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Name.....

Reg. No.....

**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION  
APRIL 2023**

B.B.A.

BBA 4C 04—QUANTITATIVE TECHNIQUES FOR BUSINESS

(2019 Admission onwards)

Time : Two Hours and a Half

Maximum : 80 Marks

**Part A***Answer all questions.*

1. Write any *two* limitations of quantitative techniques.
2. What is meant by negative correlation ?
3. What is a scatter diagram ?
4. What are the properties of regression lines ?
5. Which are the types of regression ?
6. What are cyclical variations ?
7. Which are the models of time series analysis ?
8. What are quantity index numbers ?
9. Why chain index numbers assume significance ?
10. What is meant by complement of a set ?
11. What are exhaustive events ?
12. What are the limitations of relative frequency theory of probability ?
13. Which are the constants of Poisson distribution ?
14. What is Baye's theorem ?
15. Give multiplication theorem for independent events.

(15 × 2 = 30, Maximum ceiling 25 marks)

**Turn over**

**Part B***Answer all questions.*

16. Write the important uses of quantitative techniques in the field of business and industry ?

17. Which are the different methods for measuring correlation ?

18. Given :

Covariance between X and Y = 16

Variance of X = 25

Variance of Y = 16

- (i) Calculate coefficient of correlation between X and Y.
- (ii) If arithmetic means of X and Y are 20 and 30 respectively., find regression equation of Y on X.
- (iii) Estimate Y when X = 30.

19. Calculate five yearly moving averages for the following data :

|         |      |      |      |      |      |      |      |      |      |      |
|---------|------|------|------|------|------|------|------|------|------|------|
| Year :  | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Value : | 123  | 140  | 110  | 98   | 104  | 133  | 95   | 105  | 150  | 135  |

20. An enquiry into the budgets of the middle class families in a city in India gave the following information :

|               | <i>Food</i> | <i>Rent</i> | <i>Clothing</i> | <i>Fuel</i> | <i>Others</i> |
|---------------|-------------|-------------|-----------------|-------------|---------------|
| Expenses      | 35 %        | 15 %        | 20 %            | 10 %        | 20 %          |
| Price in 2011 | 150         | 50          | 100             | 20          | 60            |
| Price in 2012 | 174         | 60          | 125             | 25          | 90            |

What change in the cost of living of 2012 has taken place as compared to 2011

21. Tickets are numbered from 1 to 100. They are well shuffled and a ticket is drawn at random. What is the probability that the drawn ticket has :

- (a) An even number ;
- (b) A number 5 or a multiple of 5 ;
- (c) A number which is greater than 75 ;
- (d) A number which is a square ?

22. A ball is drawn at random from a box containing 6 red balls, 4 white balls and 5 blue balls. Determine the probability that it is : (i) Red ; (ii) White ; (iii) Blue, (iv) Not Red ; and (v) Red or White.
23. Explain Axiomatic Approach (Modern Approach) to Probability.

(8 × 5 = 40, Maximum ceiling 35 marks)

### Part C

Answer any **two** questions.

24. Calculate co-efficient of correlation from following data :

|     |    |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|----|
| X : | 0  | 15 | 15 | 14 | 10 | 12 | 10 | 8  | 16 | 15 |
| Y : | 20 | 15 | 12 | 10 | 8  | 5  | 6  | 15 | 12 | 18 |

25. Fit a straight line trend to the following data by Least Squares method and estimate exports for the year 2012.

|                    |   |      |      |      |      |      |      |      |
|--------------------|---|------|------|------|------|------|------|------|
| Year               | : | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Export (in tons) : |   | 47   | 50   | 53   | 65   | 62   | 64   | 72   |

Solve by : (1) Taking 2005 as the year of origin ; (2) Taking middle year of the time series as origin and also verify the result.

26. Explain the method of construction of index numbers.
27. Eight coins were tossed together for 256 times. Fit a Binomial Distribution of getting heads. Also find mean and standard deviation.

(2 × 10 = 20 marks)