PG Odd Semester (CBCS) Exam. December, 2022

Business Administration

(1st Semester)

Course No: CP-105 (N)

(Data Analysis and Decision Tools)

Full Marks: 70

Pass Marks : 28

Time: 3 hours

The figures in the right margin indicate full marks for the question.

1. (a) What is the most important meaure of variability and why?

(b) The data given below are exchange rate values of the Indian Rupee, given as the value of one US dollar's worth in rupee. The first coloumn of 10 numbers is for a period in the beginning of 1995 and the second column of 10 numbers is for a similar period in the beginning of 2007. During which period, of these two set of 10 days, was the value of the Rupee more volatile?

1995	**2007**
0.6332	0.5087
0.6254	0.5077
0.6286	0.5100
0.6359	0.5143
0.6336	0.5149
0.6427	0.5177
0.6209	0.5164

0.6214	0.5180
0.6204	0.5096
0.6325	0.5182

5+9=14

2. (a) What is a population of a research study? What do you understand by sample and sampling? 1+1+1=3

   (b) What is sample size? How will you establish the formula fo determining sample size for a finite and infinite population from the Central limit theorem. 1+5+5=11

Or

3. (a) Discuss the various types of sampling methods. 3+3

   (b) Explain the following : 8

   (i) Type I error & Type II error

   (ii) α and β

   (iii) Level of significance

   (iv) Degree of freedom

   (v) Parameters and statistics

   (vi) Parametric and non-parametric statistics

   (vii) Two tailed test and one tailed test

   (viii) Steps in hypothesis testing

4. (a) What is non-parametric test? Mention the various non-parametric test.

   (b) From the data below about the treatment of 250 patients suffering from a disease. State

Firm-B

Firm-A	b_1	b_2	b_3	b_4
a_1	35	65	25	5
a2	30	20	15	0
a3	40	50	0	10
a4	55	60	0	15

14

8. (a) Solve the assignment problem for optional solution using HAM. The value of the cells with the matrix is given below.

   Time taken (in minutes) by 4 workers

Worker	Job			
	A	B	C	D
1	45	40	51	67
2	57	42	63	55
3	49	52	48	64
4	41	45	60	55

Also generate the alrorithm for general assignment problem with Excel Sover tools. Mention the steps only.

   (b) Determine the optimum Basic Feasible Solution to the transportation problem using MODI method.

Demand →

↓ Sourse	D_1	D_2	D_3	D_4	a_i
O_1	5	3	6	2	19
O_2	4	7	9	1	37
O_3	3	4	7	5	34
b_j	16	18	3	25	

7+7

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whether the new treatment is superior to conventional treatment.

Treatment	No. of Patient		
	Favourable	Unfavourable	
New	140	30	170
Conventional	60	20	80
	200	50	250

(Given for degree of freedom=1, Chi Square value at 5% =3.84) 6+8=14

Or

5. (a) What is Regression Analysis? How does it differ from Correlation analysis? 1+1

(b) The following table shows the cost and profits for eight years of a company :

X (cost) :	52	45	36	72	65	47	25
Y (cost) :	53	51	25	79	43	60	33

(i) Obtain the regression equation of Y or X and find the expected profit for a year when the cost is 49. 4+1

(ii) Obtain the regression equation of X or Y and obtain the cost when the profit is 60. 4+1

(iii) Find the correlation between X and Y. 2

6. Mr. Rohit is the operations manager at Z Company who often take decision related to the business. The problem that Mr. Rohit identifies is whether to expand their product line by manufacturing and marketing a new product, backyard sttorage sheds. Mr. Rohit decides that their alternatives are to construct (i) a large plant to manufacture the storage sheds (ii) a small plants or (iii) no plan at all. Mr. Rohit determines that these are two

possible outcomes : the market for storage sheds could be favourable, meaning that there is a high demand for the product or it could be unfavourable, meaning that there is a low demand for the sheds. In order to present infront of the board, Mr. Rohit developed the pay off table with the following values.

Alternative	Status of Nature	
	Favourable Mkt (Rs)	Unfavourable Mkt (Rs.)
Construct a large plot	2,00,000	–1,80,000
Construct a small plot	1,00,000	– 20,000
Do nothing	0	0

You are now hired in the team of Mr. Rohit. As a Management Professional you are now expected to undate Mr. Rohit about the Decision Making process under Risk with probability of Favourable Market 80% and unfavourable market 20% with EMV as well as EVPI and EOL. You are also instructed by Mr. Rohit to develop the Decision Tree for the above case. 14

Or

7. Two fast food firms A and B are competing for an increased market share. To improve their market share both the firms have the following option.

(a) Give coupons (a_1, b_1)

(b) Decrease price (a_2, b_2)

(c) Maintain present strategy (a_3, b_3)

(d) Incrase advertising (a_4, b_4)

Find the value of the game with the following table pay off matrix— increase in market share for Firm A