B.Com.(CS) DEGREE EXAMINATION,NOVEMBER 2018
II Year IV Semester
Core Major- Paper XII
STATISTICS - II

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

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

Answer any **TEN** questions

1. What are the various types of correlation?
2. Write any two difference between correlation and regression analysis
3. If two regression coefficient are 0.8 and 0.6, what would be the value of the coefficient of correlation
4. Write a short note on time series
5. What are the types of index numbers
6. From the following data construct an index for 2006 taking 2007 as base

Commodity	Price in 2006 (Rs)	Price in 2007 (Rs)
A	50	70
B	40	60
C	80	90
D	110	120
E	20	20

7. Calculate consumer price index for 2007, where the value of $\sum pw = 15800$ and $\sum w = 100$.
8. Write the situation when time reversal and factor reversal test will be satisfied.
9. Mention any two limitations of chi square test
10. What is F test
11. Given: Sample size:n= 50

    Sample mean = 999.50 gms

    Population mean μ= 1000 gms

    Population SD = 1 gram

    Calculate Z test
12. Explain the principle of least square

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

Answer any **FIVE** questions

13. Ten competitors in a beauty contest are ranked by 3 Judges in the following area

1st Judge	1	6	5	10	3	2	4	9	7	8
2nd Judge	3	5	8	4	7	10	2	1	6	9
3rd Judge	6	4	9	8	1	2	3	10	5	7

Use the rank correlation coefficient to determine which pair of judge has the nearest apporach to common taste in beauty.

14. In a Regression analysis, Height of the Father's and son's are given below. Find the height of the son when the height of the father is 70 inches

Father(Inches)	71	68	66	67	70	71	70	73	72	65	66
Son(Inches)	69	64	65	63	65	62	65	64	66	59	62

15. Assume a four yearly cycle and calculate the trend by the method of moving averages from the following data relating to the production of tea in India

Year	Production(in lbs)
1998	464
1999	515
2000	518
2001	467
2002	502
2003	540
2004	557
2005	571
2006	586
2007	612

16. From the following data given below, calculate index numbers by taking

    a) 1999 as base year

    b) 2006 as base year

Year	Price of commodity X
1999	4
2000	5
2001	6
2002	7
2003	8
2004	10
2005	9
2006	10
2007	11

17. From the data given below about the treatment of 250 patients suffering from a disease, state whether the new treatment is superior to the conventional treatment.

Treatment	No. Of patients		
	Favourable	Not favourable	Total
New	140	30	170
Conventional	60	20	80
Total	200	50	250

(Given the degree of freedom = 1, chi square 5% = 3.84)

18. The following data present the yields in quintals of common ten subdivisions of equal area of two agricultural plots:

Plot 1	6.2	5.7	6.5	6.0	6.3	5.8	5.7	6.0	6.0	5.8
Plot 2	5.6	5.9	5.6	5.7	5.8	5.7	6.0	5.5.	5.7	5.5

Test whether two samples taken from two random population have the same variance (5% point of F for v1 = 9 & v2 = 9 is 3.18)

19. A wholesaler in apple claims that only 4% of the apples supplied by him are defective. A random sample of 600 apples contained 36 defective apples. Test the claim of the wholesaler.

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

Answer any **TWO** questions

20. The following table gives the frequency, according to group of marks obtained by 67 students in an intelligence test. Measure the degree of relationship between age and intelligence test:

	Age in years				Total
Test marks	18	19	20	21	
200 - 250	4	4	2	1	11
250 - 300	3	5	4	2	14
300 - 350	2	6	8	5	21
350 - 400	1	4	6	10	21
Total	10	19	20	18	67

21. From the data given below find:

a) the two regression equations

b) the coefficient of correlation between marks in economics and statistics

c) the most likely marks in statistics when the marks in Economics are 30.

Marks in economics	25	28	35	32	31	36	29	38	34	32
Marks in statistics	43	46	49	41	36	32	31	30	33	39

22. Construct index numbers of price from the following data by applying:

    a) Laspeyres method c) Bowley's method

    b) Paache method d) Fishers ideal method

Commodity	2005		2006	
	Price	Quantity	Price	Quantity
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

23. Using the following data construct Fishers Ideal Index & show that it satisfies factor reversal test & time reversal test

Commodity	Price (in Rs)/ unit		No 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