

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.B.A. END SEMESTER EXAMINATIONS NOVEMBER -2023

SEMESTER - IV

**20UBACT4009 - Business Statistics - II**

Total Duration : 2 Hrs 30 Mins.

Total Marks : 60

**Section B**

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

1. Determine trend in the following time series taking 3 – yearly moving average.

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Value	2.7	2.9	3.4	5.2	5.8	6.4	9.3	9.2	9.8	10.2	11.0

2. Construct index numbers of price form the following data by applying:

i) Laspeyre's method ii) Pasche's method iii) Bowley's method

Item	Base Year		Current Year	
	Kg	Rate (Rs.)	Kg	Rate (Rs.)
Bread	10	3.00	8	3.25
Meat	20	15.00	15	20.00
Tea	2	25.00	3	23.00

3. Distinguish between sampling and non-sampling errors.
4. Out of 8000 graduates in a town 800 are females, out of 1600 graduate employees, 120 are females. Use chi square to determine if any distinction is made in appointment on the basis of sex. Value of  $\chi^2$  for 5% level for one degree of freedom is 3.4
5. Set up ANOVA Table for the following per hectare yield for three varieties of wheat, each grown in four plots.

Plots of Lands	Variety of wheat's		
	A1	A2	A3
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4

Also work out F- ratio and test whether there is significant difference among the average yields in the 3 varieties of wheat. (Table Value of F at 5% level = 4.26)

**Contd...**

6. From the following data, construct an index number for 2012 taking 2011 as base year by using simple aggregate method:

Commodity	Price in 2011	Price in 2012
A	90	95
B	40	60
C	90	110
D	30	35

7. Calculate the seasonal indices from the following data using the average method.

Year	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
1974	72	68	80	70
1975	76	70	82	74
1976	74	66	84	80
1977	76	74	84	78
1978	78	74	86	82

8. Write the procedure for large sample test.

### Section C

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

9. Fit a straight line trend by the method of least squares for the following date. Assuming that the same rate of change continues, what would be the predicted earnings for the year 1995?

Year	1987	88	89	90	91	92	93	94
Earnings	38	40	65	72	69	60	97	95

10. Using the following data, construct Fisher ideal index and show how it satisfies Time Reversal Test and Factor Reversal Test?

	2006		2007	
Commodity	Price	Value	Price	Value
A	8	80	10	120
B	10	120	12	96
C	5	40	5	50
D	4	56	3	60
E	20	100	25	150

11. Explain the different types of sampling..

12. The following table shows the distribution of digits in number chosen at random from a telephone directory,

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory.

13. Perform a two way ANOVA for the given table

Treatment II	Treatment I			
		1	2	3
	I	30	26	38
	II	24	29	28
	III	33	24	35
	IV	36	31	30
	V	27	35	33

Using the coding method substituting 30 from the given number(number of degrees of freedom for columns means (8,2) at 5% level = 19.4 and number of degrees of freedom for rows mean (8,4) at 5% level = 6.04)

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