**SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)**
**(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)**
**Chromepet, Chennai — 600 044.**
**B.Com.(ISM) END SEMESTER EXAMINATIONS APRIL-2022**
**SEMESTER - IV**
**20UBIAT4004 - Business Mathematics and Statistics - II**

**Total Duration : 3 Hrs.** **Total Marks : 60**

## Section A

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Find the inverse of $\begin{pmatrix} a & b \\ c & d \end{pmatrix}$
2. Divide Rs.1,162 among A,B and C in the ratio 35:28:20.
3. Calculate Fishes ideal index from the following data and prove that time reversal test:

| | 2002 | 2002 | 2003 | 2003 |
|---|---|---|---|---|
| **Commodities** | **Price** | **Quantity** | **Price** | **Quantity** |
| **A** | 8 | 16 | 10 | 16 |
| **B** | 10 | 20 | 12 | 24 |
| **C** | 6 | 12 | 8 | 14 |
| **D** | 16 | 10 | 20 | 8 |

4. Fit a Straight line trend for the following data by method of least square:

| **Year** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** |
|---|---|---|---|---|---|---|
| **Production** | 7 | 9 | 12 | 15 | 18 | 23 |

5. There are three main brands of a certain powder. A set of 120 sample value is examined and found to be allotted among four groups:

| **Brands** | **A** | **B** | **C** | **D** |
|---|---|---|---|---|
| **I** | 0 | 4 | 8 | 15 |
| **II** | 5 | 8 | 13 | 6 |
| **III** | 18 | 19 | 11 | 13 |

6. From the following data construct an index number for 1995 taking 1994 as base.

| **Commodities** | **Price in 1994** | **Price in 1995** |
|---|---|---|
| **A** | 100 | 140 |
| **B** | 80 | 120 |
| **C** | 160 | 180 |
| **D** | 220 | 240 |
| **E** | 40 | 40 |

**Contd...**

7. Write the uses of Chi square test.

8. Explain the procedure for ANOVA in one way classification.

## Section B

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Find the inverse of
$$\begin{pmatrix} 2 & 3 & 4 \\ 3 & 2 & 1 \\ 1 & 1 & -2 \end{pmatrix}$$

10. A bag contains 50p, 25p and 10p coins in the ratio 5:9:4, amounting to Rs.206. Find the number of coins of each type.

11. Construct the index numbers of price from the following data by applying:
    (i) Laspeyer's method.
    (ii) Passches method.
    (iii) Fisher ideal method.

| | **1994** | | **1995** | |
|---|---|---|---|---|
| **Commodities** | **Price** | **Quantity** | **Price** | **Quantity** |
| **A** | 4 | 8 | 8 | 6 |
| **B** | 10 | 10 | 12 | 5 |
| **C** | 08 | 14 | 10 | 10 |
| **D** | 4 | 19 | 4 | 13 |

12. A set of 5 identical coins is tossed 320 times and number of heads appearing each time is recorded:

| **No of Heads** | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **Frequency** | 14 | 45 | 80 | 112 | 61 | 8 |

13. Perform a two way ANOVA on the given below:

| | | **Treatment I** | | |
|---|---|---|---|---|
| | | **I** | **II** | **III** |
| **Treatment II** | **I** | 30 | 26 | 38 |
| | **II** | 24 | 29 | 28 |
| | **III** | 33 | 24 | 35 |
| | **IV** | 36 | 31 | 30 |
| | **V** | 27 | 35 | 33 |

*****