(8 pages) **Reg. No. :** .....

Code No. : 31151 E **Sub. Code : EECR 41**

B.Com. (CBCS) DEGREE EXAMINATION, NOVEMBER 2025.

Fourth Semester

Corporate Secretaryship

Elective – BUSINESS STATISTICS

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Statistics is essential for a
   (a) City (b) State
   (c) Country (d) Village

2. Co-efficient of determination is
   (a) r^2 (b) r^3
   (c) r^4 (d) r

3. The two lines are very close to each other, if the degree of correlation is
   (a) High (b) Low
   (c) Medium (d) Flexible

4. Co — efficient of regression of X on Y is
   (a) byx (b) bxy
   (c) $bx + y$ (d) $by + x$

5. Historically the first index was constructed in
   (a) 1874 (b) 1774
   (c) 1764 (d) 1854

6. Quantity Index numbers deal with
   (a) Quantity of goods
   (b) Quality of goods
   (c) Price of goods
   (d) Sale of goods

7. The graphic method is otherwise called as
   (a) Free hand method
   (b) Multiple method
   (c) Index method
   (d) Moving average method

8. _____ method is an improvement over the method of simple average method

(a) Link relative method

(b) Ratio to moving average method

(c) Ratio to trend method

(d) Binomial method

9. The simplest method of interpolation is

(a) Graphic method (b) Binomial method

(c) Newton's method (d) Lagrange's method

10. It gives us forecast for the future

(a) Interpolation (b) Extrapolation

(c) Regression (d) Mode

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) A random sample of five college students is selected and their grades in Maths and Statistics are found to be

Maths :	85	60	73	40	90	35	50
Statistics :	93	75	65	50	80	68	72

Calculate Pearman's rank correlation coefficient.

Or

(b) Calculate the co-efficient of correlation from the following data :

$N = 10 \; \Sigma x^2 = 290 \; \Sigma x = 50 \; \Sigma y = -30 \; \Sigma y^2 = 300$
$\Sigma xy = -115$.

12. (a) What are the uses of regression analysis?

Or

(b) Find the line of regression of y on x

x :	1	2	3	4	5	8	10
y :	9	8	10	12	14	16	15

13. (a) What is a time series? What are the main components?

Or

(b) Compute the average seasonal movement for the following series :

Year	I	II	III	IV
1988	3.5	3.9	3.4	3.6
1989	3.5	9.1	3.7	4.0
1990	3.5	3.9	3.7	4.2
1991	4.0	4.6	3.8	4.5
1992	4.1	4.4	4.2	4.5

14. (a) Calculate by the weighted aggregate method the index number from the following data:

Commodity	Base Year (price per unit)	Current Year (price per unit)	Weight
Rice	30	40	10
Wheat	20	30	5
Pulses	40	50	6
Oil	35	40	5
Milk	40	50	10

Or

(b) Explain the characteristics of Index numbers.

15. (a) Interpolate the missing term in the following:

Year :	2017	2018	2019	2020	2021
Production :	20	30	50	?	80

Or

(b) Interpolate y when $x = 12$

x :	10	15	25
y :	90	215	615

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Find out the co-efficient of correlation for the following data :

Height of father (cm) :	160	162	163	164	165	167	168
Height of son (cm) :	150	152	148	149	154	160	165

Or

(b) Ten students got the following marks in mathematics and accountancy.

Marks in Maths :	78	36	98	25	75	82	90	62	65	39
Marks in A/c :	84	51	91	60	68	62	86	58	53	47

Calculate the rank correlation coefficient and interpret the result.

17. (a) In a correlation analysis between production and price of a commodity, the following constants were obtained

	Production Index	Price Index
Mean	110	98
Standard Deviation	12	5

$r = 0.4$

Write down the two regression equations. Find the price index when the production index is 116.

Or

(b) Explain the various uses of Regression Analysis.

18. (a) The sales of a company in lakhs of rupees for the years 2004 — 2011 are given below :

Years :	2004	2005	2006	2007	2008	2009	2010	2011
Sales :	550	560	555	585	540	524	545	585

(i) Find the linear trend equation

(ii) Estimate the sales for the year 2003

Or

(b) Explain the importance of time series analysis in business forecasting.

19. (a) Following are the data related with the prices and quantity consumed for 2006 and 2007

Commodities	2006		2007	
	Price (Rs.)	Price (Rs.)	Price (Rs.)	Price (Rs.)
Rice	25	10	27	15
Wheat	20	5	22	7
Sugar	22	4	24	6
Tea	15	2	17	5

Construct price index numbers by

(i) Laspeyre's Method

(ii) Paasche's Method

(iii) Bowley-Dorfish Method

(iv) Fisher's Method

Or

(b) Explain the various methods of construction of index numbers.

20. (a) By Binomial method, interpolate the missing figure

Year :	2015	2016	2017	2018	2019	2020
Index No :	320	300	?	280	278	250

Or

(b) Explain Interpolation and Extrapolation. How are they calculated?
