(8 pages)

**S.No. 9273**

**PN 15 FM 4/**
**PN 15 BM 4/**
**PN 15 CA 4**

(For candidates admitted from 2015–2016 onwards)

M.Com. DEGREE EXAMINATION, NOVEMBER 2023.

Financial Management / Bank Management / Computer Application

BUSINESS TOOLS FOR DECISION MAKING

Time : Three hours Maximum : 100 marks

SECTION A — (10 × 2 = 20)

Answer ALL questions.

1. What is regression analysis?

2. What is difference between correlation and regression?

3. What is meant by time series analysis?

4. Write a note on price index numbers.

5. Define probability.

6. Write a note on test of significance for small samples.

7. How do you test the significance of variance?

8. What do you mean by two tailed test?

9. How do you analyze ANOVA variance?

10. What is called chi-square test?

SECTION B — (5 × 7 = 35)

Answer ALL questions.

11. (a) Compute the co-efficient of correlation between X and Y.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X | 10 | 12 | 18 | 8 | 13 | 20 | 22 | 15 | 5 | 17 |
| Y | 88 | 90 | 94 | 86 | 87 | 92 | 96 | 94 | 88 | 85 |

Or

(b) Compute Karl Pearson's Co-efficient of correlation from the following data.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Marks in Accountancy | 77 | 54 | 27 | 52 | 14 | 35 | 90 | 25 | 56 | 60 |
| Marks in English | 35 | 58 | 60 | 40 | 50 | 40 | 35 | 56 | 34 | 42 |

12. (a) Calculate the four yearly moving average for the following data:

| Year | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Production (in '000 tons) | 464 | 515 | 518 | 467 | 502 |
| Year | 1999 | 2000 | 2001 | 2002 | 2003 |
| Production (in '000 tons) | 540 | 557 | 571 | 586 | 612 |

Or

(b) Calculate the five yearly moving average from the following data:

| Year | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|
| No. of Students | 705 | 685 | 703 | 687 | 705 |
| Year | 2002 | 2003 | 2004 | 2005 | 2006 |
| No. of Students | 689 | 715 | 685 | 725 | 730 |



13. (a) Machine I, II, III and IV account for 30%, 25% and 10% of total production. These machines produce 95%, 90%, 85% and 98% non-defective items. If a randomly selected items is found to be non-defective, find the probability that it was produced by machine IV.

Or

(b) One card is drawn from a pack of 52 cards. What is the probability that the card drawn is a king?

14. (a) The mean produce of wheat of a sample of 100 fields is 20 quintals per acre with a standard deviation of 1 quintal. Another sample of 150 fields gives the mean of 22 quintals per acre with a standard deviation of 1.2 quintals. Can the two samples be considered to have taken from the same population whose standard is 1.1 quintals? Use 5% level.

Or

(b) The following table gives the data on the hardness of wood stored outside and inside the room.

| | Outside | Inside |
|---|---|---|
| Sample size | 40 | 110 |
| Mean | 117 | 132 |
| Sum of squares of deviation from mean | 8655 | 27244 |

Test whether the hardness is effected by weathering.

15. (a) In a certain sample of 2000 families, 1400 families are consumers of tea. Out of 1800 Hindu families, 1236 families consumer tea. Use Chi-square test and state whether there is any significance difference between consumption of tea among Hindu and Non- Hindu families.

Or



(b) The three samples below have been obtained from normal populations with equal variances. Test the hypothesis that the sample means are equal:

| | | |
|---|---|---|
| 8 | 7 | 12 |
| 10 | 5 | 9 |
| 7 | 10 | 13 |
| 14 | 9 | 12 |
| 11 | 9 | 14 |

The table value of F at 5% level of significance for $V_1 = 2$ and $V_2 = 12$ is 3.88.

SECTION C — ($3 \times 15 = 45$)

Answer any THREE questions.

16. Find out the co-efficient of correlation from the given data.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X | 65 | 66 | 67 | 67 | 68 | 69 | 71 | 73 |
| Y | 67 | 68 | 64 | 68 | 72 | 70 | 69 | 70 |

17. Using the following data construct Fisher's Ideal Index and show that is satisfies factor reversal test and time reversal test.

| Commodity | Price (in Rs.) / Unit | | Number of Units | |
|---|---|---|---|---|
| | Base Year | Current Year | Base Year | Current Year |
| A | 6 | 8 | 10 | 12 |
| B | 10 | 10 | 5 | 8 |
| C | 5 | 7 | 8 | 10 |
| D | 15 | 20 | 12 | 15 |
| E | 20 | 25 | 15 | 10 |

18. The probability that both Shyam and Naveen will win the game in 70 and 80 per cent respectively. What is the probability that both of them will win the game?

19. The specimen of copper wires drawn from a large lot has the following breaking strength (in kg. weights)

578 572 570 568 572 578 570 572 596 544

Test (Using students t-statistic) whether the mean breaking strength of the 1. It may be taken to he 578 kg. weight. (Test at 5% level)



20. Sex and opinion of the passengers towards the services of the railways arc given below. Test the level of significance between the sex and the level of attitude towards the railways.

| | Level of Attitude | | | |
|---|---|---|---|---|
| Sex | High | Medium | Low | Total |
| Male | 35 | 92 | 20 | 147 |
| Female | 10 | 30 | 13 | 53 |
| Total | 45 | 122 | 33 | 200 |