ASSIGNMENT BOOKLET

Post Graduate Diploma in Applied Statistics
(Specialisations in Industrial Statistics/Biostatistics)

MSTE-003: Biostatistics-I
(Valid from 1ˢᵗ January 2026 to 31ˢᵗ December, 2026)

> **It is compulsory to submit the assignment before filling the Examination Form. Candidates should submit the latest assignment for the courses for which they filled the examination form. Only Work books/Lab Record Books are needed to be submitted for the Lab Courses.**

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THE PEOPLE'S UNIVERSITY

School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068
(2026)

Dear Student,

Please read the information on assignments in the Programme Guide that we have sent you after your enrolment. A weightage of 30%, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment for the theory course MSTE-003 has been given.

Instructions for Formatting Your Assignments

Before attempting the assignment, please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ENROLLMENT NO :…………………………………………

NAME :…………………………………………

ADDRESS :…………………………………………

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PROGRAMME CODE: <u>PGDAST</u>

COURSE CODE: <u>MST-001</u>

COURSE TITLE: <u>FOUNDATION IN MATHEMATICS AND STATISTICS</u>

STUDY CENTRE: …………………..……. DATE: …………….………………...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) This assignment is to be submitted at the Study Centre.

   We strongly suggest that you should retain a copy of your answer sheets.

6) This assignment is valid from January 1st, 2026 up to December 31, 2026.

7) The latest assignments should be submitted by the candidate.

8) **You cannot fill the Exam Form for this course** till you have submitted this assignment. So solve it and **submit it to your study centre at the earliest.** If you wish to appear in the **TEE, June 2026,** you should submit your TMAs by **March 31, 2026.** Similarly, If you wish to appear in the **TEE, December 2026,** you should submit your TMAs by **September 30, 2026.**

We wish you good luck.

TUTOR MARKED ASSIGNMENT
MSTE-003: Biostatistics-I

Note: All questions are compulsory. Answer in your own words.

1. State whether the following statements are **True** or **False**. Give reason in support of your answer: **(2×5=10)**

   (a) Equality of slopes is the basic requirement for the parallel-line assay.

   (b) The quantal assay is applicable when the response is the percentage of subjects who responded to a treatment at different doses.

   (c) A complete life table is more elaborate than an abridged life table.

   (d) Primary prevention includes strategies designed to reduce the incidence of disease.

   (e) In Phase II of a clinical trial, we determine a safe dosage range and identify potential side effects.

2. In a quantal assay, the number of cured cases for five doses of a standard and four doses of a new test drug are recorded in the following table:

	d_i	n_i	r_i
Standard	3	28	4
	6	30	8
	9	24	12
	12	32	22
	15	27	21
Test	2	31	3
	4	25	9
	6	30	16
	8	25	16

   Determine the median effective dose for the standard and test drugs using regression model. **(20)**

3(a). Write a short note on the Sampling Registration method of data collection for vital statistics.

(b) The number of births occurring in a country in 2015 classified according to age of mother, together with the female population in each group of the childbearing period, is given as follows:

Age	Female Population (in '000)	Number of Births to the mother in the age group
15 - 19	84.79	2,343
20 - 24	70.01	14,541
25 - 29	72.66	16,736
30 - 34	75.92	10,218
35 - 39	75.10	5,134
40 - 44	71.62	1,422
45 - 49	66.66	93
Total	516.66	50,487

The total population of the country in 2015 was 2285.8 thousand. Using the given information, determine the following:

(i) CBR,
(ii) GFR,
(iii) ASFR for the country in 1958. **(6+14)**

4(a). In a hypothetical study, 10 patients with kidney disease were randomly assigned to receive two dialysis methods (A and B). 5 patients received Dialysis-A followed by Dialysis-B, and the remaining 5 received Dialysis-B followed by Dialysis-A. The kidney function scores of these patients are given as:

	Group-I (AB Sequence)				
Patient No.	1	2	3	4	5
Dialysis-A	69	73	50	69	76
Dialysis-B	68	79	68	72	85

	Group-II (BA Sequence)				
Patient No.	6	7	8	9	10
Dialysis-B	57	70	75	70	69
Dialysis-A	51	71	53	62	64

Test whether the mean score for dialysis-A is different from the mean score of dialysis-B, assuming no carry-over effect.

(b) Describe descriptive and analytic epidemiology.

(10+10)

5(a). Explain any *five* types of biases in clinical trials.

(b) Differentiate between direct and indirect bioassays.

(c) Explain the steps taken for minimising bias in a research setup of a clinical trial.

(d) Define experimental and non-experimental studies.

(7+10+6+7)