B.B.A. DEGREE EXAMINATION,APRIL 2019
II Year IV Semester
Business Statistics - II

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define time series.
2. Write down the components of time series.
3. What do you mean by seasonal indicies.
4. State the uses of index number.
5. State the different types of index numbers.
6. Write the formula to calculate index number by Bowley' method.
7. Construct index number for 2002 taking 2001 as base from the following data.

Commodity	Price 2001	Price 2002
A	90	95
B	40	60
C	90	110
D	30	35

8. What do you know about sampling technique.
9. Define hypothesis.
10. State the different types of random sampling methods.
11. What do you know about judgement sampling?
12. State the uses of chi-square test.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Calculate three yearly moving average to the following data

Year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Number of students	15	18	17	20	23	25	29	33	36	40

14. Calculate Index Number using aggregate expenditure method from the following data.

Commodity	Weight	Price	
		Base year	Current year
A	100	8	12
B	25	6	7.5
C	10	5	5.25
D	20	48	52
E	65	15	16.5
F	30	19	27

15. Write short notes on stratified random sampling.
16. State the steps involved in hypothesis testing procedure.
17. Explain briefly about sampling errors.
18. A dice is tossed 120 times with the following results.

Number turned up	1	2	3	4	5	6	Total
Frequency	30	25	18	10	22	15	120

Test the hypothesis that the dice is unbiased.(table value of chi-square at 5% level for 5 d.f. is 11.07)

19. Perform one way analysis of variance.

A	B	C	D
25	19	21	15
19	35	28	23
21	30	32	25
29	28	23	20

(Given the table value of F(3,12) at 5% level is 3.49)

Section C $(2 \times 15 = 30)$ Marks

Answer any **TWO** questions

20. Fit a straight line by the method of least squares to the following data and also estimate the likely production for the year 2005.

Year	1998	1999	2000	2001	2002
Production	70	74	80	86	90

21. Using the following data, show how it satisfies Fisher's Time Reversal Test and Factor Reversal Test ?

Commodity	Price in rupees per unit		Number of units	
	Base year	Current year	Base year	Current year
A	5	6	10	12
B	7	10	12	8
C	10	12	8	8
D	4	5	5	6
E	8	8	7	8

22. A certain drug was administered to 500 people out of a total of 800 included in the sample to test its efficiency against thypoid. The are given below:

	Typhoid	No Typhoid
Drug	200	300
No Drug	280	20

On the basis of these data, can it be concluded that the drug is effective in preventing typhoid (Given chi-square table value for 1 d.f. at 5% level=3.84)

23. An experiment was designed to study the performance of 4 different detergents for cleaning fuel injectors. The following "cleanness" readings were obtained with specially designed equipment for 12 tanks of gas distributed over 3 different model of engines.

	Engine 1	Engine 2	Engine 3
Detergent A	45	43	51
Detergent B	47	46	52
Detergent C	48	50	55
Detergent D	42	37	49

Looking on the detergents of treatments and the engines at blocks, obtain the appropriate anova table and test at 1% level of significance whether difference in detergents and engines?

(Given table values: F(2,6) at 1% level is 10.92 & F(3,6) at 1% level is 9.78)