficient of determination is 0.94?

- 94% of total variation of one variable is explained by variation in the other variable
- Strength of relationship is 0.94
- Direction of relationship is positive
- All of the above are correct

61 of 100

233 PU_2016_375_M

Let A be the event of getting sum on two dice is a multiple of 3, B be the event of getting sum on two dice is a multiple of 4, when two fair dice are thrown simultaneously. Then, P(AUB) and P(A∩B) are equal to:-

- 21/36,1/36
- 21/36, 20/36
- 20/36, 19/36
- 20/36, 1/36

62 of 100

248 PU_2016_375_M

The value of y_0 in the p.df. $f(x) = y_0 e^{-|x|}\, dx;\ -\infty < x < \infty$ is:-

- 1
- 1 / 2
- 1/4
- 1 / 8

63 of 100

247 PU_2016_375_M

If E(X)=2, E(Y)=3,V(X)=4,V(Y)=5, COV(X,Y)=1, Z=3X+2Y, then E(Z), V(Z)=

- 16,68
- 12,45
- 12,68
- 10,12

64 of 100

242 PU_2016_375_M

Two distributions with p.d.f.'s $f_1(.)$ and $f_2(.)$ to be identical is that their characteristic functions $\phi_1(t)$ and $\phi_2(t)$ are identical is a condition of:-

- Necessary & Sufficient
- Necessary but not sufficient
- Not Necessary but sufficient
- Neither necessary nor Sufficient

65 of 100

234 PU_2016_375_M

Given that P(A) =1/3, P(B) =3/4, P(A U B) = 11/12, the probability, then P(B|A) =

- 1/6
- 4/9
- 1/4
- 1/2

66 of 100

245 PU_2016_375_M

Two balls are drawn from an urn consisting of 7 white and 3 red balls, and if X be a random variable denotes the number of red balls drawn, then E(X) is:-

- 21/12
- 12/21

- 21/15
- 15/21

67 of 100

236 PU_2016_375_M

A and B stand in a queue at random with 15 other persons. What is the probability that there will be two persons between A and B?

- 17/68
- 8/68
- 7/68
- 6/68

68 of 100

237 PU_2016_375_M

Given P(AUB)=7/10, P(A∩B) =2/5 and P(A|B) =2/3, then the values of P(A), P(B), and P(B|A) are:-

- 1/2, 3/5, 4/5
- 3/5, 2/5,7/8
- 4/5, 2/5,2/3
- 5/6,4/5,1/2

69 of 100

231 PU_2016_375_M

A speaks truth 2 out of 3 times and B speaks truth 4 out of 5 times. Both of them agree in the assertion that a bag contains 6 different coloured balls among which one is Red coloured. Then the probability of the statement is true, is:-

- 20/41
- 30/41
- 10/41
- 40/41

70 of 100

246 PU_2016_375_M

E(X), V(X)and Cov(X,Y) based on the following bivariate probability distribution is:-

		X		
		-1	0	1
Y	-1	0	0.1	0.1
	0	0.2	0.2	0.2
	1	0	0.1	0.1

- 0.2, 0.6, 0.8
- 0.25, 0.50, 1

- 0.4, 0.5, 0.1
- 0.2, 0.56, 0

71 of 100

249 PU_2016_375_M

If the probability distribution of a discrete random variable X is as follows, then the value of constant 'a' and P(X>1) are:-

X	1	2	3	4	5	6	7
P(x)	a	2a	2a	3a	a^2	$2a^2$	$7a^2+a$

- 1/7,6/7
- 1/10, 9/10
- 1/8,7/8
- 1/9,8/9

72 of 100

241 PU_2016_375_M

The P.G.F. of sum of 'n' independent discrete random variables is equal to the Product of their individual P.G.F.s, this property is also referred as:-

- Probability Convolution Property
- Probability Multiplicative Property
- Probability Additive Property
- Probability complementary Property

73 of 100

243 PU_2016_375_M

Expected value of sum of numbers of points, when two dies are thrown simultaneously is:-

- 8
- 12
- 7
- 6

74 of 100

240 PU_2016_375_M

The r^{th} order cumulant K_r=

- $\frac{d^r}{dt^r}[K_x(t)]_{t=0}$
- $\frac{d^r}{dt^r}[M_x(t)]_{t=1}$

- $\frac{d^r}{dt^r}[K_X(t)]_{t=1}$
- $\frac{d^r}{dt^r}[M_X(t)]_{t=0}$

75 of 100

230 PU_2016_375_M

In a city, 60% read newspaper A, 40% read newspaper B and 50% read newspaper C, 20% read A and B, 30% read A and C, 10% read B and C. Also 5% read all papers A, B and C. What is the percentage of people who do not read any of these newspapers?

- 45%
- 5%
- 65%
- 15%

76 of 100

235 PU_2016_375_M

X and Y sit around a round table with another 10 persons. Assuming the seating arrangement is in random order, what is the chance that there are 3 persons between X and Y?

- 2/11
- 1/11
- 5/11
- 7/11

77 of 100

244 PU_2016_375_M

If X is a random variable with the following probability distribution, then $E(X^2)$ is

X=x:	-3	0	6	9
P(X=x)	1/6	0	½	1/3

- 45/93
- 93/2
- 45/4
- 90/3

78 of 100

238 PU_2016_375_M

If (20,30) is a 90% Confidence Interval (C.I.) for a parameter θ then which one of the following is a correct statement about the confidence interval?

- All other intervals will contain θ with probability less than 90%

- (20,30) is a C.I. randomly selected from a collection of intervals 90% of which contain θ
- With probability 90% θ will be in the interval (20,30)
- θ will be in the middle of the confidence interval with a longer probability (> 90%) than towards the end of C.I

79 of 100

239 PU_2016_375_M

If X and Y are two random variables then V [(aX± b) ± (cY± d)] =

- $a^2V(X) + c^2V(Y) \pm ac\ Cov(X,Y)$
- $a^2V(X) + c^2V(Y) \pm 2ac\ Cov(X,Y)$
- $a^2V(X) + c^2V(Y) + 2ac\ Cov(X,Y)$
- $a^2V(X) - c^2V(Y) + ac\ Cov(X,Y)$

80 of 100

232 PU_2016_375_M

If A point P is taken at random in a line AB of length 2a, all positions of the point being equally likely. Assume that the AP and PB formed a rectangle. Then the probability of the formed rectangular is more than $a^2/2$ is:-

- 1
- $\frac{1}{\sqrt{4}}$
- $\frac{1}{\sqrt{2}}$
- $\frac{1}{\sqrt{3}}$

81 of 100

295 PU_2016_375_D

If X be the sum of the out comes when two fair dice are thrown simultaneously, then P[| X - 6 | ≥ 1]=

- 31/36
- 6/36
- 30/36
- 5/36

82 of 100

293 PU_2016_375_D

Two dimensional random variable (X, Y) has the joint density

$$f(x,y) = \begin{cases} 8xy, 0 < x < y < 1 \\ 0, \ elsewhere \end{cases}$$

Then the conditional distribution of X given Y is:-

- $\frac{2x^2}{y^2}$
- $\frac{2x}{y^3}$
- $\frac{2x}{y}$
- $\frac{2x}{y^2}$

83 of 100

269 PU_2016_375_D

Stratified random sampling is recommended where the population is:-

- Non-homogeneous
- Non-homogeneous but can be divided into homogeneous sub-populations
- Having a linear trend
- Homogeneous

84 of 100

266 PU_2016_375_D

If the population size is 'N' and sample size is 'n', then total number of possible samples that can be obtained through SRSWR and SRSWOR respectively are:-

- $N^{n+1}; \binom{N}{n+1}$
- $N^{n+1}; \binom{N}{n}$
- $N^n; \binom{N}{n}$
- $n^N; \binom{N}{n+1}$

85 of 100

276 PU_2016_375_D

If $x^x y^y z^z = k(constant)$ then $\frac{\partial z}{\partial x}$ is given by:-

