B. Com - Part (II) Subject - ABST Paper - (II) Advanced Business statistics (optional Paper) (duéstion Bank)



निबन्धात्मक प्रश्न (Essay Type Questions) :

- (a) काल-श्रेणी क्या होती है ? आप उनका कैसे विश्लेषण करते हैं ? What are time series ? How will you analyse them ?
 - (Raj., B.Com., Part-III, 2014; BBA, Jodhpur, 2007) (b) उपनति से आप क्या समझते हैं ? उपनति मूल्यों का मापन किस प्रकार किया जाता है ? मापन की विभिन्न विधियों को बताइये।
- What do you understand by trend ? How are trend values measured ? State various methods of measuring it.
 (Bikaner, 2006)

 2. काल-श्रेणी क्या है ? काल-श्रेणी के कौन-कौन से संघटक होते हैं ? किसी काल-श्रेणी में उपनति मापने की विभिन्न विधियों को स्पष्ट कीजिये।

What is time series ? What are the components of time series ? Explain the various methods of estimating the secular trend of time series.

[Jodhpur, 2001 (Modified); Ajmer, 2001, 2015; Bikaner, 2004;

Find the multiple regression equation of X_1 on X_2 and X_3 from the data relating to three variables given below :

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निम्नलिखित तीन चरों से सम्बन्धित समंकों से बहुगुणी प्रतीपगमन समीकरण ${
m X}_1$ की ${
m X}_2$ तथा ${
m X}_3$ पर ज्ञात कीजिये :

- X₁
 X₂
 X₃

 4
 15
 30
- 6 12 24
- 7 8 20
- 9 6 14
- 13 4 10
- 15 3 4





Calculates that 7 is inging solution

Test the significance of the coefficient of correlation for the following values based on the number of observations (i) 10 and (ii) 100. Coefficient of correlation or r = +0.4 and +0.9. [T.D.C. IIyr., Com. Raj., 1970]

- [Ans. when r = +0.4 When r = +0.9
- P.E. (i) = 0.18 (ii) = 0.057 If in two series x and y, the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items, *i.e.* n = 16 and the probable control of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of items of f is the number of pairs of f is the number of f is the number
- probable error is 0.05, find out the coefficient of correlation and point out its significance.

[Ans. r = 0.89 The coefficient of correlation is significant] The coefficient of rank correlation is 0.143 and the sum of the squares of the differences in ranks is 48, find N. S-1 - 4.70

From the following data obtain the two regression equations and calculate 35. the correlation coefficient : 8 7 6 9 5 4 3 X : 16 14 13 15 11 12 10 8 9 **Y** : Estimate the value of Y which should correspond on an average to X = 6.2. (B.Com., Bangalore Univ., 1984; MBA, Mangalore Univ., 1985): Madurai Kamaraj Univ., 1986; M.Com. Bhopal, 1991) [Ans. Regression Equations X on Y is X = -6.4 + 0.95Y] Y on X is Y = 7.25+0.95X, r = 0.95 Value of $Y_{6.2} = 13.14$ Find out σ_y and r from the following data : **3**6. [Ans. $\sigma_v = 3$ and r = 0.5] 3x = y, 4y = 3x and $\sigma_x = 2$.

37. Given $\overline{X}_1 = 55.95$, $\overline{X}_2 = 51.84$, $\overline{X}_3 = 56.03$, $\sigma_1 = 2.26$, $\sigma_2 = 4.39$, $\sigma_3 = 4.41$, $r_{12} = 0.578$, $r_{23} = 0.974$ and $r_{13} = 0.581$. Obtain the linear regression equation of x_3 on x_1 and x_2 and also estimate x_3 if $x_1 = 58.8$ and $x_2 = 52.5$.

5. Calculate trend value by 3 yearly moving average from the following data :

Years	Population ('000)	Years	Population ('000)
1994	5	1999	10
1995	7 . 1997 - 1997	2000	8
1996	9	2001	12·
1997	12	2002	13
1998	11	2003	17

[Ans. : 7, 9.33, 10.67, 11, 9.67, 10, 11, 14]

प्रायिकता में स्वतन्त्र एवं परस्पर अपवर्जी घटनाओं से आप क्या समझते हैं ? योग एवं गुणन प्रमेयों को उपयुक्त उदाहरण देकर समझाइए।

What do you understand by independent and mutually exclusive events in probability ? Explain the concept of independence and mutually exclusive events in probability by giving suitable examples.

निम्नलिखित में अन्तर स्पष्ट कीजिए—

Differentiate between the following :

(i) सरल एवं संयुक्त घटनाएँ (Simple and Compound events) (Raj. Univ., 2009)

(ii) स्वतन्त्र और आश्रित घटनाएँ

(Independent and Dependent events)

(iii) परस्पर अपवर्जी एवं स्वतन्त्र घटनाएँ (Mutually Exclusive and Independent events) (Raj. Univ., 2013)

(iv) सीमान्त, संयुक्त एवं प्रतिबन्धित प्रायिकता । (Marginal, Joint and Conditional Probability) (Raj. Univ. 2011) (v) परस्पर अपवर्जी एवं पूरक घटनाएँ । (Mutually exclusive events and Complementary events)

a sections):





$-10 \times 17 = 30,28,800$ ways.

Illustration 14 :

In how many ways can the letters of the following words be written ? (i) STATISTICS (ii) (a) COMMITTEE; (b) ANSWER. [B.A. Raj. 1992]

[B.A. Rajasthan 1991; M.Com. Garhwal 1994]

= 15Illustration 26 : A committee is to be formed by taking 2 economists, 2 government officers and 1 businessman out of 4 economists, 5 government officers and 3 businessmen. In how many ways can the committee be formed?

Calution



Out of three events A, B and C only one event can happen at a time. Odds against A are 8 : 3 and against B are 5 : 2. Find the odds against the happening of C.







A purse contains 2 silver and 4 copper coins and a second purse contains 4 silver and 3 copper coins. If a coin is selected at random from one of the purses, find the probability that it is (i) a copper coin; (ii) silver coin.



all-rice at प्रायिकता बंटन से आप क्या समझते हैं ? What do you mean by Probability Distribution ? (Raj. Univ., 2005) 1. द्विपद बंटन की प्रमुख विशेषताओं का उल्लेख कीजिए। Narrate the main features of Binomial probability distribution. (Raj. Univ., 2007) द्विपद, प्वॉयसन और प्रसामान्य बंटनों का अन्तर बतलाइए। Differentiate between Binomial, Poisson and Normal probability distributions. (M.D.S. Univ. Ajmer, 2008) द्विपद बंटन कब एक प्रसामान्य तथा प्वॉयसन बंटन की ओर प्रवृत्त होता है ? When does a Binomial distribution tend to become a normal and Poisson distribution ? · (M.G.S. Univ. Bikaner 2007)





Six dice were thrown 128 times. Dots on the dice showing 1, 2 or 3 are treated as success and dots on the dice showing 4, 5 or 6 are treated as failure. The actual results of throws are as under :

Number of Success :01Obtained Frequencies :110



5 Justine

IIIUStration X7 ·

In 192 families where the chance of an albino child being born is 0.25, the distribution of abinoes among first three children was as follows :

No. of Albino Children0123(Total)No. of Families7790205192

Assuming that the Binomial distribution holds good, calculate theoretical frequencies and test the goodness of fit by chi-square test. (M.Com., Raipur 1995)