14/05/22

VCD.........FYBSC SEM II PAPER I DESCRIPTIVE STATS II 100 MARKS 3 HRS

Q1. Attempt the following.   [50 MARKS]

1) If $r = 0.32$, $Cov(x, y) = 15$, $V(x) = 9$ then $S.D(y) = $ _____
   a) 15.625   b) 14.652   c) 16.625   d) 17.652

2) Let $x = 2y + 4$ and $y = kx + 6$ are regression lines x on y and y on x. ___ is the value of k if r=0.5
   a) ⅛   b) ⅓   c) ½   d) ¼

3) The regression lines y on x and x on y are 5y-x=21 and 64x-45y= 31. Variance of x is 25. $SD(y) = $ _____.
   a) ⅕   b) 45/64   c) ⅜   d) 8/3

4) The normal equations for a straight line y = ax + b are:
a) $\Sigma y = a\Sigma x + nb$ and $\Sigma xy = a\Sigma x^2 + b\Sigma x$ b) $\Sigma xy = a\Sigma x + nb$ and $\Sigma y = a\Sigma x^2 + b\Sigma x$
c) $\Sigma y = a\Sigma x + nb$ and $\Sigma xy = a\Sigma x^2 + b\Sigma xy$ d) $\Sigma y = a\Sigma x + nb$ and $\Sigma x2y = a\Sigma x^2 + b\Sigma x$

5) If the values of two variables move in the opposite direction then ____
 a) The correlation is said to be linear   b) The correlation is said to be non - linear
 c) The correlation is said to be positive d) The correlation is said to be negative

6) The value of simple correlation coefficient lies in the interval____
   a) [0,1]   b) [-1,1]   c) [1,∞]   d) (-∞,1)

7) The coefficient of correlation between two variables x and y is 0.48. The covariance is 36 and variance of x is 16. The S.D. of y is
   a) 10.15   b) 13.32   c) 16.5   d) 18.75

8) If the sum of squares of different of ranks of 6 candidates in 2 criteria is 21, the rank correlation coefficient is ___
   a) 0.5   b) 0.6   c) 0.4   d) 0.7

9) If n= 10, $\Sigma x=4$, $\Sigma x^2=8$, $\Sigma y=3$, $\Sigma y^2=9$, $\Sigma xy=3$, then coefficient of correlation is ____.
   a) ¼   b) 7/12   c) 15/4   d) 14/3

10) Index numbers are expressed in _____
a) Ratios   b) Squares   c) Percentages   d) Proportion

11) Index Numbers may be categorized in terms of ___'?
a) variables   b) constants   c) numbers   d)Alphabet

12) Price relatives are a percentage ratio of current year price and:
 a) Base year quantity   b) Previous year quantity   c) Base year price   d) Current year quantity

13) Aggregative method is further divided into _____ many types.
 a) one   b) two   c) three   d) four

14) Laspeyre's index = 100, Paasche's index = 121, then Fisher's index = _____.
   a) 110   b) 108   c) 100   d) 109

15) Most commonly used index number is _____ number.
   a) Volume index   b) Value index   c) Price index   d) Simple index

16) Price Index Numbers measures the changes in_____
a) relative changes in prices of commodities between two periods b) single variable
c) Physical quantity of goods produced   d)None of the Above.

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17) Consumer price index numbers are obtained by _____ formula.
   a) Laspeyre's   b) Fisher ideal   c) Marshall Edgeworth   d) Paasche's

18) In moving average method, we cannot find the trend values of some _____.
   a) Middle periods   b) End periods   c) Starting periods   d) Between extreme period

19) An orderly set of data arranged in accordance with their time of occurrence is called _____.
a) Arithmetic series   b) Harmonic series c) Geometric series   d) Time series

20) A time series has _____ components.
   a) Two   b) Three   c) Four   d) Five

21) The method of moving average is used to find the _____.
   a)Secular trend b) Seasonal variation c) Cyclical variation d) Irregular variation.

22) In a straight line equation Y = a + bX; b is the
   1) Y-intercept   b) Slope   c) X-intercept   d) Trend

23) If years from 1998 to 2001, the sales are 200, 100, 300,400 respect. Then the 3 yearly trend value is ___.
   a) 300   b) 200   c) 400   d) 100

24) The secular trend is measured by the method of semi-averages when:
a) Time series based yearly values   b) Time series consists of even number of values
c) Trend is linear   d) Time series depending on regression

25)Increase in the number of patients in the hospital due to heat stroke is:
a) Secular trend   b) Irregular variation   c) Seasonal variation   d) Cyclical variation

Q2. Attempt the following. Solve any Three. [15 MARKS]
1.Define scatter diagram. Also define strong positive, weak negative and perfect positive correlation with the help of scatter diagram.
2. Prove that Cov(x-a/c , y-b/d) =(1/cd) Cov(x,y)
3. Find the regression coefficient and equation of regression lines from the following data. Also obtain y when x=10 and x when y=15

	X	Y
Mean	25	20
S.D.	04	03	Correlation Coefficient is 0.5

4. Find the spearman's rank correlation from the following data.

X	48	33	40	9	16	16	65	24	16	57
Y	13	13	24	6	15	4	20	9	6	19

5) Find the point of intersection from the following equation of regression lines.
   5y- 4x-15=0,   3y-5x-18=0

Q 3.Attempt the following. Solve any Three. [15 MARKS]
   1. Define Time-series. Discuss its main components.
   2. Write note on measurement of seasonal variation.

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3. Calculate 4 yearly moving average for the following data:

Year	1998	1999	2000	2001	2002	2003	2004	2005
Sale	35	38	42	45	42	41	50	48

4. The given table shows trend free figures of quarterly sales (in crs) made by a mega mall. Find the seasonal indices.

Quarterly Values

Year	I	II	III	IV
2008	152	157	162	135
2009	157	148	165	150
2010	154	157	153	154
2011	158	156	148	152

5. Find a linear trend by the method of least squares to the following data and estimate the trend value for 2008.

Year	2001	2002	2003	2004	2005	2006	2007
Sale	265	270	280	290	300	320	310

Q4. Attempt the following. Solve any Three.   [15 MARKS]

1. Explain briefly various steps involved in construction of Index number.
2. What are the uses of Index number.
3. The cost of living index number for industrial workers is 215. Obtain group index for the group D.

Group	Group index	Weights
A	254	45
B	174	15
C	160	12
D	X	18
E	211	8

4. For the following data, calculate price index number using (i) Dorbish-Bowly method, (ii) Marshall Edgeworth method

Commodity	Prices in Rs.		Quantity	
	Base Year	Current Year	Base Year	Current Year
A	20	30	50	55
B	40	60	12	15
C	10	30	10	14
D	30	50	25	30

P.T.O.

5. Calculate Chain base indices for the following data.

Year	2008	2009	2010	2011	2012
Index no.	100	114	126	137	143

Q5. Attempt the following. Solve any One.   [05 MARKS]

1. Find the correlation coefficient for the following data.

X	2	4	6	8	10	12
Y	4	8	16	14	20	10

2. Calculate 3 yearly moving average for the following data

Year	2001	2002	2003	2004	2005	2006	2007
Production	1050	1070	1090	1120	1140	1160	1180

3. For the following data index number calculated by weighted aggregative method

X	2	4	6	8	10	12
Y	4	8	16	14	20	10