- $-\left(\frac{1+logx}{1+logz}\right)$

- $-\left(\frac{1+\log z}{1+\log x}\right)$
- $x^x y^y z$
- $x^x y^y$

86 of 100

291 PU_2016_375_D

Which of the following relation holds good for the following data? The values of X are 1,2,3,4,5,6,7,8 and 9; their respective frequencies are 2,18,15,13,12,9,7,4,1:-

- Mean = Mode
- Mode = Median
- Mode > Mean
- Mean > Mode

87 of 100

299 PU_2016_375_D

If X and Y are standardized variates, u = ax + by, v = bx + ay, $r_{xy} = \frac{1+2ab}{a^2+b^2}$ then r_{uv} =

- $\frac{a^2+b^2}{(a^2+b^2)^{1/2}-2ab}$
- $\frac{a^2+b^2}{(a^2-b^2)-2ab}$
- $\frac{a^2+b^2}{(a^2-b^2)^2-2ab}$
- $\frac{a+b}{(a^2-b^2)-2ab}$

88 of 100

292 PU_2016_375_D

If the values of a variate are a, ar, ar^2, ar^3,....,....,....., ar^{n-1} each with frequency 1, then Arithmetic Mean is:-

- $ar^{(n-1)/2}$
- $\frac{a(1-r^n)}{n(1-r)}$
- $\frac{a(1-r)r^{(n-1)}}{(1-r^n)}$
- $\frac{an(1-r)r^{(n-1)}}{(1-r^n)}$

89 of 100

294 PU_2016_375_D

The Probability generating function of sum of independent random variables is equal to the product of their individual probability generating functions is propagated through the property named a:-

- Additive Property
- Convolution Property
- Multiplicative Property
- Hybrid Property

90 of 100

290 PU_2016_375_D

Which of the following statement is true regarding the shape of the frequency curve?

(1) Poisson and Exponential Distributions;
(2) Chi-square and Snedecor's -F Distributions;
(3) Student's -t and Normal Distributions;

- (1), (2) and (3) are Symmetric
- (1) and (2) are positively skewed; (3) are Symmetric
- (1) and (2) are symmetric; (3) are Positively skewed
- (1) are positively skewed; (2) and (3) are Symmetric

91 of 100

279 PU_2016_375_D

The solution of the equation $\int_{log2}^{x} \frac{dt}{e^t-1} = log\left(\frac{3}{4}\right)$ is given by x =

- $log\left(\frac{8}{5}\right)$
- e^2
- $log\left(\frac{5}{8}\right)$
- e

92 of 100

275 PU_2016_375_D

If T is an unbiased estimator of θ then:-

- The average error is zero
- T has both the errors
- the error in T will tend to 0 as the sample size tends to ∞
- T has no error

93 of 100

277 PU_2016_375_D

If [x] denotes the greatest integer function then the value of $\int_{0.5}^{4.5}[x]dx + \int_{-1}^{1}|x|dx$ is:-

- 6
- 7
- 8
- 9

94 of 100

267 PU_2016_375_D

The total number of possible samples of size 2 that can be drawn from a population with 5 units without replacement is:-

- 10
- 20
- 25
- 5

95 of 100

298 PU_2016_375_D

The Cumulant Generating Function of χ^2- distribution is:-

- $\frac{n}{2}\log(2t).$
- $\frac{n}{2}\log(1+2t).$
- $-\frac{n}{2}\log(1-2t)$
- $\frac{n}{2}\log(1-2t).$

96 of 100

268 PU_2016_375_D

In a sample survey, the true value of a unit is 16 and it is wrongly recorded as 61 and analysis carried out. This error comes under:-

- Non-sampling Error
- Arithmetic error
- Sampling Error
- Experimental Error

97 of 100

296 PU_2016_375_D

If X, Y are any two random variables then the conditional Expectation E[E(X/Y)] =

- E[X/E(Y)]

- E(Y)
- E(X)
- E(X/Y)

98 of 100

297 PU_2016_375_D

Let $\{X_n\}$ be a sequence of random variables. X_n converges almost surely if and only if:-

- $P(\lim_{n\to\infty} X_n = X) = 1$
- $P(\lim_{n\to\infty} X_n \neq X) = a; 0 < a < 1$
- $P(\lim_{n\to\infty} X_n = X) = 0$
- $P(\lim_{n\to\infty} X_n \neq X) = 1$

99 of 100

265 PU_2016_375_D

For a Normal distribution, Quartile deviation, Mean deviation and Standard deviation are in the ratio:-

- 1 : 4/5 : 2/3
- 1/2 : 1 : 4/5
- 2/3 : 4/5 : 1
- 4/5 : 2/3 : 1

100 of 100

278 PU_2016_375_D

The value of $\int_{\frac{1}{e}}^{e} |logx| dx$ is:-

- $2\left(\frac{e+1}{e}\right)$
- $2\left(\frac{e-1}{e}\right)$
- $\frac{2}{e}$
- $2\left(\frac{1-e}{e}\right)$

Sr No.	MSc Statistics
1	Choose the missing term out of the given options: ___aa__ba__bb__ab__aab
Alt1	aaabb
Alt2	babab
Alt3	bbaab
Alt4	bbbaa

2	Choose word from the given options which bears the same relationship to the third word, as the first two bears: Hour : Second :: Tertiary : ?
Alt1	Intermediary
Alt2	Primary
Alt3	Ordinary
Alt4	Secondary

3	Select the lettered pair that has the same relationship as the original pair of words: Stickler :Insist
Alt1	Laggard: Outlast
Alt2	Braggart: Boast
Alt3	Haggler: Concede
Alt4	Trickster: Risk

4	Select the lettered pair that has the same relationship as the original pair of words: Necromancy : Ghosts
Alt1	Romance: Stories
Alt2	Magie: Amulets
Alt3	Alchemy: Gold
Alt4	Sorcery: Spirits

5	Find out the number that has the same relationship as the numbers of the given pair: MAD: JXA: RUN: ?
Alt1	ORK
Alt2	OSQ
Alt3	PRJ
Alt4	UXQ

6	Spot the defective segment from the following:
Alt1	Keep the miscreants
Alt2	at your arm's length
Alt3	for
Alt4	they will pull the wool over your eyes

7	The terrorists held the tourists ---------- for ransom.
Alt1	as hostages
Alt2	hostages
Alt3	hostage

Alt4	captives

8	If I ------- wealthy, I would have got many friends.
Alt1	had been
Alt2	were
Alt3	was
Alt4	am

9	Choose the option closest in meaning to the given word: NEOLOGISM
Alt1	inoculation
Alt2	coinage
Alt3	consistency
Alt4	mirth

10	Choose the antonymous option you consider the best: SUAVE
Alt1	crestfallen
Alt2	polite
Alt3	rough
Alt4	cherished

11	In a certain code, REFRIGERATOR is coded as ROTAREGIRFER. Which wordwould be coded as NOITINUMMA ?
Alt1	ANMOMIUTNI
Alt2	AMNTOMUIIN
Alt3	AMMUNITION
Alt4	NMMUNITIOA

12	Traffic : Road in the same way as
Alt1	Aeroplane : Aerodrome
Alt2	Blood : Veins
Alt3	Roots : Tree
Alt4	Car : Garage

13	The following information is given: One of M.Gopi, his wife, their son and Mr.Gopi's mother is an architect and another is a doctor. (i) If the doctor is younger than the architect, then the doctor and the architect are not blood relatives. (ii) If the doctor is a woman, then the doctor and the architect are blood relatives. (iii) If the architect is a man, then the doctor is a man. Whose occupation is known by this information?
Alt1	Mr. Gopi is the doctor
Alt2	Mr. Gopi's son is the architect
Alt3	Mrs. Gopi is the doctor
Alt4	Mr. Gopi's mother is the doctor

14	Gopal was ranked 5th from the top and 16th from the bottom in a test. How many students were there in his class
Alt1	19
Alt2	21
Alt3	22
Alt4	20

