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Code No. : 12205 E **Sub. Code : EECR 41**

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

Fourth Semester

Corporate Secretaryship

Elective – BUSINESS STATISTICS – II

(For those who joined in July 2023 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What is the range of values for the correlation coefficient?

   (a) –1 to 1 (b) 0 to 1

   (c) –1 to 0 (d) 0 to 100

2. If the correlation co-efficient is +1, it indicates:

   (a) No relationship

   (b) Weak positive correlation

   (c) Perfect positive correlation

   (d) Perfect negative correlation

3. The method of least squares dictates that we choose a regression line where the sum of the square of deviations of the points from the lie is:

   (a) Maximum (b) Minimum

   (c) Zero (d) Positive

4. All data points falling along a straight line is called:

   (a) linear relationship

   (b) non linear relationship

   (c) residual

   (d) scatter diagram

5. Secular trend can be measured by _____.

   (a) Two methods (b) Three methods

   (c) Four methods (d) Five methods

6. In semi average method, we decide the data into:

   (a) Two parts

   (b) Two equal parts

   (c) Always zero

   (d) Both negative and positive

7. Factor reversal test is satisfied by which index _____.

(a) Simple Gm of price relatives
(b) Fisher's ideal index
(c) Marshall – Edgeworth index
(d) All of the above

8. The cost of living (CLI) is always the _____ index.

(a) Price index (b) Quantity index
(c) Weighted index (d) Value index

9. Find n if $X_0 = 0.75825$, $X = 0.759$ and $h = 0.0005$.

(a) 1.5 (b) 15
(c) 2.5 (d) 25

10. Find X if $X_0 = 0.6$, $n = 2.6$ and $h = 0.2$

(a) 12 (b) 1.2
(c) 1.12 (d) 1.22

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

Answer should not exceed 250 words.

11. (a) Define correlation and explain its significance.

Or

(b) Find the correlation co-efficient between the variables X and Y.

X:	2	4	6	8	10
Y:	5	7	9	8	11

12. (a) Differentiate between correlation and regression.

Or

(b) Find the regression equation of X on Y from the following data.

X:	10	12	16	11	15	14	20	22
Y:	15	18	23	14	20	17	25	28

13. (a) From the following time series, calculate the trend by the method of 3 yearly moving averages.

Year:	1996	1997	1998	1999	2000	2001
Values:	330	320	356	360	374	392
Year:	2002	2003	2004	2005	2006	
Values:	400	420	430	450	440	

Or

(b) Draw a trend line by the method of semi-averages for the following time series.

Year:	2007	2008	2009	2010	2011	2012
Sales (000's)	55	53	58	55	60	65

14. (a) Write a note on

(i) Fisher's method and

(ii) Marshall Edgeworth method.

Or

(b) From the following data compute price index number by using simple aggregative method.

Commodity	A	B	C	D
Price in the year 2013	1	2	3	4
Price in the year 2014	5	4	3	2

15. (a) From the following data interpolate the value for $X = 8$.

X:	6	10	14	18	22
Value (Y):	19	34	42	44	46

Or

(b) Define Interpolation and Extrapolation.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Answer should not exceed 600 words.

16. (a) Calculate Karl Pearson's correlation co-efficient.

X:	2	4	6	8	10
Y:	5	7	9	8	11

Or

(b) Calculate the linear correlation coefficient for the following data. $X = 4, 8, 12, 16$ and $Y = 5, 10, 15, 20$.

17. (a) From the following information, find regression equations and estimate the production when the capacity utilization is 70%.

	Avg (mean)	Std. deviation
Production (in lakh units)	42	12.5
Capacity utilizations (%)	88	8.5
Correlation co-efficient (r)	0.72	

Or

(b) The regression equation of two variables are $5Y = 9X - 22$ and $20X = 9Y + 350$.

Find the means of X and Y. Also find the value of l.

18. (a) For the following time series, compute the trend by five yearly moving averages.

Year:	2008	2009	2010	2011	2012	2013
Sales	53	76	76	66	69	94
Year:	2014	2015	2016	2017	2018	
Sales:	105	87	79	104	97	

Or

(b) Calculate estimated trend population for the year 2013.

Year:	2007	2008	2009	2010	2011
Population (in lakhs):	7	8	10	13	15

19. (a) From the following data, compute index number.

Item	Base year		Current year	
	Price	Qty	Price	Qty
A	1	6	5	8
B	2	7	4	7
C	3	8	3	6
D	4	9	2	5

Or

(b) Construct the consumer price index number for the year 2012 on the basis of 2010 from the following data.

Commodities	Rice	Wheat	Pulses	Butter	Oil
Weights	40	20	15	20	5
Price – 2010	16	40	0.50	5.12	2
Price – 2012	20	60	0.5	6.25	1.5

20. (a) From the following data find out the no. of workers earning salary less than Rs. 25 (000's)

Salary (in '000 Rs.):	10-20	20-30	30-40	40-50	50-60	60-70
No. of workers	125	200	250	188	100	63

Or

(b) Using Newton's forward interpolation formula and cubic polynomial.

x:	0	1	2	3
f(x):	1	2	1	10