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

Code No. : 31050 E **Sub. Code : EECO 32/ FECO 3 B**

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

Third Semester

Commerce

Elective — BUSINESS MATHEMATICS AND STATISTICS

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

1. $\frac{32^7}{2^3}$ as a power of 2 is

(a) 2^{32} (b) 2^{23}

(c) 2^4 (d) none

2. The number of digits in 3^{24} is

(a) 10 (b) 12

(c) 11 (d) 15

3. The difference between the simple interest and compound interest on Rs. 1,200 at 10% per annum for 2 years is

(a) zero (b) 10

(c) 12 (d) 14

4. The formula for present value of perpetuity is

(a) $V = pi$ (b) $V = Ai$

(c) $V = P/i$ (d) $V = A/i$

5. The best measure of central tendency is

(a) Arithmetic mean

(b) Geometric mean

(c) Harmonic mean

(d) Median

6. The appropriate measure whenever the extreme items are to be disregarded and when the distribution contains indefinite classes at the end is.

(a) Mean (b) Median

(c) Mode (d) Quartile deviation

7. The co-efficient of correlation

(a) cannot be positive

(b) cannot be negative

(c) can be either positive or negative

(d) none of these

8. Where r is zero the regression lines cut each other making an angle of

(a) 30° (b) 60°

(c) 90° (d) none of these

9. The best average of construction of index number is

(a) median (b) geometric mean

(c) mode (d) arithmetic mean

10. Which of the following components is used for a short term forecast?

(a) cyclical (b) trend

(c) seasonal (d) none of these

PART B — (5 × 5 = 25 marks)

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

11. (a) Find the value of X, if $2^{x+1} + 3.2^{x-3} = 76$.

Or

(b) Simplify $\dfrac{\log 72 - \log 3}{\frac{1}{3}\log 27 + \frac{1}{2}\log 64}$.

12. (a) Calculate the total interest on Rs. 500 for 73 days. Rs. 720 for 14 weeks and on Rs. 900 for 3 months at 6% per annum.

Or

(b) Find the amount for an annuity of Rs. 2,000, a year payable in the beginning of every year, for 10 years at 5% p.a. compounded annually.

13. (a) Find the range of weights of 7 students from the following 27, 30, 35, 36, 38, 40, 43.

Or

(b) 10 students of B.Com class of a college have obtained the following marks in statistics out of 100 marks. Calculate the standard deviation.

S.No	1	2	3	4	5	6	7	8	9	10
Marks :	5	10	20	25	40	42	45	48	70	80

14. (a) Distinguish between correlation and regression.

Or

(b) A random of 5 college students is selected and their grades in mathematics and statistics found to be.

	1	2	3	4	5
Mathematics :	85	60	73	40	90
Statistics :	93	75	65	50	80

Calculate Pearman's rank correlation.

15. (a) Draw a trend line by the method of semi-average.

Year :	2001	2002	2003	2004	2005	2006	2007
Sales ('000')	110	105	115	112	120	118	130

Or

(b) Construct chain index numbers from the link relatives given below.

Year :	2003	2004	2005	2006	2007
Index No :	100	105	95	115	102

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Simplify : $\frac{5^{2x+3}}{25^{3x+2}} \cdot \frac{10^{4x+1}}{16x^{\frac{-1}{2}}}$.

Or

(b) Find the value of $\left(\frac{0.2926}{5.683}\right)$ using logarithm.

17. (a) Find the true discount on a bill of Rs. 5175 due 6 months, if the rate of interest is 7% p.a. Also find out

(i) Banker's discount and

(ii) Banker's gain

Or

(b) The difference between simple interest and CI is Rs. 384.60. No. of years = 4. Rate of Interest = 10%. Find out the sum.

18. (a) Calculate standard deviation from the following :

Marks :	10	20	30	40	50	60
No.of students :	8	12	20	10	7	3

Or

(b) Calculate the median from the following table :

Marks :	10-25	25-40	40-55	55-70	70-85	85-100
Frequency :	6	20	44	26	3	1

19. (a) Calculate the co-efficient of correlation between X and Y series from the following data :

	X series	Y series
No.of pairs of observations :	15	15
Arithmetic mean :	25	18
Standard deviation :	3.01	3.03
Sum of squares of deviation from the arithmetic mean :	136	138

Or

(b) The following table given the age of cars of certain make and annual maintenance cost. Obtain regression equation for costs related to age.

Age of car in years :	2	4	6	8
Maintenance cost :	10	20	25	30

20. (a) The following figures relate to the profits of a commercial concern for 8 years.

Year :	2000	2001	2002	2003	2004
Profit (Rs.) :	15,420	14,470	15,520	21,020	26,120
Year :	2005	2006	2007		
Profit (Rs.) :	31,950	35,370	34,670		

Find the trend of profits by the method of moving averages.

Or

(b) Calculate the three yearly moving average of the following data :

Years :	1998	1999	2000	2001	2002	2003
Students :	15	18	17	20	23	25
Years :	2004	2005	2006	2007		
Students :	29	33	36	40		