15	Median of 10o, 5o, -2o, -1o, -5o, 15o is
Alt1	-2o
Alt2	-1o
Alt3	2o
Alt4	3o

16	Which of the following is 'OXYMORON'?
Alt1	Found Missing
Alt2	TIT-TAT
Alt3	GOTO
Alt4	Misunderstood

17	There are 5 persons in a class. Each one is shaking hand with the other. Find the total number of hand shakes?
Alt1	5
Alt2	10
Alt3	20
Alt4	60

18	Of the 26 Capital letters, how many are symmetrical along with vertical and horizontal axes.
Alt1	4
Alt2	3
Alt3	6
Alt4	5

19	There are 30 boys and 60 girls in a village . There are 70 men and 40 women in that village. What is the percentage of boys in that village?
Alt1	0.1
Alt2	0.25
Alt3	0.2
Alt4	0.15

20	There are N students in a class and only 8 of them are girls. If 11 boys added to the class,how many students in the class are boys?
Alt1	N+3
Alt2	N-3
Alt3	N-19

Alt4	19

21	A statistical organization established by the Department of Economic Affairs, Ministry of Finance is:- A. Labour Bureau of Statistics B. National Sample Survey Organization C. Indian Labour Organization D. World Health Organization
Alt1	A
Alt2	B
Alt3	C
Alt4	D

22	If the c.d.f. of a r.v. X is F(x)=0, for x<0; F(x)=1-(e^{-x}/2), for x≥0, then the m.g.f. of X is:- A. $\frac{(2-t)}{2t}, t<1$ B. $\frac{2-t}{(1-t)}, t<1$ C. $\frac{2-t^2}{(1-t)}, t<1$ D. $\frac{2-t}{2(1-t)}, t<1$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

23	If the joint pdf is $f(x,y)=e^{-(x+y)}$, $0 < x, y < \infty$ then the value of P(X < Y) = A. 1/4 B. 1/2 C. 1/3 D. 1/5
Alt1	A
Alt2	B
Alt3	C
Alt4	D

24	In case of a random effect model, the hypothesis which is to be tested with regard to treatments is:- A. $\sum \tau_i = 0$ B. $\tau_i = 0$ C. $\sigma_\tau^2 = 0$ D. $\sum \tau_i^2 = 0$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

25	The outcomes of an experiment were marked on the two dimensional space of X, Y plane taking the values 0<X<1 and 0 <Y<1. The chance that a randomly chosen outcome will fall in the region $X^2+Y^2>a^2$ is:- A. π/4 B. π/2 C. 1-π/4 D. 1-π/2
Alt1	A
Alt2	B
Alt3	C
Alt4	D

26	If arithmetic mean and coefficient of variation of x are 20 and 20 respectively, what is the variance of y = 10 - 2 x? A. 84 B. 64 C. 36 D. 16
Alt1	A
Alt2	B
Alt3	C
Alt4	D

27	The unknown coefficient of the equation $x^2 + bx + 3 = 0$ is determined by throwing an ordinary six faced die. The probability that the equation has real roots is:- A. 1/36 B. 4/36 C. 2/3 D. 1/2
Alt1	A
Alt2	B
Alt3	C
Alt4	D

28	In the analysis of data of a Randomized Block Design (RBD) with b blocks and v treatments, the error degrees of freedom are:- A. v b B. (b-1) (v-1) C. v (b-1) D. b (v-1)
Alt1	A
Alt2	B
Alt3	C
Alt4	D

29	A partial correlation:- A. Controls for influence on both of the variables being correlated B. Controls for influence on both of the variables being uncorrelated C. Controls for influence on the first of the variables being correlated D. Controls for influence on the second of the variables being correlated
Alt1	A
Alt2	B
Alt3	C
Alt4	D

30	The sum of the series $\frac{1}{2}+\frac{1}{3}.(\frac{1}{2})^3+\frac{1}{5}(\frac{1}{2})^5+\ldots\ldots$ is equal:- A. $\sqrt{3}$ B. $\log 3$ C. $\log\sqrt{3}$ D. 3
Alt1	A
Alt2	B
Alt3	C
Alt4	D

31	In a split plot design with Factor A at 'p' levels in main plots, Factor B at 'q' levels in sub-plots and 'r' replications, the degrees of freedom for sub-plot error is:- A. (q-1)(r-1) B. (p-1)(q-1)(r-1) C. q(r-1)(p-1) D. p(q-1)(r-1)
Alt1	A
Alt2	B
Alt3	C
Alt4	D

32	The analysis of variance technique test the significant difference of:- A. Two or more means when σ^2 is unknown B. Two or more variances when μ is known C. Two or more means when σ^2 is known D. Two or more variances when μ is unknown
Alt1	A
Alt2	B
Alt3	C
Alt4	D

33	Let A and B be two square matrices of the same order, then $(A+B)^3 = A^3 + 3A^2B + 3AB^2 + B^3$ only when_____. A. BA = I B. AB = I C. AB ≠ BA D. AB = BA
Alt1	A
Alt2	B
Alt3	C
Alt4	D

34	If $A = \begin{bmatrix} \cos^2\alpha & \cos\alpha\sin\alpha \\ \cos\alpha\sin\alpha & \sin^2\alpha \end{bmatrix}$ and $\begin{bmatrix} \cos^2\beta & \cos\beta\sin\beta \\ \cos\beta\sin\beta & \sin^2\beta \end{bmatrix}$ are two matrices such that the product AB is the null matrix, then α-β is equal to:- A. an odd multiple of $\pi/2$ B. a multiple of π C. 1 D. 0
Alt1	A
Alt2	B

Alt3	C
Alt4	D

35	If p is the ratio of the roots of the equation $ax^2 + bx + c = 0$, then $\frac{(p+1)^2}{p}$ is :- A. $a^2 b^2 c^2$ B. $\frac{b^2}{a^2 b^2}$ C. $\frac{b^2}{ac}$ D. $\frac{b}{ac}$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

36	A student is answering the objective multiple choice questions, each consist of 4 options and one among them is correct and the rest of them are incorrect. He answers the question either by guessing or by knowing the correct answer with chances 1/3 and 2/3 respectively. What is the chance that he guessed the answer given that the response is correct? A. 1/6 B. 1/10 C. 1/8 D. 1/9
Alt1	A
Alt2	B
Alt3	C
Alt4	D

37	Which of the following statement about the assumptions of the error term in the simple linear regression is not correct? A. Mean is zero B. Variance is 1 C. Constant Variance D. Normality
Alt1	A
Alt2	B
Alt3	C
Alt4	D

38	If α is a root of the equation $4x^2 + 2x - 1 = 0$, then the other root is:- A. $-(\alpha + 1/2)$ B. $4\alpha^3 + 3\alpha$ C. $2\alpha^2 + 2\alpha - 1$ D. $4\alpha^3 - 3\alpha$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

39	Let C be the midpoint of a straight line AB with a length of a units. Let D and E be the two points in AC and CB. What is the probability that the distance between D and E is less than λa, where $0<\lambda<1$? A. $1-\lambda/2$ B. $1-\lambda$ C. $\lambda^2/2$ D. $2\lambda^2$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

40	The cumulative distribution function of a random variable X is $$F(x) = \begin{cases} 0 & \\ \frac{1}{2} & 0 \le x < 2 \\ \frac{5}{6} & 2 \le x < 3 \\ 1 & x \ge 3 \end{cases}$$ Then F (2) is equal to:- A. 1/6 B. 1/3 C. 1/7 D. 1/4
Alt1	A
Alt2	B
Alt3	C
Alt4	D

