



LOYOLA-INTERNATIONAL ACADEMIC COLLABORATION

LOYOLA COLLEGE CHENNAI – 600 034

BBA-FRANCE – END SEMESTER EXAMINATION

III SEMESTER – OCTOBER / NOVEMBER 2019

BBA 337 – STATISTICS FOR BUSINESS II

Date : 06/11/2019

Dept. No.

Max. : 100 Marks

Time : 9 A.M. – 12 P.M.

PART A

(Answer any five)

5x6=30 marks

1. Identify the four principal components of a time series and explain the kind of change , over time, to which each applies.
2. What is deseasonalisation? Where is it used?
3. What is the logic for time reversal and Factor reversal test?
4. What is a questionnaire. What are the prerequisites for a good questionnaire
5. What is a fishbone diagram?
6. Explain time reversal and factor reversal test
7. What is interpolation? Mention the methods

PART B

(Answer any 10)

10x7=70 marks

8. The following are the annual premiums charged by LIC. Calculate the premium payable at the age of 26.

Age in yrs	Premium
20	23
25	26
30	30
35	35
40	42

9. The following table gives the profit of a farm for the period 1985 to 1990. The figure for 1989 is missing. Interpolate the same by graphic method.

Year	1985	1986	1987	1988	1989	1990
Profit(Lakhs)	108	113	111	110	?	114

10. The following table gives the quantity of cement produced in India in the year X. Find the probable production for the year 1984.

Year(X)	1980	1982	1984	1986	1988	1990
Qty Y in 000	39	85	?	151	264	388

11. Ten competitors in a beauty contest are ranked by three judges in the following order

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

Use the rank correlation coefficient to determine which pair of judges has the nearest approach to common tastes in beauty

12. Find out coefficient of correlation by concurrent deviation method from the following data

X	100	120	135	135	115	110	120
Y	50	40	60	80	80	55	65

13. Draw a scatter diagram from the foll data and interpret

Height	Weight	Height	Weight
62	50	70	60
72	65	64	59
70	63	65	58
60	52	60	54
67	66	70	65

14. Compute by suitable method the index number of quantity from the data given below

Commodities	1989		1990	
	Price	Tot.value	Price	Tot.value
A	8	80	10	110
B	10	90	12	108
C	16	256	20	340

15. The following figures relate to the prices and quantities of certain commodities. Construct an appropriate index number and find out whether it satisfies time reversal test.

Commodities	1989		1990	
	Price	Qty	Price	Qty
A	30	50	32	50
B	25	40	30	35
C	18	50	16	55

16. Gray P Saeurs owns the corner fruit stand in a small town. After hearing many complaints that his price constantly change during the summer, he has decided to see whether this is true. Based on the following data, help Mr. Saeurs calculate the appropriate weighted aggregate price indices for each month. Use June as the base period. Is your result a Laspeyres or a Paasche index?

Fruit	Price per pound			No of pounds sold
	June	July	August	June
Apples	0.59	0.64	0.69	150
Oranges	0.75	0.65	0.70	200
Peaches	0.87	0.90	0.85	125
Watermelons	1.00	1.10	0.95	350
Cantaloupes	0.95	0.89	0.90	150

17. As a part of the evaluation of the possible acquisition, A New York City conglomerate has collected the sales information.

Product	Average Annual Price		Total Dollar value(000)
	1993	1995	1993
Calculators	\$27	\$20	\$150
Radios	30	42	900
Portable TVs	157	145	1370

Calculate the unweighted average of relatives price index using 1993 as the base period.

Calculate the weighted average of relatives price index using the dollar value for each product in 1993 as the appropriate set of weights and 1995 as the base year.

18. A food company puts mango juice into cans advertised as containing 10 ounces of the juice. The weights of the juice drained from cans immediately after filling for 20 samples are taken by a random method (at an interval of every 30 minutes). Each of the samples includes 4 cans. The samples are tabulated in the following table. The weight in the table are given in units of 0.01 ounces in excess of 10 ounces. For example, the weight of a juice drained from the first can of the sample is 10.15 ounces which is in excess of 10 ounces of 0.15 ounces. Since the unit in the table is 0.01 ounces, the excess is recorded as 15 units in the table. Construct an X chart to control the weights of mango juice for the filling.

Sample Number	C1	C2	C3	C4
1	15	12	13	20
2	10	8	8	14
3	8	15	17	10
4	15	17	11	12
5	18	13	15	4
6	20	16	14	20
7	15	19	23	17
8	13	23	14	16
9	9	8	18	5
10	6	10	24	20
11	5	12	20	15
12	3	15	18	18
13	6	18	12	10
14	12	9	15	18
15	15	15	6	16
16	18	17	8	15
17	13	16	5	4
18	10	20	8	10
19	5	15	10	12
20	6	14	12	14

19. The number of faculty-owned personal computers at the University of Ohio increased dramatically between 1990 and 1995.

Year	1990	1991	1992	1993	1994	1995
Number of PCs	50	110	350	1,020	1,950	3,710

Develop a linear estimating equation that best describes these data.

Develop a second-degree estimating equation that best describes these data.

Estimate the number of PCs that will be in use at the university in 1999, using both equations.

If there are 8,000 faculty members at the university, which equation is the better predictor? Why?

20. Here are data describing the air pollution rate (in ppm of particles in the air) in a western city

Year	1980	1985	1990	1995
Pollution rate	220	350	800	2450

Would a linear or a second degree estimating equation provide the better prediction of future pollution in that city?

Considering the economic, social and political environment, would you change your answer to part a?

Describe how political and social action could change the effectiveness of either of the estimating equations in part a.

21. The owner of The Pleasure - Glide Boat Company has compiled the following quarterly figures regarding the company's level of accounts receivable over the last 5 years (X \$1,000):

Year	Spring	Summer	Fall	Winter
1991	102	120	90	78
1992	110	126	95	83
1993	111	128	97	86
1994	115	135	103	91
1995	122	144	110	98

- Calculate a 4-quarter centered moving average.
- Find the percentage of actual to moving average for each period.
- Determine the modified seasonal indices and the seasonal indices.

22. Here are data describing the air pollution rate (in ppm of particles in the air) in a western city:

Year	1980	1985	1990	1995
Pollution rate	220	350	800	2450

Would a linear or a second- degree estimating, equation provide the better prediction of future pollution in that city?

Considering the economic, social, and political environment, would you change your answer to part (a)?

Described how political and social action could change the effectiveness of either of the estimating equations in part (a).

23. Joe Hang, the sales manager responsible for the appliance division of a large consumer-products company, has collected the following data regarding unit sales for his division during the last 5 years:

Year	1991	1992	1993	1994	1995
Units (X 10,000)	32	46	50	66	68

The equation describing the secular trend for appliance sales is

$$\hat{Y} = 52.4 + 9.2x, \text{ where } 1993 = 0, \text{ and } x \text{ units} = 1 \text{ year.}$$

Calculate the percent of trend for these data.

Calculate the relative cyclical residential for these data.

Plot the percent of trend from part (a).

In which does the largest fluctuation from trend occur, and is it the same for both methods
