

## Faculty of Science

## B.Sc (Statistics) III-Year, CBCS-VI Semester Examinations, May/June 2019

## PAPER: OPERATIONS RESEARCH

Time: 3 Hours

Max Marks: 60

## Section-A

I. Answer any Three of the following questions.

(3x5=15 Marks)

1. Explain the scope of O.R
2. What is degeneracy in LPP?
3. Explain Primal - Dual relationship with an example.
4. Show that TP is a special case of LPP
5. Write a short note on Travelling salesman problem.
6. Define sequencing problem.

## Section-B

II. Answer the following questions.

(3x15=45 Marks)

7. (a) Explain the simplex method to solve an LPP.

(OR)

(b) What is an artificial variable and explain the procedure for Big- M to solve an Lpp

8. (a) Consider the following transportation problem:

Source	Destination				Availability
	1	2	3	4	
1	20	22	17	4	120
2	24	37	9	7	70
3	32	37	20	15	50
Requirement	60	40	30	110	240

Determine an IBFS using i) North west corner rule ii) Matrix minima method.

(OR)

(b) Explain various steps involved in finding optimum solution of TP by MODI method.

9. (a) What is Assignment problem? Explain various steps involved in finding the optimum solution to an AP by Hungarian method.

(OR)

(b) Determine the optimal sequence of jobs that minimizes the total elapsed time based on the following information.

Jobs	1	2	3	4	5	6	7
Machine A	10	8	12	6	9	11	9
Machine B	6	4	6	5	3	4	2
Machine C	8	7	5	9	10	6	5

Processing time on machines is given in hours and passing is not allowed.

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**Faculty of Science****B.Sc (Statistics) III-Year, CBCS-VI Semester Examinations, May/June 2019****PAPER: BIO-STATISTICS - II**

Time: 3 Hours

Max Marks: 60

**Section-A**

I. Answer any Three of the following questions. (3x5=15 Marks)

1. Define Survival function and Hazard rate.
2. What is mean by Linear failure rate and likelihood ratio?
3. Define Bathtub failure rate, Actuarial estimator.
4. Define Kaplan-Meier estimator.
5. What are the principles of epidemiological investigator?
6. Define quantitative methods in screening.

**Section-B**

II. Answer the following questions. (3x15=45 Marks)

7. (a) Explain the types of censoring for Life distributions in Exponential and Gamma.  
(OR)  
(b) Explain Point estimator, confidence interval, MLE, scores.
8. (a) Explain the test procedure for exponentiality against nonparametric classes.  
(OR)  
(b) Write short notes on mean residual life and their elementary properties.
9. (a) Explain measures of disease frequency, measures of effect and association.  
(OR)  
(b) What are the regression models for the estimation of relative risk?

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