41	The characteristic function of standard Cauchy distribution is:- A. e^t B. $e^{|t|}$ C. $e^{-|t|}$ D. e^{-t}

Alt1	A
Alt2	B
Alt3	C
Alt4	D

42	If $K(t_1,t_2) = \log_e M(t_1,t_2)$, where $M(t_1,t_2)$ is the joint m.g.f. of X and Y, then Mean and Variances of X are:- A. $\frac{\partial}{\partial t_1} M(0,0); \frac{\partial^2}{\partial t_1^2} M(0,0)$ B. $\frac{\partial}{\partial t_2} M(0,0); \frac{\partial^2}{\partial t_2^2} M(0,0)$ C. $\frac{\partial}{\partial t_2} K(0,0); \frac{\partial^2}{\partial t_2^2} K(0,0)$ D. $\frac{\partial}{\partial t_1} K(0,0); \frac{\partial^2}{\partial t_1^2} K(0,0)$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

43	In simple random sampling with replacement, variance of sample mean is equal to:- A. $\left(\frac{1}{N}-\frac{1}{n}\right)S^2$ B. $\left(\frac{1}{n}-\frac{1}{N+1}\right)S^2$ C. $\left(\frac{1}{n+1}-\frac{1}{N-1}\right)S^2$ D. $\left(\frac{1}{n}-\frac{1}{N}\right)S^2$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

44	The p.d.f. of a random variable is $f(x) = \begin{matrix} \frac{3}{4}x(2-x) & ;0 \le x \le 2 \\ 0 & otherwise \end{matrix}$ then the median of the distribution is A. 3/4 B. 4/5 C. 1 D. 2/3
Alt1	A
Alt2	B
Alt3	C
Alt4	D

45	A and B play a game in which their chances of winning are in the ratio 3:2 then A's chances of winning exactly two games out of five is equal to:- A. 625/ 3125 B. 600/ 3125 C. 720/3125 D. 700/ 3125
Alt1	A
Alt2	B
Alt3	C
Alt4	D

46	A random sample $x_1, x_2, \ldots x_n$ is drawn from a normal population $N(\mu, \sigma^2)$. To test the hypothesis $H_0: \mu = \mu_0$ against $H_1: \mu \neq \mu_0$, the likelihood ratio statistic is:- A. $\left\{\frac{\frac{1}{n}\sum_{i=1}^{n}(x_i-\bar{x})}{\sum_{i=1}^{n}(x_i-\bar{x})^2}\right\}^{\frac{n}{2}}$ B. $\left\{\frac{\frac{1}{n}\sum_{i=1}^{n}(x_i-\bar{x})^2}{\frac{1}{n-1}\sum_{i=1}^{n}(x_i-\mu_0)^2}\right\}^{\frac{n}{2}}$ C. $\left\{\frac{\sum_{i=1}^{n}(x_i-\bar{x})^2}{\sum_{i=1}^{n}(x_i-\mu_0)^2}\right\}^{\frac{n}{2}}$ D. $\left\{\frac{\sum_{i=1}^{n}(x_i-\mu_0)^2}{\sum_{i=1}^{n}(x_i-\bar{x})^2}\right\}^{\frac{n}{2}}$

Alt1	A
Alt2	B
Alt3	C
Alt4	D

47	Suppose $X \sim N(\mu, \sigma^2)$ then $U = \frac{1}{2}(\frac{X-\mu}{\sigma})^2$ follows:- A. Gamma distribution with parameter 1/2 B. Normal distribution with parameters 0 and 1 C. Normal distribution with parameters 0 and σ^2 D. Gamma distribution with parameter 1 and 1
Alt1	A
Alt2	B
Alt3	C
Alt4	D

48	If T_1 and T_2 be two unbiased estimators of a parameter θ, then the efficiency of T_1 with respect to T_2 is:- A. $V(T_1)/V(T_2)$ B. $V(T_2)/V(T_1)$ C. $V(T_1) + V(T_2)$ D. $V(T_1) - V(T_2)$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

49	As per Weak Law of Large Numbers, $P\{\lvert\bar{x}_n - \mu\rvert < \varepsilon\} \to (L)$, as n→∞; and $P\{\lvert\bar{x}_n - \mu\rvert \geq \varepsilon\} \to (M)$, as n→∞, where (L) and (M) are respectively:- A. 0,1 B. 1,1 C. 1,0 D. 0,0
Alt1	A
Alt2	B
Alt3	C
Alt4	D

50	X is a random variable taking values 1 and 2 with probabilities p and q, p+q=1. To test H: p = 0.2, a single observation is made on X (say x). A test rejects H if x =1. What is the size of the test? A. 0.8 B. 0.2 C. greater than 0.2 D. less than 0.2
Alt1	A
Alt2	B
Alt3	C
Alt4	D

51	If $A(t) = \int_{-t}^{t} e^{-\lvert x \rvert} dx$ then $lim_{t\to\infty} A(t)$ A. 1 B. 4 C. 2 D. 0
Alt1	A
Alt2	B
Alt3	C
Alt4	D

52	The mean of a random sample of 16 observations for N(μ,σ^2= 4) distribution is 25. The 95% confidence interval for μ is approximately:- A. (21, 29) B. (23, 27) C. (24.5, 25.5) D. (24, 26)
Alt1	A
Alt2	B
Alt3	C
Alt4	D

53	If $f(x) = \frac{1}{x}\left\{\int_{y}^{a} e^{sin^2 t} dt - \int_{x+y}^{a} e^{sin^2 t} dt\right\}$ for x ≠ 0 is continuous at x = 0 then f(0) is:- A. $e^{sin^2 y}$ B. $e^{cos^2 y}$ C. $sin\ 2y\ e^{sin^2 y}$ D. $-sin\ 2y\ e^{sin^2 y}$
Alt1	A

Alt2	B
Alt3	C
Alt4	D

54	Systematic sampling means:- A. selection of n units situated at equal distances B. selection of n contiguous units C. selection of n largest units D. selection of n middle units
Alt1	A
Alt2	B
Alt3	C
Alt4	D

55	ISS in Indian administrative services is the acronym for:- A. Indian Service Systems B. Indian Statistical Services C. Indian Social Systems D. Indian Statistical Societies
Alt1	A
Alt2	B
Alt3	C
Alt4	D

56	If X and Y are independent with common Exponential distribution with parameter $\theta = 1$, then the distribution of (X-Y) is:- A. A standard normal distribution B. A standard Cauchy distribution C. An exponential distribution D. A standard Laplace distribution
Alt1	A
Alt2	B
Alt3	C
Alt4	D

57	The PGF of a random variable X where P(X=0)=0.5, P(X=1)=0.3 and P(X=3)=0.2 is:- A. $0.2t^3$ B. $0.5+0.3t+0.2t^3$ C. $0.3t+0.2t^3$ D. $0.5+0.3t$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

58	If the mean, standard deviation and coefficient of skewness of a frequency distribution are 60, 45 and -0.4, respectively, then the mode of the frequency distribution is:- A. 78 B. 80 C. 68 D. 42
Alt1	A
Alt2	B
Alt3	C
Alt4	D

59	The variance of the first n natural numbers is:- A. $\frac{n^2-1}{12}$ B. $\frac{n-1}{2}$ C. $\frac{n^2+1}{12}$ D. $\frac{n+1}{2}$
Alt1	A
Alt2	B
Alt3	C
Alt4	D

60	Which one the following is true?
Alt1	The sum of the observation from the median is zero
Alt2	The sum of the observation from the mode zero
Alt3	The sum of the observation from the Harmonic Mean is zero
Alt4	The sum of the observation from the arithmetic mean is zero.

