

FYBA
Sem II

Statistics - I

18/4/17
(02 pages)
20 copies

Q.P. Code : 04956

[Time: Three Hours]

[Marks:100]

Please check whether you have got the right question paper.

- N.B:
1. All questions are compulsory.
 2. Use of calculator is allowed.

- Q. 1**
- a) Correct the following if necessary giving justification for each.
- 1) The coefficient of determination tells us the proportion of variance in X due to Y. (10)
 - 2) In regression analysis, the variable that is being predicted is the independent variable. (02)
 - 3) Sale of an Ice cream increases during summer season, it is an example of cyclic component of time series. (02)
 - 4) The ratio of a current price to the base year price is called the price index. (02)
 - 5) The exponential curve is of the form $y=ab^x$. (02)
- b) State the following:
- 1) Any two criteria to decide a good index number. (10)
 - 2) The expression of rank correlation coefficient when there is a tie in rank. (02)
 - 3) Angle between regression equation of Y on X, and that of X on Y. (02)
 - 4) Examples of positive and negative correlation. (02)
 - 5) Any two methods to estimate seasonal component of time series. (02)
- Q. 2** Attempt any Two:
- 1) I) What is meant by curve fitting? (20)
 - II) How will you fit quadratic curve? (05)
 - 2) I) What do you understand by regression analysis? (05)
 - II) Write a note on coefficient of determination. (05)
 - 3) I) Define Spearman's rank correlation coefficient. Show that it is derived from Pearson's correlation Coefficient. (06)
 - II) Explain the term 'Spurious correlation' (04)
 - 4) I) State and prove properties of correlation coefficient. (07)
 - II) Interpret values of $r = 1$, $r = -1$ and $r = 0$. (03)
- Q. 3** Attempt any TWO
- 1) Explain method of ratio to moving average to estimate seasonal component. State merits and demerits for the same. (20)
 - 2) I) Explain i) additive model ii) Multiplicative model of time series. (07)
 - II) What is a time series analysis? (04)
 - III) State uses of time series. (02)
 - 3) I) Explain following components of time series. (06)
 - i) Trend ii) Irregular. (04)
 - II) Describe methods of estimating trend by freehand method.
 - 4) I) Discuss method of least square to estimate trend. (06)
 - II) State merits of Semi average methods. (04)

[P.T.O.]

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Q. 4 Attempt any TWO

- 1) Write short note
 - i) Cost of living index number ii) Real income (20)
- 2) Describe the following methods of calculating Index Number. (10)
 - i) Weighted aggregate of price ii) Weighted arithmetic mean of price relatives iii) simple aggregate of prices iv) Simple average of prices (10)
- 3) Explain i) Time reversal test ii) Circular test iii) Factor reversal test. (04)
- 4) i) Write a note on Splicing of an index number. (06)
 - ii) Calculate the price index number for the year 2003 taking year 2000 as base using Geometric mean of price relatives.

Items	Price in 2000	Price in 2003
A	20	25
B	12	18
C	40	48
D	50	56
E	36	44

Q. 5 Attempt any four

- 1) Define a) Paasche's Index number b) Marshall- edgeworth quantity Index number. (05)
- 2) Describe various steps involved in the construction of an index number. (05)
- 3) Fit a power curve for the data given below. (05)

X	1	2	3	4	5
Y	20	150	550	1300	2500
- 4) Explain what is meant by fixed base index number and chain base index number (05)
- 5) Explain periodic components of time series. (05)
- 6) Write a note on scatter diagram. (05)
- 7) The regression equations are $2x+3y=60$ and $5x+3y=95$ (05)
 - Find i) Regression coefficients ii) mean of x and y.