INTERNAL ASSIGNMENT QUESTIONS
Advanced Diploma in Data science

Semester - I

2025

PROF. G. RAM REDDY CENTRE FOR DISTANCE EDUCATION
(RECOGNISED BY THE DISTANCE EDUCATION BUREAU, UGC, NEW DELHI)
OSMANIA UNIVERSITY
(A University with Potential for Excellence and Re-Accredited by NAAC with "A" + Grade)

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PROF.G.RAM REDDY CENTRE FOR DISTANCE EDUCATION
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Dear Students,

Every student of Advanced Diploma in Data Science Semester I has to write and submit **Assignment** for each paper compulsorily. Each assignment carries **30 marks.** The marks awarded to the students will be forwarded to the Examination Branch, OU for inclusion in the marks memo. If the student fail to submit Internal Assignments before the stipulated date, the internal marks will not be added in the final marks memo under any circumstances. The assignments will not be accepted after the stipulated date. **Candidates should submit assignments only in the academic year in which the examination fee is paid for the examination for the first time.**

Candidates are required to submit the Exam fee receipt along with the assignment answers scripts at the concerned counter on or before **30-08-2025** and obtain proper submission receipt.

ASSIGNMENT WITHOUT EXAMINATION FEE PAYMENT RECEIPT (ONLINE) WILL NOT BE ACCEPTED

Assignments on Printed / Photocopy / Typed will not be accepted and will not be valued at any cost. Only HAND WRITTEN ASSIGNMENTS will be accepted and valued.

Students are Advised not use Black Pen.

Methodology for writing the Assignments (Instructions) :

1. First read the subject matter in the course material that is supplied to you.
2. If possible read the subject matter in the books suggested for further reading.
3. You are welcome to use the PGRRCDE Library on all working days for collecting information on the topic of your assignments. (10.30 am to 5.00 pm).
4. Give a final reading to the answer you have written and see whether you can delete unimportant or repetitive words.
5. The cover page of the each theory assignments must have information as given in FORMAT below.

FORMAT

1. NAME OF THE STUDENT :
2. ENROLLMENT NUMBER :
3. NAME OF THE COURSE :
4. SEMESTER (I, II, III & IV) :
5. TITLE OF THE PAPER :
6. DATE OF SUBMISSION :

6. Write the above said details clearly on every subject assignments paper, otherwise your paper will not be valued.
7. Tag all the assignments paper wise and submit them in the concerned counter.
8. Submit the assignments on or before **30-08-2025** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

INTERNAL ASSESSMENT

Paper : I

Subject : Data Analytics & Data Management

ASSIGNMENT - I

UNIT – I : Answer the following questions (each question carries three marks) 5x3=15

1) What are different types of data variables, how do they differ in term of categorization?

2) Explain levels of measurement provide an example for each level.

3) Discuss importance of data management and in design in data Analysis ? .

4) What are the measures of Central tendency and measures of dispersion.

5) Explain the concept of pivoting in data Analytics. How can you perform pivoting in R ? Provide an example where pivoting is useful in data Analysis.

ASSIGNMENT - II

UNIT – I : Answer the following questions (each question carries three marks) 5x3=15

1. Explain the purpose of Chi-square test and perform a Chi-square analysis using R on a sample data set. Interpret results ?

2. Using a dataset of your choice, apply regression analysis in R to Predict an outcome variable. Provide code, o/p and brief explanation of result ?

3. Write SQL queries to perform i) Retrieve all records ii) Join two tables iii) Demonstration a data pruning operation.

4. Load dataset to MS Excel and perform descriptive analysis and create atleast two types of charts. Submit Screenshots.

5. Explain purpose and we of TRIM ( ) in SQ. Also describe how over fitting might occur during SQL – based data analysis or transformation.

INTERNAL ASSESSMENT

Paper : II

Subject : Mathematics for Data Science

ASSIGNMENT - I

UNIT – I : Answer the following questions (each question carries three marks) 5x3=15

1. Explain how to plot the points in the Cartesian plane. (Unit – I)
2. Find all the 1st order partial derivatives of the following function.
   $f(x,y,z)= 4x^3y^2-e^2y^4+z^3/x^2+4y-x^{16}$ (Unit – I)
3. Describe the concept of span and linear dependency among vectors. How do they influence space transformations? (Unit – II)
4. How can encoding be performed using matrices and tensors in data science applications? (Unit – II)
5. Discuss the method of Linear Regression using Least Squares Approximation. (Unit – III)

ASSIGNMENT - II

UNIT – I : Answer the following questions (each question carries three marks) 5x3=15

1. Explain the concept of Singular Value Decomposition (SVD). (Unit – III)
2. What is the T-distribution and when is it used ? (Unit – IV)
3. Compare and contrast the Binomial, Beta, and Normal distributions. (Unit – IV)
4. Discuss different methods of graph representation. (Unit – V)
5. Given two graphs G1 and G2 with adjacency matrices: (Unit – V)

$$A_1 = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$$

$$A_2 = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$$

Are these graphs isomorphic?

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INTERNAL ASSESSMENT

Paper : III

Subject : Python Programming

ASSIGNMENT - I

UNIT – I : Answer the following questions (each question carries three marks) 5x3=15

1. List out the standard data types of python (Unit – I).
2. Differentiate between lists and tuples (Unit – I).
3. Explain the functionality of for loop with an example (Unit – II).
4. Explain about the different ways of parameter passing (Unit – II).
5. Discuss the use of recursive functions (Unit – II).

ASSIGNMENT - II

UNIT – I : Answer the following questions (each question carries three marks) 5x3=15

1. What are the steps to create a module (Unit – II).
2. How to create python class (Unit – II).
3. Explain how to open, read and write to a file (Unit – IV).
4. Explain the process to handle an exception (Unit – V).
5. Write a program to demonstrate Exception (Unit – V).

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