Assignment MSTE-011

for

M.Sc. (Applied Statistics) (MSCAST)

Valid from January 2025 to December 2025

Dear Learner,

Welcome to the M.Sc. (Applied Statistics) Programme.

As per the university guidelines, you need to complete the assignment for each theory course. Note that there are no assignments for lab courses in the MSCAST programme, namely, MSTL-011, MSTL-012, MSTL-013, MSTL-014, and MSTL-015. You should remember that writing answers to an assignment's questions will improve your writing skills and prepare you for the term-end examination.

It is compulsory to submit the assignments within the stipulated time to be eligible to appear in the term-end examination. You will not be allowed to appear for the term-end examination for a course if you do not submit the assignment for that course by the due date. As per the University guidelines, if you appear in the term-end examination of a course without submitting its assignment, the result of the term-end examination is liable to be cancelled/ withheld.

The assignments constitute the continuous component of the evaluation process and have 30% weightage in the final grading.

Before you write the assignments, you are advised to first go through the self-learning material for that course and then prepare the assignments carefully by following the instructions pertaining to the assignments. Your responses should not be a verbatim reproduction of the textual materials provided for self-learning purposes, but it should be in your own words.

If you have any doubts or problems pertaining to the course material and assignments, contact the programme in charge or the academic counsellor at your study centre. If you still have problems related to this assignment, feel free to contact the course coordinator.

Wishing you all the best in successfully completing the programme.

(Dr. Gajraj Singh)
Course Coordinators, MSTE-011
Email: gajrajsingh@ignou.ac.in

Instructions:

➤ Submit the assignments within the stipulated time. Otherwise, you will not be permitted to appear for the term-end examination.

➤ Solve the latest assignments uploaded for the current year/session.

➤ Read the instructions related to the assignments mentioned in the Programme Guide.

➤ Use only A-4 size paper to write your responses. It is mandatory to write all assignments neatly in your own handwriting. Typed or printed copies of the assignments will not be accepted. Note that you may use the printout only if a question specifically asks for the output of a program in MST-015 and MST-024.

➤ All questions given in the assignments are compulsory for each course.

➤ Express your response in your own words. You are advised to restrict your response based on the marks assigned to it. This will also help you to distribute your time in writing or completing your assignments on time.

➤ Securely fasten multiple pages together (you can staple or tie them) and number them carefully for each assignment separately.

➤ Do not forget to enclose the assignment question sheet of that course after the cover page of the assignment response (answer sheets). It is not compulsory to write each question separately before answering the question. Mention the question number for each answer.

➤ The solved assignment must be submitted at the Study Centre allotted to you before the due date set by the University. Please check the IGNOU website for updated information regarding the due date of assignment submission.

➤ You are advised to mention all information on the first page of the assignment response sheet, given on the next page.

➤ **Keep a copy of the assignment answer sheets with you before submission for future reference.**

ASSIGNMENT CODE: MSTE-011/TMA/2025

NAME: _____

ENROLLMENT NO: _____

ADMISSION CYCLE: _____

PROGRAMME CODE: **MSCAST**

COURSE CODE: **MSTE-011**

COURSE TITLE: **OPERATIONS RESEARCH**

REGIONAL CENTRE CODE: _____

STUDY CENTRE CODE: _____

ADDRESS: _____

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_____

CONTACT NUMBER: _____

EMAIL ID: _____

DATE OF SUBMISSION: _____

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THE PEOPLE'S
UNIVERSITY

School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068 (INDIA)

TUTOR MARKED ASSIGNMENT
MSTE-011: OPERATIONS RESEARCH

Note: All questions are compulsory. The answer should be in your handwriting. All questions carry equal marks

1(a) State whether the following statements are true or false and also give the reason in support of your answer. **(5×2=10)**

   (i) The four primary functional areas of a firm are marketing, finance, operations, and human resources.

   (ii) Operations research is concerned with the systematic analysis of work methods.

   (iii) Productivity is the most common measure of competitiveness.

   (iv) Ensuring good quality underlies all operational decisions.

   (v) In a two person zero-sum game, a saddle point always exists

2 (a) Define operations research. Explain critically the limitations of various definitions as you understand them.

  (b) What is the purpose of a mathematical model? How does a model achieve this purpose? In your answer consider the concept of a model an abstraction of reality.' **(10×2=20)**

3 (a) What are the four major types of allocation problems that can be solved using the linear programming technique? Briefly explain each with an example.

  (b) What is a game in game theory? What are the properties of a game? Explain the 'best strategy' on the basis of minimax criterion of optimality **(10×2=20)**

4 (a) What are inventory models? Enumerate various types of inventory models and describe them briefly.

  (b) Differentiate between a fixed-order quantity system and a fixed interval system. Mention the advantages and disadvantages of both. **(15+10=25)**

5 (a) Formulate and solve a discrete stochastic model for a single product with lead time zero. The storage and shortage costs are independent of time. The set-up cost is constant.

  (b) Explain the concept of dynamic programming and the relation between dynamic and linear programming approach. **(15+10=25)**