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

2 of 100

105 PU_2015_375

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

- Geometric Mean
- Arithmetic Mean
- Harmonic Mean
- Mode

3 of 100

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:-

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

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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

6 of 100

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:-

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

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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

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

- 99
- 97
- 100
- 98

10 of 100

163 PU_2015_375

Which type of estimator does the Neyman factorization theorem provides?

- sufficient
- consistent
- Efficient
- unbiased

11 of 100

173 PU_2015_375
Non parametric methods are based on:-

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

12 of 100

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

When $$s_c^2 = \frac{C.S.S}{m-1}, s_E^2 = \frac{E.S.S}{(m-1)(m-2)}$$ the relative efficiency (E) of L.S.D. over R.B.D. when rows are taken as block is:-

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

- $\frac{s_c^2+(m+5)s_{\bar{x}}^2}{(m-5)s_{\bar{x}}^2}$
- $\frac{s_c^2+(m-1)s_{\bar{x}}^2}{ms_{\bar{x}}^2}$
- $\frac{s_c^2+(m+1)s_{\bar{x}}^2}{(m+3)s_{\bar{x}}^2}$

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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:-

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

16 of 100

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

17 of 100

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

18 of 100

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

20 of 100

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

21 of 100

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

22 of 100

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

23 of 100
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

24 of 100
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

25 of 100
143 PU_2015_375
Which of the following distribution is non similar regarding the range of their variable?

Poisson

Chi-square

Normal

Exponential

26 of 100
200 PU_2015_375

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

9

25

13

24

27 of 100

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

28 of 100

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

29 of 100

202 PU_2015_375

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

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

30 of 100

164 PU_2015_375

For an independent random sample drawn from normal population N(μ ,σ 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:-

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

34 of 100

152 PU_2015_375

Square of Standard Normal variate follows which probability distribution:-

- Gamma
- Normal
- Chi-square
- Standard Normal

35 of 100
196 PU_2015_375

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

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

36 of 100
185 PU_2015_375
Process capability is equal to:-

- 4σ
- 6σ
- 2σ
- 3σ

37 of 100
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

38 of 100
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

40 of 100

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 $P (a < x \leq b) = P (a \leq x \leq b) = P (a < x < b) = P (a \leq x \leq b) = F (b) - F(a)$ 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

45 of 100

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

46 of 100

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

47 of 100

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

48 of 100

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

51 of 100

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

54 of 100

146 PU_2015_375

Which of the following single parameter probability distribution will satisfy the below mentioned properties i) $\text{Mean} < \text{Variance}$ as $\theta > 1$; ii) $\text{Mean} > \text{Variance}$ as $\theta < 1$; iii) $\text{Mean} = \text{Variance}$ as $\theta = 1$

- 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

56 of 100

150 PU_2015_375

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

- $(0,1),(0,\infty),(0,1)$
- $(-\infty,+\infty)$, $(0,1)$, $(0,\infty)$
- $(0,1)$, $(0,n)$,$(0,\infty)$

(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

58 of 100
151 PU_2015_375
If X and y are two gamma variates with parameters a,b respectively, then X/(X+Y) is:-

- $\beta_2(a,b)$
- γ(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

63 of 100

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

65 of 100

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

68 of 100

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:-

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

- $\int_{0}^{b}\left[\int_{a}^{\infty} f(x,y)\,d_y\right]d_x$
- $\int_{-\infty}^{a}\left[\int_{-\infty}^{b} f(x,y)\,d_y\right]d_x$
- $\int_{-\infty}^{a}\left[\int_{a}^{b} f(x,y)\,d_y\right]d_x$

70 of 100

237 PU_2015_375

If X ~ N(μ, σ 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:-

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

72 of 100

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:-

- $\frac{mn}{2}$

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

73 of 100

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

74 of 100

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 Treatments	x – 1 4	90 y	30 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),

79 of 100

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

80 of 100

234 PU_2015_375

Let A_1, A_2, A_3...... be a sequence of events on the probability space (Ω,B,P) and let $A = \lim_{n\to\infty} Sup\{A_n\}$, 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

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

277 PU_2015_375

If X_1, X_2,-----,X_n is an independent random sample drawn from a Cauchy population with p.d.f. f(x) = $\frac{1}{\prod\left[1+(x-\theta)^2\right]}$ 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)

275 PU_2015_375

Let X~ β_1(m,n) and Y ~ γ (λ , m+n), be independent random variables such that m,n, λ >0 Then X*Y ~

- β_2(m,n)
- β_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

85 of 100
291 PU_2015_375

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

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

86 of 100
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

297 PU_2015_375

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

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

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

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

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

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

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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

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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:-

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

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

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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

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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:-

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

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

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

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

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

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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

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

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

- $\frac{22}{63}$

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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