61	The mid point of a class in a frequency distribution is obtained by
Alt1	Adding upper and lower class limits
Alt2	Subtrating the lower class limit from the upper class limit
Alt3	Dividing the sum of lower and upper class limiits by 2
Alt4	Dividing by 2 the difference of upper and lower class limits

62	The empirical relationship among mean , median and mode is

Alt1	mean-mode=2(mean-median)
Alt2	mean-mode=median-mode
Alt3	mean-mode=4(mean-median)
Alt4	mean-mode=3(mean-median)

63	The mean of 50 items is 25 and their standard deviation is 2. Then the sum of squares of all the items is
Alt1	31450
Alt2	31455
Alt3	31405
Alt4	31250

64	A random variable X is such that Var(X) =2, then Var(2x+3) is
Alt1	5
Alt2	8
Alt3	13
Alt4	17

65	Two attributes A and B are said to be positively associated if
Alt1	(AB) > (A)(B)/N
Alt2	(AB) = (A)(B)/N
Alt3	(AB) < (A)(B)/N
Alt4	(AB) - (A)(B)/N

66	The regression equations are 5x=22+y and 64x=24+45y. Then the regression coefficient of y on x is
Alt1	1/5
Alt2	45/64
Alt3	5
Alt4	64/45

67	When one regression coefficient is Negative, the other should be
Alt1	Negative
Alt2	0
Alt3	Positive
Alt4	1

68	If A and B are mutually exclusive events, then
Alt1	P(AUB)=P(A) P(B)
Alt2	P(AUB) = P(A) + P(B)

Alt3	P(AUB) = 0
Alt4	P(AUB)=P(A) – P(B)

69	Three houses were available in a locality for allotment. Three persons applied for a house. The probability that all the three persons applied for the same house is
Alt1	1/3
Alt2	1/9
Alt3	1/27
Alt4	1

70	If X is a random variable and its p.d.f is f(x), E(log X) represents its
Alt1	Arithmetic mean
Alt2	Geometric Mean
Alt3	Harmonic Mean
Alt4	None of the above

71	The joint cumulative distribution function F(x, y) of the random variables X and Y takes values in the interval
Alt1	[-1 , 1]
Alt2	[-1, 0]
Alt3	(-∞ , 0]
Alt4	[0, 1]

72	The number of normal equations for fitting a polynomial of degree 3 is
Alt1	2
Alt2	3
Alt3	4
Alt4	5

73	The coefficient of variation of n observations is c. If each observation is multiplied by a constant k, then the coefficient of variation for the new set observations is
Alt1	kc
Alt2	c/k
Alt3	c
Alt4	c+k

74	If X and Y are two random variables, the covariance between the variables aX + b and cY+d, (a, b not equal to 0) in terms of COV(X,Y) is
Alt1	COV(X,Y)
Alt2	abcd COV(X,Y)
Alt3	ac COV(X,Y)+bd
Alt4	ac COV(X,Y)

75	The standard deviation of the sampling distribution of a statistic is known as
Alt1	sampling error
Alt2	non sampling error
Alt3	mean square error
Alt4	standard error

76	If a random variable X has the following probability distribution: x: -1 -2 1 2 Prob.: 1/3 1/6 1/6 1/3 then the expected value of X is:
Alt1	3/2
Alt2	1/6
Alt3	1/2
Alt4	0

77	The Cramer- Rao inequality gives the lower bound for the variance of
Alt1	a Least square estimator
Alt2	a moment estimator
Alt3	an unbiased estimator
Alt4	an MLE

78	For testing the independence of attributes in a (4,3) contingency table the degrees freedom is
Alt1	12
Alt2	8
Alt3	6
Alt4	1

79	Which one of the following probability distribution is impossible?
Alt1	A Poisson distribution with mean 16 and standard deviation is 4
Alt2	A Binomial dsitribution with mean 16 and standard deviation 4
Alt3	A Binomial distribution with mean 18 and variance 6
Alt4	A Gamma distribution with mean 5 and variance 5

80	The distribution having memory- less property is
Alt1	Rectangular distribution
Alt2	Normal distribution
Alt3	Cauchy distribution
Alt4	Exponential distribution

81	The mean of the following distribution is: x: 1 2 3 ... n f(x): 1 2 3 ... n
Alt1	[n(n+1)]/2
Alt2	1
Alt3	[(n+1)(2n+1)]/6

Alt4	[2n+1]/6

82	Which of the following is not true for normal distribution?
Alt1	Skewness = 0 and Kurtosis =3
Alt2	The frequency curve is not symmetric about the mean
Alt3	Mean = Median = Mode
Alt4	All moments of odd order about the mean is zero

83	If X and Y are independent gamma random variables with parameters μ and ν, then the distribution of X/X+Y is
Alt1	Normal with aprameters μ and ν
Alt2	F distribution with parameters μ, ν
Alt3	Beta distribution with parameters μ, ν
Alt4	Gamma with parameters μ, ν

84	The normal distribu on is a limi ng form of binomial distribu on if
Alt1	$n \to \infty$, $p \to 0$
Alt2	n is finite and $p \to 0$
Alt3	$n \to \infty$, $p = 1/2$
Alt4	$n \to \infty$ and neither p nor q is small

85	Which one of the following is not correct?
Alt1	The mean of Chi-Square distribution with n d.f is n
Alt2	The variance of Chi-Square distribution is 2n
Alt3	The range of Chi-Square variate is $-\infty$ to $+\infty$
Alt4	The skewness of Chi-Square distribution is 8/n

86	Let X be a random variable U(0, 1), then the variable Y = -2logX follows
Alt1	Chi-Squares distribu on
Alt2	Normal distribu on
Alt3	Binomial distribu on
Alt4	t - distribution

87	A simple random sample of 5 households was drawn from a village containing 250 households. The numbers of persons per household in the sample were 5, 6, 4, 7, and 3. The estimate of the total number of people in the village is
Alt1	625
Alt2	3125
Alt3	25
Alt4	1250

88	In systematic sampling the selection of sampling units is
Alt1	selection of any n successive units
Alt2	selection of n largest units
Alt3	selection of n units situated at equal distances

Alt4	selection of n middle units in a sequence

89	A simple random sample can be drawn with the help of
Alt1	Random number tables
Alt2	Lo ery Method
Alt3	Roule e wheel
Alt4	all the above

90	Under Optimal allocation in stratified sampling, the sample size in each stratum is directly porportional to
Alt1	the sample size
Alt2	total popula on size
Alt3	the population size in each stratum
Alt4	Population MSE of each stratum

91	A value of an estimator is called
Alt1	an estimate
Alt2	as a statistic
Alt3	a parameter
Alt4	a random sample

92	The bias of an estimator can be
Alt1	positive
Alt2	negative
Alt3	always zero
Alt4	either positive or negative

93	If an unbiased estimator and a sufficient statistic exist for a parametric function g(θ), then the minimum varaince unbiased estimator of g(θ) is a function of
Alt1	the unbiased estimator
Alt2	the unbiased estimator and the sufficient statistic
Alt3	the sufficient statistic
Alt4	the efficient estimate

94	The Rao-Blackwell theorem enables us to obtain minimum variance unbiased estimator through
Alt1	an unbiased estimator
Alt2	a Bayes' estimator
Alt3	a maximum likelihood estimator
Alt4	a sufficient Statistic

95	To test the difference between two normal population means (with known variances) based on two independent random samples from them, the test used is
Alt1	t-test
Alt2	Z-test
Alt3	Chi-Square test
Alt4	F-test

96	The test based on the ratio of the likelihood function under null hypothesis and under the entire parametric space is called
Alt1	Neyman Pearson test
Alt2	SPRT
Alt3	Likelihood ratio test
Alt4	Run test

97	A curve showing the probability of accepting a lot of quality p is known as
Alt1	OC Curve
Alt2	ASN Curve
Alt3	Gompetz Curve
Alt4	Power curve

98	To remove biasedness in the experimental studies of designs of experiments, we use
Alt1	Completely Randomizied Design
Alt2	Randomized Block Design
Alt3	Latin Square Design
Alt4	Factorial Design

99	A time series is unable to adjust the influences like
Alt1	Customs and policy changes
Alt2	Seasonal changes
Alt3	Long term influences
Alt4	Trend

100	The Fisher's ideal index number satisfies
Alt1	Time reversal test
Alt2	Factor reversal test
Alt3	both time and factor reversal tests.
Alt4	circular test

Examination: **M.Sc. Statistics**

Section 1 - Section 1

Question No.1 4.00

Bookmark

The standard error of the sampling distribution of median is given by

- $\sqrt{\frac{\sigma\pi}{2}}$
- $\sigma\sqrt{\frac{\pi}{2}}$
- $\sigma\sqrt{\frac{\pi}{2n}}$
- $\sqrt{\frac{\sigma\pi}{2n}}$

Question No.2 4.00

Bookmark

The average travel time to a distant city is c hours by car or b hours by bus. A woman cannot decide whether to drive or take the bus, so she tosses a coin. What is her expected travel time?

