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BCMCMC 158

**Credit Based Second Semester B.Com. Degree
Examination, July/August 2023
(2018-19 and Earlier Batches)
BUSINESS STATISTICS AND MATHEMATICS**

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **any four** of the following questions :

(4×4=16)

1. Calculate rank correlation coefficient for the following data :

Rank in Maths	3	4	2	1	5	6
Rank in Statistics	1	2	3	4	5	6

2. From the following data, estimate the retail price when wholesale price is Rs. 120.

	Wholesale Price (Rs.)	Retail Price (Rs.)
Arithmetic mean	80	110
Standard deviation	4	5
Coefficient of correlation	0.7	

3. Explain the utility of time series analysis.
4. The cash price of an article sold is Rs. 11,400. The trade discount and cash discount are 20% and 5% respectively. Find the marked price.
5. A bill with a face value of Rs. 7,500 is due 3 months from now. It is discounted with a bank at 16% p.a. Find banker's gain.
6. A bill for Rs. 14,800 is due 4 months from now. At 14.5% rate of interest, find the true discount and present value of the bill.



SECTION – B

Answer **any four** of the following questions :

(4×8=32)

7. Calculate Karl Pearson's coefficient of correlation.

X	32	55	43	45	50	38	48	46	40	44
Y	25	40	38	42	41	35	33	29	30	32

8. If the regression equations of x and y are respectively

$$3x - 2y + 1 = 0$$

$$3x - 8y + 13 = 0$$

Find \bar{x}, \bar{y} and correlation coefficient.

9. Find 3 yearly averages to the following data :

Year	2016	2017	2018	2019	2020	2021	2022
Production	142	137	128	133	134	133	130

10. On a site worth Rs. 5 lakh, a house worth is Rs. 7 lakh is built. What would be the worth of the site with the house 5 years hence, if the site value appreciates annually at 12% and building value depreciates annually at 4% ?

11. A bank offers vehicle loan at a compound interest of 17% p.a., whereas a cooperative society offers the same at 16.8% p.a., compounded half-yearly. A finance company offers the same at 16.4% p.a. compounded quarterly. Advise in choosing the cheapest source of finance.

12. Find the equated due dates for the following bills :

Rs. 2,200 drawn on February 11 for 6 months

Rs. 8,400 drawn on April 10 for 6 months

Rs. 6,500 drawn on May 14 for 4 months.

SECTION – C

Answer **any two** of the following questions :

(2×16=32)

13. Calculate the coefficient of correlation between expenditure in advertisement (X) and sales (Y) of a product.

Y (Rs. in lakhs)	X ('000 of Rs.)				
	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100
10 – 12	8	4	–	–	–
12 – 14	2	10	3	–	–
14 – 16	–	8	25	7	–
16 – 18	–	–	6	10	4
18 – 20	–	–	–	6	7

14. Following is the distribution of students according to their height and weight.

Height (inches)	57	59	62	63	64	65	55	58	57	60
Weight (in lbs)	113	117	126	126	130	129	111	116	112	120

Obtain :

- i) Correlation coefficient
- ii) The height of a student whose weight is 125 lbs.

15. Fit a straight line trend for the following data and estimate the production for 1983.

Year	2016	2017	2018	2019	2020	2021	2022
Production	77	88	94	95	91	98	90

16. A sum invested with a firm doubles in 4 years, whereas the same invested with another firm becomes 5 times in 10 years, which of the following two investments is more attractive ?