

VINAYAKA MISSIONS SIKKIM UNIVERSITY

(Estd. by Sikkim Legislative Act vide VMSU Act No.11 of 2008)

DIRECTORATE OF DISTANCE EDUCATION

NH 10-A, Tadong, East Sikkim-737102

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Programme: MBA **Session:** 2015-16 **Full Marks:** 10
Course/Subject Name: Applied Operation Research and Statistics **Course/Subject Code:** CM 4201
Assignment No. 1 **Last Date of Submission:** 31st March 2016

NOTE : All Sections in the Assignments are compulsory to be attempted as per Instructions.

Section -A

Choose the correct option

0.5x10 = 5

1. Operations Research approach is _____.
A. multi-disciplinary B. scientific C. intuitive D. collects essential data
2. Mathematical model of linear programming problem is important because _____.
A. it helps in converting the verbal description and numerical data into mathematical expression
B. decision makers prefer to work with formal models
C. it captures the relevant relationship among decision factors
D. it enables the use of algebraic technique
3. Graphical method of linear programming is useful when the number of decision variable is _____.
A. 1 B. 2 C. 3 D. 4
4. While solving a linear programming problem infeasibility may be removed by _____.
A. adding another constraint B. adding another variable
C. removing a constraint D. removing a variable
5. The dummy source or destination in a transportation problem is added to _____.
A. satisfy rim conditions
B. prevent solution from becoming degenerate
C. ensure that total cost does not exceed a limit
D. the solution not be degenerate
6. Which of the following methods is used to verify the optimality of the current solution of the transportation problem _____.
A. Least cost method B. Vogel's Approximation method
C. Row minima method D. Modified Distribution method

7. An unoccupied cell in the transportation method is analogous to a _____.
- A. $Z_j - C_j$ value in the simplex table.
 - B. variable in the B-column in the simplex table.
 - C. variable not in the B-column in the simplex table.
 - D. value in the XB column in the simplex table.
8. Traveling salesman problem will have a total of _____ different sequences.
- A. $n!$
 - B. $n-1$
 - C. $(n-a)!$
 - D. n
9. In the network, one activity may connect any _____ nodes
- A. 1
 - B. 2
 - C. 3
 - D. 4
10. In the transportation table, empty cells will be called _____.
- A. occupied
 - B. unoccupied
 - C. no
 - D. finite

Section -B

Answer any Five questions from the following within 50 words

[1x5=5]

1. Define applied operation research.
2. What is assignment problem of operation research?
3. While solving a linear programming problem infeasibility may be removed by removing a constraint. How?
4. Define graphical and simplex method of linear programming.
5. Explain sequencing problem.
6. Write the meaning of game theory.
7. Write short notes on network project scheduling.

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Assignment No. 2

Last Date of Submission: 15th April 2016

NOTE : All Sections in the Assignments are compulsory to be attempted as per Instructions.

Section -A

Choose the correct option

0.5x10 = 5

1. If you drew all possible samples from some population, calculated the mean for each of the samples, and constructed a line graph (showing the shape of the distribution) based on all of those means, what would you have?
A. A population distribution B. A sample distribution
C. A sampling distribution D. A parameter distribution
2. What is the standard deviation of a sampling distribution called?
A. Sampling error B. Sample error C. Standard error D. Simple error
3. _____ results if you fail to reject the null hypothesis when the null hypothesis is actually false.
A. Type I error B. Type II error C. Type III error D. Type IV error
4. The cutoff the researcher uses to decide whether to reject the null hypothesis is called the:
A. Significance level B. Alpha level C. Probability value D. Both a and b are correct
5. What is the key question in the field of statistical estimation?
A. Based on my random sample, what is my estimate of the population parameter?
B. Based on my random sample, what is my estimate of normal distribution?
C. Is the value of my sample statistic unlikely enough for me to reject the null hypothesis?
D. There is no key question in statistical estimation
6. The “equals” sign (=) is included in which hypothesis when conducting hypothesis testing?
A. Null
B. Alternative
C. It can appear in both the null and the alternative hypothesis
D. Correlation

7. A process by which we estimate the value of dependent variable on the basis of one or more independent variables is called:

- A. Correlation B. Regression C. Residual D. Slope

8. The independent variable is also called:

- A. Regressor B. Regressand C. Predictand D. Estimated

9. The signs of regression coefficients and correlation coefficient are always:

- A. Different B. Same C. Positive D. Negative

10. In correlation problem both variables are:

- A. Equal B. Unknown C. Fixed D. Random

Section -B

Answer any Five questions from the following within 50 words

[1x5=5]

1. Define sampling distribution.
2. Explain normal distribution.
3. Define null hypothesis.
4. Differentiate between correlation and regression.
5. Write down the assumption of ANNOVA.
6. What is seasonal variation of time series analysis?
7. Define estimation of proportion.

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Assignment No. 3

Last Date of Submission: 15th April 2016

Choose the correct option

0.5x10 = 5

- The solution to a transportation problem with m-sources and n-destinations is feasible if the numbers of allocations are _____.
A. m+n B. mn C. m-n D. m+n-1
- Linear Programming Problem is a technique of finding the _____.
A. optimal value B. approximate value C. initial value D. infeasible value
- A activity in a network diagram is said to be _____ if the delay in its start will further delay the project completion time.
A. forward pass B. backward pass C. critical. D. non-critical.
- Which of the following statements sounds like a null hypothesis?
A. The coin is not fair
B. There is a correlation in the population
C. There is no difference between male and female incomes in the population
D. The defendant is guilty
- Which of the following can be viewed as an effect size indicator?
A. r-squared B. Eta-squared C. Omega-squared D. All of the above.
- Who coined the term Operations Research?
A.J.F. McCloskey B. F.N. Trefethen C. P.F. Adams D.Both A and B
- Negative regression coefficient indicates that the movement of the variables is in:
A. Same direction B. Opposite direction C. Both (a) and (b) D. Difficult to tell
- If the coefficient of correlation between the variables X and Y is r, the coefficient of correlation between X² and Y² is:
A. -1 B. 1 C. r D. r²

9. The linear function to be maximized or minimized is called _____ function.
A. injective B. surjective C. bijective D. optimal

10. In the regression equation $Y = a + bX$, b is called:
A. Slope B. Regression coefficient C. Intercept D. Both (a) and (b)