- $\frac{c+b}{4}$
- $2(c+b)$
- $\frac{c+b}{2}$
- $c+b$

Question No.3 4.00

Bookmark

The determinant of an elementary matrix of the third kind is

- 0
- -1
- 1
- 2

Question No.4 4.00

Bookmark

If P(A) = 0.25 and P(B) = 0.8, which of the following is true?

- $0.05 \leq P(A \cap B) \leq 0.25$
- $0.05 \leq P(A \cap B) \leq 0.50$
- $0.25 \leq P(A \cap B) \leq 0.8$
- $0.05 \leq P(A \cap B) \leq 0.8$

Question No.5 4.00

Bookmark

The range of multiple correlation coefficient R is

- [0.5,1]
- $(-\infty,\infty)$
- [0,1]
- [-1,1]

Question No.6 4.00

Bookmark

The ratio of class frequency to the class width is called

- Relative frequency
- Conditional frequency
- Cumulative frequency
- Frequency density

Question No.7 4.00

Bookmark

If X is a continuous random variable and a< b
then $\int_a^b f(x)dx$ is equal to

- {F(b) + F(a)}/2
- F(b)-F(a)
- F(a)-F(b)
- F(b)/F(a)

Question No.8 4.00

Bookmark

If a fair coin is tossed twice, what is the probability of getting at least one head?

- 2/3
- 1/4
- 3/4
- 1/2

Question No.9 4.00

Bookmark

When three unbiased coins are tossed at a time the chance of getting no heads is

- 1/8
- 5/8
- 1/4
- 3/8

Question No.10 4.00

Bookmark

A nonparametric method in the analysis of variance for one-factor experiments is provided by

- Kruskal-Wallis H test
- Friedman test
- Wilcoxon's signed rank test
- Mann-Whitney U test

Question No.11 4.00

Bookmark

The maximum probability with which we would be willing to risk a type I error is termed as

- error probability
- power of the test
- margin of error
- significance level

Question No.12 4.00

Bookmark

When two six-faced dice are rolled simultaneously the chance of getting a sum of 8 is

- 1/36
- 1/2
- 5/36
- 8/36

Question No.13 4.00

Bookmark

A quicker response to a shift in the process average is provided by

- exponential weighted moving average chart
- standard deviation chart
- mean chart
- acceptance control chart

Question No.14 4.00

Bookmark

The equation of the tangent to $y = x^3 - 2x^2 + 4$ at (2, 4) is

- $x + 4y = 18$
- $4x - 4$
- $2x - 4$
- $4x + y = 18$

Question No.15 4.00

Bookmark

The proportion of nonconforming items being produced by a process is monitored by using

- NP chart
- U chart
- P - chart
- Both P and NP charts

Question No.16 4.00

Bookmark

The null hypothesis that the three or more sampling means are all equal is tested using

- Chi-square test procedure
- ANOVA procedure
- normal Z test procedure
- Student's t test procedure

Question No.17 4.00

Bookmark

The amount of variation present in a set of time series data can be reduced by using the method of

- moving averages
- separate averages
- free-hand
- least-squares

Question No.18 4.00

Bookmark

For a normal distribution, which of the following relations is correct?

- $MD = \frac{4}{5} SD$
- $SD = \frac{4}{5} MD$
- $SD = \frac{2}{3} MD$
- $MD = \frac{2}{3} SD$

Question No.19 4.00

Bookmark

For two attributes A and B, $(AB) = \frac{(A)(B)}{N}$. This is the criterion for:

- dependence
- correlation
- association
- independence

Question No.20 4.00

Bookmark

The number of parameters for bivariate normal density is

- 3
- 5
- 6
- 2

Question No.21 4.00

Bookmark

The effect of a factor is defined to be the change in response produced by a change in the level of the factor. This is frequently called

- interaction effect
- fixed effect
- random effect
- main effect

Question No.22 4.00

Bookmark

The square of a standard normal random variable is distributed as

- chi-square with n degrees of freedom
- chi-square with n/2 degrees of freedom
- normal with mean 0 and variance 2
- chi-square with one degree of freedom

Question No.23 4.00

Bookmark

One of the types of sampling involves a researcher determining the appropriate sample sizes for the groups identified as important, and then taking convenience samples from those groups. Identify the type of sampling.

- Quota sampling
- Multi-stage sampling
- Proportional stratified sampling
- Cluster sampling

Question No.24 4.00

Bookmark

The set consisting of a single vector is linearly dependent if and only if that vector is a

- vector of zeros and ones
- constant vector
- zero vector
- unit vector

Question No.25 4.00

Bookmark

The ratio of imports to exports for the years 2015 and 2016 are 1.25 and 1.40 respectively. If the imports in 2015 was Rs. 250 crores and the total exports in the years 2015 and 2016 together was Rs. 500 crores, find the imports in 2016.

- 270 crores
- 320 crores
- 370 crores
- 420 crores

Question No.26 4.00

Bookmark

If A is an attribute, then its negation is denoted by

- α
- 1/A
- -A
- A^2

Question No.27 4.00

Bookmark

The slopes of the regression lines of X on Y and Y on X are equal if and only if

- r= ±1
- r=0
- r= -1
- r=1

Question No.28 4.00

Bookmark

Coefficient of determination is defined by

- Unexplained variation / Total variation
- Unexplained variation / Explained variation
- Explained variation / Total variation
- Explained variation / Unexplained variation

Question No.29 4.00

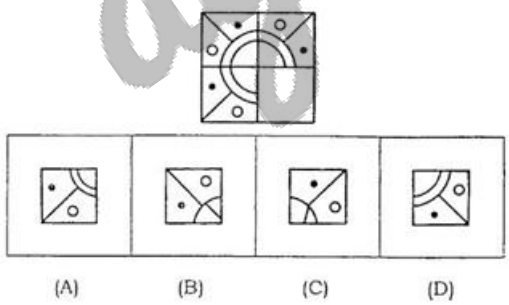
Bookmark

If A and B are two events that cannot happen simultaneously then P(AÇB) =

- 0
- 1
- P(A)xP(B)
- P(A)+P(B)

Question No.30 4.00

Bookmark



- B
- A
- D
- C

Question No.31 4.00

Bookmark

Two attributes A and B satisfies the relation (AB)(αβ) < (Aβ)(Bα). Then, A and B are said to be

- correlated.
- positively associated.
- negatively associated.
- independent.

Question No.32 4.00

Bookmark

Find out the missing term:

1, 2, 3, 6, 11, 20, 37, 68, ?

- 126
- 105
- 124
- 125

Question No.33 4.00

Bookmark

The distribution function of X is given by $F(x) = 1 - e^{-2x}, x \geq 0.$ Then, P(X > 2) is

- $1 - e^{4}$
- e^{4}
- e^{-4}
- $1 - e^{-4}$

Question No.34 4.00

Bookmark

The expectation of the sum of points obtained in tossing a pair of fair dice is equal to

- 6/7
- 7/6
- 1/3
- 7

Question No.35 4.00

Bookmark

A shelf has 6 mathematics books and 4 physics books. The probability that 3 particular mathematics books will be together is

- $\frac{3!}{10!}$
- $\frac{6!}{10!}$
- $\frac{6!\,3!}{10!}$
- $\frac{8!\,3!}{10!}$

Question No.36 4.00

Bookmark

One of the following relationships is only true

- $GM = \sqrt{AM \times HM}$
- $GM = \sqrt{AM + HM}$
- $AM = \sqrt{GM \times HM}$
- $HM = \sqrt{GM \times AM}$

Question No.37 4.00

Bookmark

If the correlation coefficient 'r' is equal to +1 then the two regression lines will be

- Coincident
- Parallel
- Lie at 45^0
- Perpendicular to each

Question No.38 4.00

Bookmark

Obtain the missing term.

