

INTERNAL ASSIGNMENT QUESTIONS
Advanced Diploma in Mathematics
Semester - I

2026



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)

DIRECTOR

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**PROF.G.RAM REDDY CENTRE FOR DISTANCE EDUCATION
OSMANIA UNIVERSITY, HYDERABAD – 500 007**

Dear Students,

Each student has to write the answers to the Assignment questions with neat own handwriting using **BLUE PEN** (Black Ink not allowed) for each paper. Assignments have to submit after the payment of Rs.500/- by showing the receipt of the same. If the Assignment is not submitted within stipulated time i.e. before the theory exams / last date is treated as absent.

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. YEAR WISE (I, II & III YEAR) :
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 **17-08-2026** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

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DIPLOMA(MATHEMATICS)

Paper: I

Title : Sets Relations & Functions : mathematical Logics Boolean Algebra
Development of the Number System

Section-A

UNIT-I: Answer the following short questions(each question carries two marks)
(5x2=10)

1. Let $A=\{1,2,3\}$. Write power set of A, i.e $P(A)$
2. Write the elements of the sets $A = \{x/x \in \mathbb{Z}, x^2 = 9\}$
3. Let $A=\{a,b,c,d\}$, $B=\{b,d,f,h\}$ Write $A \cup B$
4. Determine $A \cup U$ and $A \cap U$ where U is the Universal set
5. Prove $A-B=A$ if and only if $A \cap B = \varnothing$

UNIT-II Answer the following questions (each question carries ~~ten~~ marks) (2x10=20)

1. For any set A, prove that
 - (i) $A \in P(A)$ and $\varnothing \in P(A)$
 - (ii) $A \subset B$ if and only if $P(A) \subset P(B)$
2. If A, B and C are sets then show that
 - (i) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
 - (ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

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Paper : II : Algebra

Note : Write the Answers in A4 size white papers with Blue ink / ball point pen only

Total Marks: 30

Section – A

Answer the following short questions (each question carries two marks) (5Qx2M=10 Marks)

1. State and prove Wikson's theorem.
2. Solve by Cramer's Rule: $8x+3y-6z=1$; $s-y-z=1$; $-4x-y+3z=1$
3. Prove that every subgroup of a cycle group is cyclic.
4. Prove that every field is an integral domain.
5. Solve the LPP by Graphical Method : $\text{Max } Z = 5x_1 + 3x_2$
STC $3x_1 + 5x_2 \leq 15$
 $5x_1 + 2x_2 \leq 10$
 $x_1, x_2 \geq 0$

Section – B

Answer the following questions (each question carries ten marks) (2Qx10M=20 Marks)

1. Find the given values and corresponding given vectors of

$$\begin{pmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{pmatrix}$$

2. Solve the LPP by simplex Method :

$$\begin{aligned} \text{Max } Z &= 5x_1 + 3x_2 \\ \text{STC } 3x_1 + 5x_2 &\leq 15 \\ 5x_1 + 2x_2 &\leq 10 \\ x_1, x_2 &\geq 10 \end{aligned}$$

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Paper : III : Calculus & Differential Equations

Note : Write the Answers in A4 size white papers with Blue ink / ball point pen only

Total Marks: 30

Section – A

Answer the following short questions (each question carries two marks) (5Qx2M=10 Marks)

1. Solve $\frac{dy}{dx} = (4x + y - 1)^2$
2. Solve $(x^2 + y^2 + 2x) dx + 2y dy = 0$
3. Find the orthogonal Trajectory of $xy = C^2$
4. Test for convergence of $\sum 1/n(n+1)$
5. Show that a sequence defined by $S_n = (-1)^n$ is bounded but not cong.

Section – B

Answer the following questions (each question carries ten marks) (2Qx10M=20 Marks)

1. Solve $x^2 y$ of $x - (x^3 + y^3) dy = 0$
2. State and Prove Lagrange's Mean Value theorem.

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Paper : IV : Statistics

Note : Write the Answers in A4 size white papers with Blue ink / ball point pen only

Total Marks: 30

Section – A

Answer the following short questions (each question carries two marks) (5Qx2M=10 Marks)

1. If $nPr = 3024$, find n and r ✓
2. Obtain the median of the following data
7,15,25,10,13,14,24,26,20,17
3. Define critical region and level of significance.
4. The mean and variance of a binomial distribution ... G and 413 resp. find $P(x \geq 1)$.
5. Define M.G.F. in Normal Distribution.

Section – B

Answer the following questions (each question carries ten marks) (2Qx10M=20 Marks)

1. Find the mean values of the variable X and Y and correlation coefficient from the following regression equation $24 - X - 50 = 0$ and $34 - 2x - 10 = 0$
2. Fit a B. D. to the following data.

X	0	1	2	3	4	5
Y	2	14	20	34	22	8