

**MASTER OF LIBRARY AND INFORMATION SCIENCE(DIGITAL LIBRARY)
EXAMINATION # 2022**

(1ST Year 1st Semester)

Quantitative Techniques

Course: MLDL- 03

Time: Two Hours

Full Marks: 50

Answer all questions

- 1A. a) Two random samples of abstracts have been drawn from an abstracting journal--- one written in English and another written in German. It is required to know from the following table, abstracts which are written in English are significantly different in length from the average length of abstracts which are written in German:

English(X_1): 65 93 147 81 71 107 93 65 74 112 41 102

German(X_2): 61 97 94 90 60 113 81 113 62 31

(Given: $\bar{X}_1 = 87.6$, $\bar{X}_2 = 80.2$, t for 20 degrees of freedom in two-tailed test at 5% and 1% significance levels are 2.086 and 2.845)

10

- b) Calculate the Spearman's Rank Correlation co-efficient between length of abstract and number of pages from the following table:

Sl. No.	1	2	3	4	5	6	7	8	9	10
Length of abstract(X)	17	13	15	16	6	11	14	9	7	12
No. of Pages(Y)	36	46	35	24	12	18	27	22	2	8

10

OR

- 1B. a) Describe briefly the major components of time series.

8

b) Calculate the seasonal variation from the following table:

10

Year	Season			
	W	Sp	Su	Au
2019	3	2	1	2
2020	4	3	2	4
2021	6	5	4	6

c) De-seasonalise the data assuming additive model for the time series components. 2

2A.a) Describe with a diagram the essential components of a queuing system. 6

b) Arrivals at a library counter are assumed to follow a Poisson distribution with an average time of 10 minutes between one arrival and the next. The duration of providing services is considered to be distributed exponentially with a mean time of 3 minutes.

Find

- i) Percentage of time for which the channel is busy 3
- ii) Average number of individuals in the system 4
- iii) Average waiting time of users in the system 4
- iv) Percentage of users who will not have to wait for service 3

OR

2B. a) Define Work study . 3

b) How can it be correlated with Time and Motion study? 4

c) What is the main purpose of doing Work study? 3

d) Discuss the role of human beings in successful implementation of Work study . 10

3. Write short notes on **any two** of the following: 5X2

a) Measures of dispersion b) PERT vs CPM c) Queue discipline

d) Frequency distribution diagrams