300, 296, 287, 271, ? , 210

- 246
- 250
- 244
- None of the above

Question No.39 4.00

Bookmark

For a chi-square distribution with n degrees of freedom, the mean and variance are

- n and 2n
- n and n/2
- n and n
- n/2 and n

Question No.40 4.00

Bookmark

Choose the correct meaning of the italicized idiom.
Anil got me into trouble by giving a *false colour* to my statement.

- Colouring the sentence
- Giving a wrong character
- Giving a wrong colour box
- Giving good impression

Question No.41 4.00

Bookmark

The standard deviation of the values {3,3,3,3,3,3} is

- 1/3
- $\sqrt{3}$
- 0
- 9

Question No.42 4.00

Bookmark

If 'r' denotes the correlation coefficient between X and Y the coefficient of determination is

- 1-r
- 1/r
- r^2
- $1-r^2$

Question No.43 4.00

Bookmark

Deseasonalized time series data still include

- trend and cyclic movements
- trend, cyclic and irregular movements
- cyclic and irregular movements
- trend and random movements

Question No.44 4.00

Bookmark

Identify the underlined part of speech:
Sorry, I don't know any <u>foreign</u> languages

- adverb
- noun
- pronoun
- adjective

Question No.45 4.00

Bookmark

When a = E(X), the quantity $E[X - a]^2$ is

- zero
- a maximum
- a minimum
- one

Question No.46 4.00

Bookmark

Price relatives computed by chain base method are called

- chain indices
- average price relatives
- price relatives
- link relatives

Question No.47 4.00

Bookmark

In the usual notation the coefficient of contingency C is given by

- $\left[\frac{\chi^2}{\chi^2 + N}\right]^{1/2}$
- $\left[\frac{\chi^2}{\chi^2 + N}\right]^{2}$
- $\left[\frac{N}{\chi^2}\right]$
- $\left[\frac{\chi^2 + N}{\chi^2}\right]^{1/2}$

Question No.48 4.00

Bookmark

Statements: Some bats are snakes, No snake is dangerous
Conclusion:
I. Some dangerous animals are snakes
II. Some bats are not dangerous.

- If neither I nor II follows
- If only conclusion II follows
- If either I or II follows
- If only conclusion I follows

Question No.49 4.00

Bookmark

In the usual notation the distribution function of a random variable X is stated as F(x) =

- P(X > x)
- P(X=x)
- P(X=1/x)
- P(X<=x)

Question No.50 4.00

Bookmark

A statement of the error or precision of an estimate is often called its

- efficiency
- Bias
- reliability
- Consistency

Question No.51 4.00

Bookmark

Assertion: - India's president is appointed on a five-year term

Reason: -PratibhaPatil was appointed as India's first woman president in 2007

- Both A and R are true and R is not the correct explanation of A
- A is false but R is true
- Both A and R are true and R is the correct explanation of A
- A is true but R is false

Question No.52 4.00

Bookmark

Normality of data can be tested using

- Normal probability plot, Kolmogorov-Smirnov test and Anderson-Darling test
- Normal probability plot only
- Andesrson-Darling test only
- Kolmogorov-Smirnov test only

Question No.53 4.00

Bookmark

The 95% confidence interval for the population variance when a sample is drawn from a population follows normal distribution is specified by

- $\frac{ns^2}{\chi^2_{0.025}} \le \sigma^2 \le \frac{ns^2}{\chi^2_{0.975}}$
- $\frac{\chi^2_{0.975}}{ns^2} \le \sigma^2 \le \frac{\chi^2_{0.025}}{ns^2}$
- $\frac{ns^2}{\chi^2_{0.975}} \le \sigma^2 \le \frac{ns^2}{\chi^2_{0.025}}$
- $\frac{\chi^2_{0.025}}{ns^2} \le \sigma^2 \le \frac{\chi^2_{0.975}}{ns^2}$

Question No.54 4.00

Bookmark

Identify the type of set: (2, 3, 4, 4, 4, 5, 5, 7, 7, 7, 9).

- The set is bimodal.
- The set is unimodal.
- The set is multimodal.
- The set has no mode.

Question No.55 4.00

Bookmark

In the usual notation the inter-quartile range of a data set is given by

- $(Q_3 - Q_1)$
- (Q_3/Q_1)
- $\frac{(Q_3 - Q_1)}{(Q_3 + Q_1)}$
- $(Q_3 + Q_1)$

Question No.56 4.00

Bookmark

For a random variable X if E(X) = m then E(3X+5) =

- 3m+5
- 9m
- 3m+15
- 3m

Question No.57 4.00

Bookmark

Based on the information given, answer the below question.
1. A,B,C,D,E and F are travelling in a bus.
2. There are two reporters, two mechanics, one photographer and one writer in the group.
3. Photographer A is married to D who is a reporter.
4. The writer is married to B who is of the same profession as that of F.
5. A,B,C,D are two married couples and no one in this belong to the same profession.
6. F is the brother of C.

How is C related to F?

- Brother-in-law
- Sister
- Brother
- Cannot be determined

Question No.58 4.00

Bookmark

$e^{\ln 3 - \ln 2 + \ln(1/x)} =$

- 1+1/x
- 3/2 – 1/x
- 3x/2
- 3/(2x)

Question No.59 4.00

Bookmark

Choose the best antonym of the italicized word.
Ravi and Raghu are really *obstinate* men.

- friendly
- compliant
- considerate
- understanding

Question No.60 4.00

Bookmark

In a code language, 321 means "Hot Black Coffee", 536 means "Very Hot Summer", and 589 means "Summer and Winter". Which digit stands for "Very" ?

- 5
- 3
- 9
- 6

Question No.61 4.00

Bookmark

Data on categorical variables is summarized as

- Average
- Ratio
- Interval
- Frequency

Question No.62 4.00

Bookmark

In the usual notation, if AÇB = null set then P(A|B) =

- P(B)
- P(A)/P(B)
- 0
- P(A)

Question No.63 4.00

Bookmark

In the usual notation the expression $\sqrt{\frac{r_{12}^2+r_{13}^2-2r_{12}r_{13}r_{23}}{1-r_{13}^2}}$ denotes

- $R_{2.13}$
- $R_{3.12}$
- $R_{13.2}$
- $R_{1.23}$

Question No.64 4.00

Bookmark

Choose the correct meaning of the italicized idiom.
Sheela's work seems to be a *Penelope's web.*

- Endless
- Declining
- In her best form
- Difficult

Question No.65 4.00

Bookmark

For what value of c,
the function
$f(x) = c, a \le x \le b$ is
the density function?

- 1/(a+b)
- 1/(b-a)
- 1
- 1/(a-b)

Question No.66 4.00

Bookmark

Good restaurants serving pure vegetarian food are very hard to _____.

- get in
- come by
- take to
- go through

Question No.67 4.00

Bookmark

Consider the following statements:
I: The company sold 5000 units of product A each costing Rs. 100.
II: This company has no other product line.
To find the total sales of the company, which of the following is true?

