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

Code No. : 32187 E **Sub. Code : EEBF 21**

B.Com. (CBCS) DEGREE EXAMINATION, APRIL 2024

Second Semester

Banking and Finance

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 questions.

Choose the correct answer :

1. If A:B = 2:3 and B:C = 4:5 then A:B:C is

(a) 2:3:5 (b) 5:4:6

(c) 8:12:15 (d) 6:4:5

2. If log a/b + log b/a = log(a+b), then

(a) $a + b = 1$ (b) $a - b = 1$

(c) $a = b$ (d) $a^2 - b^2 = 1$

3. Kabir paid Rs.9,600 as interest on a loan he took 5 years ago at 16% rate of simple interest. What was the amount he took as loan?

(a) Rs.16,400 (b) Rs.12,000

(c) Rs.6,000 (d) Rs.5,000

4. What is the difference between the compound interests on Rs.5,000 for 1½ years at 4% pa. compounded yearly and half yearly?

(a) Rs.2.04 (b) Rs.3.06

(c) Rs.4.80 (d) Rs.8.30

5. Which average is affected most by extreme observations?

(a) Mode (b) Median

(c) Geometric mean (d) Arithmetic mean

6. The square of the variance of a distribution is the

(a) Median (b) Mean

(c) Mode (d) None of these

7. The co-efficient of correlation

(a) Has no limits

(b) Can be less than 1

(c) Can be more than 1

(d) Varies between ±1

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

(a) 0 (b) -1

(c) 1 (d) 0.5

9. Paasche's index is based on

(a) Base year quantities

(b) Current year quantities

(c) Last year

(d) None of these

10. Seasonal variations repeat during a period of

(a) 1 year (b) 5 years

(c) 10 years (d) 7 years

PART B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words.

11. (a) If $x/y+z = y/z+x = z/x+y$, then prove that if $x+y+z \neq 0$ then each ratio = 1/2.

Or

(b) Simplify:

$\left(\frac{X^m}{X^n}\right)m^2+mn+n^2$. $\left(\frac{X^n}{X^l}\right)n^2+n^1+1^2$.

$\left(\frac{X^l}{X^m}\right)1^2+1m+m^2$.

12. (a) Find the compound interest on a sum of Rs.6,280 for one year and 7 months at the rate of 8% p.a. reckoned yearly.

Or

(b) Find the term of a bill of Rs. 18,450 whose true discount at 5% p.a. is Rs.450.

13. (a) Comparison between mean deviation and standard deviation.

Or

(b) Find out the geometric mean:

Yield of wheat	7.5-10.5	10.5-13.5	13.5-16.5	16.5-19.5
No. of forms	5	9	19	23

Yield of wheat	19.5-22.5	22.5-25.5	25.5-28.5
No. of forms	7	4	1

14. (a) What are the methods of studying correlation?

Or

(b) Estimate the marks in Mathematics obtained by a student who has scored 60 marks in English.

Mean of marks in Mathematics 80

Mean of marks in English 50

S.D of marks in Mathematics 15

S.D of marks in English 10

Co efficient of correlation 0.4

15. (a) What are the characteristics of index numbers?

Or

(b) From the following data calculate price index number for 2015 with 2014 as base by

(i) Laspeyre's method

(ii) Paasche's method.

Commodity	2014		2015	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) If $X=1+\log_a bc, Y=1+\log_b ca, Z=1+\log_c ab$, show that $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}=1$.

Or

(b) If $a+b:\sqrt{ab}=4:1$ prove that $\sqrt{\frac{a}{b}}+\sqrt{\frac{b}{c}}=4$ and hence find the value of a:b.

17. (a) Find the bankers gain on a bill of Rs.3,750 due in 8 months at 8% p.a.

Or

(b) The difference between true and bankers discounts on a bill due after 6 months at 4% interest p.a. is Rs.20. Find

(i) True discount

(ii) Bankers discount and

(iii) Face value of the bill