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Reg. No. :

Code No. : 12081 E Sub. Code : EECO 32

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

Third Semester

Commerce

Elective — BUSINESS MATHEMATICS AND
STATISTICS

(For those who joined in July 2023 only).

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. The value of $(3.2)^3$ is _____.

- (a) 216 (b) 035
(c) 125 (d) None

2. $\log(0.0001)$ is equal to

- (a) -1 (b) -2
(c) -3 (d) -4

3. The compound interest on Rs. 30,000 for 3 years at 10% p.a is

- (a) 9,930 (b) 9,000
(c) 39,930 (d) None

4. Given banker's discount is Rs. 68.25 and banker's gain is 6.38. The true discount is

- (a) 74.53 (b) 61.97
(c) 60.25 (d) 75

5. The sum of deviations taken from arithmetic mean is

- (a) Minimum (b) Zero
(c) Maximum (d) None

6. The quartile deviation includes the

- (a) First 50% (b) Last 50%
(c) Central 50% (d) Both (a) and (b)

7. The value of r^2 for a particular situation is 0.81. What is coefficient of correlation

- (a) 0.81 (b) 0.9
(c) 0.09 (d) 0.009

8. When the two regression lines coincide, then r is

- (a) 0 (b) -1
(c) 1 (d) 0.5

9. The best average in the construction of index number is

- (a) Median (b) Geometric mean
(c) Mode (d) Arithmetic mean

10. Seasonal variations repeat during a period of

- (a) One year (b) Five year
(c) Seven years (d) Nine year

PART B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words.

11. (a) Simplify $2(4)^{-3} + \left(\frac{4}{3}\right)^{-2} + (x+7)^0$.

Or

(b) If $\log 2 = 0.3010$ find the value of $\log 50$.

12. (a) Find out the period by which a sum of Rs. 1,200 will count to Rs. 1,700 at 12% p.a.

Or

(b) A person wishes to deposit Rs. 2,000 at the end of each year in a bank paying 5% p.a. compound interest. If the instalments are allowed to accumulate, what will be the total accumulation at the end of 10 years?

13. (a) Calculate the semi interquartile and quartile co-efficient from the following.

Age in years : 20 30 40 50 60 70 80

No. of members : 3 61 132 153 140 51 3

Or

(b) Compute the geometric mean of the following series.

Marks : 0-10 10-20 20-30 30-40 40-50

No. of students : 5 7 15 25 8

14. (a) Calculate the correlation co-efficient between the height of father and son from the given data.

Height of father (in inches) : 64 65 66 67 68 69 70

Height of son (in inches) : 66 67 65 68 70 68 72

Or

(b) Given the following data, calculate the expected value of y when $x = 12$.

x y

Average 7.6 14.8

Std. deviation 3.6 2.5

$r = 0.99$

15. (a) Calculate trend value from the following data using the method of least square.

Year :	2002	2003	2004	2005	2006	2007
Production :	7	9	12	15	18	23

Or

- (b) Compute price index for the following data by applying weighted average of price relative method, using Arithmetic mean.

Item	Price in 2005 (Rs.)	Price in 2006 (Rs.)	Quantity in 2005
Wheat	2.00	2.50	40 kg
Sugar	3.00	3.25	20 kg
Milk	1.50	1.75	10 lit

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Find the mean, median ages of married women at first child birth.

Age :	13	14	15	16	17	18	19	20	21	22	23	24	25
No. of married women :	37	162	343	390	256	433	161	355	65	85	49	46	40

Or

- (b) Calculate standard deviation from the following.

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

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17. (a) Simplify the following

(i) $a^5 \cdot a^2$

(ii) $5^{17} \cdot 5^{13} - 4^0 \cdot 4^7 \cdot 4^{18}$

(iii) $17^9 \div (15 + 2)^5$

Or

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

18. (a) The difference between simple interest and compound interest is Rs. 384.60. Number of years = 4. Rate of interest = 10%. Find out the sum.

Or

- (b) X sold goods worth Rs. 5,000 to y for 6 months credit and drew a bill on y at 6% per annum. X, immediately discounted the bill with a banker at the same rate of interest got the balance from the bank. Find (i) True discount, (ii) Banker's discount (iii) Amount received from the Bank and (iv) Banker's gain.

19. (a) Coefficient of correlation between two variables x and y is 0.48. Their covariance is 36. The variance of x is 16. Find the standard deviation of y series.

Or

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

Age of cars in years : 2 4 6 8

Maintenance cost : 10 20 25 30

20. (a) Calculate three yearly moving average of the following data.

Year : 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007

No. of students : 15 18 17 20 23 25 29 33 36 40

Or

- (b) An enquiry into the budget of middle class families in a certain city gave the following information.

Expenses	Food	Fuel	Clothing	Rent	Miscellaneous
Price (2006) Rs.	150	25	75	30	40
Price (2007)	145	23	65	30	45

What is the cost of living Index Number of 2007 as compared with that of 2006?