- I alone is sufficient while II alone is not sufficient
- Either I or II is sufficient
- II alone is sufficient while I alone is not sufficient
- Both I and II are sufficient

Question No.68 4.00

Bookmark

The diagram used to understand the nature of relationship between two variables is

- Histogram
- Scatter diagram
- Line chart
- Pie chart

Question No.69 4.00

Bookmark

The standard error of the sampling distribution of proportions is given by

- $\sqrt{\frac{n}{p(1-p)}}$
- $\frac{n}{p(1-p)}$
- $\frac{p(1-p)}{n}$
- $\sqrt{\frac{p(1-p)}{n}}$

Question No.70 4.00

Bookmark

Three sources of error or variability can be controlled using

- factorial design
- Latin squares design
- Greaco - Latin squares design
- randomized block design

Question No.71 4.00

Bookmark

A quantity computed with complete population data to represent a characteristic of the population is called

- index
- parameter
- statistic
- sample point

Question No.72 4.00

Bookmark

Assume that
$r_{12} = r_{13} = r_{23} = r \neq 1.$
Then, $R_{1.23} =$

- $\sqrt{\frac{2}{1-r}}$
- $r\sqrt{\frac{2}{1-r}}$
- $\sqrt{\frac{2}{1+r}}$
- $r\sqrt{\frac{2}{1+r}}$

Question No.73 4.00

Bookmark

The most common multiplier used in vital statistics mortality rates is

- 10000
- 1000
- 100
- 10

Question No.74 4.00

Bookmark

A nonparametric test for randomness is provided by

- Kruskal-Wallis test
- sign test
- theory of runs
- Friedman test

Question No.75 4.00

Bookmark

Select the option which improves the underlined part of the sentences.
The Prime Minister called on the President.

- to
- by
- in
- No improvement

Question No.76 4.00

Bookmark

The Arithmetic Mean of first 9 natural numbers is

- 4.5
- 45
- 55
- 5.5

Question No.77 4.00

Bookmark

The number of points of intersections of the graphs of $y = x^2$ and $y = 2 - x^2$

- 1
- 2
- 3
- 0

Question No.78 4.00

Bookmark

If X is a discrete random variable taking values 1,2,…,n then P(X=i) is called _____ function

- probability density
- distribution
- probability mass
- characteristic

Question No.79 4.00

Bookmark

Choose the correct meaning of the italicized idiom.
He had great difficulty to *save his bacon* when he was blackmailed.

- Threaten somebody
- Escape death
- Save pork
- Put bacon in the refrigerator

Question No.80 4.00

Bookmark

In case the population is normally distributed, the sampling distribution of means is

- normally distributed only for small values of n
- not normal even for large values of n
- normally distributed even for small values of n
- normally distributed only for large values of n

Question No.81 4.00

Bookmark

Based on the given information, answer the following question.
1. Six friends P,Q,R,S,T and U are memebers of a club and play different games of Football, Cricket, Tennis, Basketball, Badminton and Volleyball
2. T who is taller than P and S plays Tennis.
3. The tallest among them plays Basketball.
4. The Shortest among them plays volleyball.
5. Q and S neither play Volleyball nor Basketball.
6. R plays Volleyball
7. T is between Q who plays Football and P in order of height

What does S Play?

- Cricket
- Badminton
- Either Cricket or Badminton
- None of the above

Question No.82 4.00

Bookmark

It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the cars is:

- 3:4
- 1:4
- 2:3
- 1:2

Question No.83 4.00

Bookmark

When Y and X are related by the model Y = 2x+4 then the correlation coefficient between X and Y is

- -1
- +1
- 0.5
- 0

Question No.84 4.00

Bookmark

The expression $\frac{r_{13}-r_{12}r_{23}}{\sqrt{(1-r_{12}^2)(1-r_{23}^2)}}$ indicates the following partial correlation

- $r_{13.2}$
- $r_{12.3}$
- $r_{32.1}$
- $r_{23.1}$

Question No.85 4.00

Bookmark

If X takes values 1,2,3,4,5 with equal probability then E(X) =

- 7.5
- 3
- 5
- 15

Question No.86 4.00

Bookmark

$E(X \mid Y) =$

- $\int_{-\infty}^{\infty} xf(y \mid x)dx$
- $\int_{-\infty}^{\infty} yf(y \mid x)dy$
- $\int_{-\infty}^{\infty} xf(y \mid x)dy$
- $\int_{-\infty}^{\infty} xf(x \mid y)dx$

Question No.87 4.00

Bookmark

If (X,Y) is a bivariate random variable then the marginal density of Y is given as

- $\int_{-\infty}^{\infty} f(x,y)\,dy$
- $\frac{f(x)}{f(x,y)}$
- $\frac{f(x,y)}{g(x)}$
- $\int_{-\infty}^{\infty} f(x,y)\,dx$

Question No.88 4.00

Bookmark

Choose the best synonym of the italicized word.
Each one of us is the subject of *derision* at some time or the other in our life.

- criticism
- irony
- laughter
- ridicule

Question No.89 4.00

Bookmark

The regression equation of X_1 on X_2 and X_3 can be written as X_1 =

- $a + b_{13.2}X_2 + b_{12.3}X_3$
- $a + b_{12}X_2 + b_{13}X_3$
- $a + b_{12.3}X_2 + b_{13.2}X_3$
- $a + b_{13}X_2 + b_{12}X_3$

Question No.90 4.00

Bookmark

Suppose that X is a random variable having mean μ and variance σ^2, which are finite. Then, if ε is any positive number, which of the following is true?

- $P[|X-\mu| \leq \varepsilon] \leq \frac{\sigma^2}{\varepsilon^2}$
- $P[|X-\mu| \geq \varepsilon] \geq \frac{\sigma^2}{\varepsilon^2}$
- $P[|X-\mu| \geq \varepsilon] \leq \frac{\sigma^2}{\varepsilon^2}$
- $P[|X-\mu| \leq \varepsilon] \geq \frac{\sigma^2}{\varepsilon^2}$

Question No.91 4.00

Bookmark

If $s_n = \frac{2n+1}{n+1}$, then

$\lim_{n\to\infty} s_n =$

- 0
- Indeterminate
- 2
- 1

Question No.92 4.00

Bookmark

Ramesh had a cold and couldn't go to the party, so I bought him a cake to make up for his_____

- depression
- disgust
- disappointment
- disillusion

Question No.93 4.00

Bookmark

The geometric mean of Laspeyre's and Paasche's formulae is

- Walsch index number
- Fisher's ideal index number
- Marshall – Edgeworth index number
- Bowley index number

Question No.94 4.00

Bookmark

Study the following information carefully and answer the question below it

The Director of an MBA college has decided that six guest lectures on the topics of Motivation, Decision Making, Quality Circle, Assessment Centre, Leadership and Group Discussion are to be organised on each day from Monday to Sunday.
(i) One day there will be no lecture (Saturday is not that day), just before that day Group Discussion will be organised.
(ii) Motivation should be organised immediately after Assessment Centre.
(iii) Quality Circle should be organised on Wednesday and should not be followed by Group Discussion
(iv) Decision Making should be organised on Friday and there should be a gap of two days between Leadership and Group Discussion

How many lectures are organised between Motivation and Quality Circle?

- One
- Four
- Two
- Three

Question No.95 4.00

Bookmark

The quantity $E[X-E(X)]^3$ is a measure of

- Scale
- Kurtosis
- Skewness
- Location

Question No.96 4.00

Bookmark

Choose the missing term: 3F,6G,11I,18L, ?

- 27P
- 28Q
- 26N
- 27O

Question No.97 4.00

Bookmark

Bayes theorem produces _____ probability

- Apriori
- Complementary
- Empirical
- Posterior

Question No.98 4.00

Bookmark

In the usual notation $E(e^{itX})$ is called

- Probability Generating Function
- Moment Generating Function
- Characteristic Function
- Cumulant Generating Function

Question No.99 4.00

Bookmark

If $\bar{A}$ denotes the compliment of A then $P(\bar{A})$ =

- 1
- P(A)+0.5
- 1/P(A)
- 1-P(A)

Question No.100 4.00

Bookmark

Consider F and t distributions. Which of the following relations is true?

- $F_{1-p,1,\nu} = t^2_{1-(p/2),\nu}$
- $F_{1-p,1,\nu} = t^2_{p/2,\nu}$
- $F_{1-p,1,\nu} = t^2_{p,\nu}$
- $F_{1-p,1,\nu} = t^2_{1-p,\nu}$