INTERNAL ASSIGNMENT QUESTIONS
P.G. Diploma in Mathematics

2023

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
Prof. G.B. Reddy
Hyderabad – 7 Telangana State

Dear Students,

Every student of PG Diploma in Mathematics has to write and submit **Assignment** for each paper compulsorily. Each assignment carries **20 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 **15.07.2023** 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.

HAND WRITTEN ASSIGNMENTS will be accepted and valued.
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. NAME OF THE PAPER   :
5. 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 **15.07.2023** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

Course : PG 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 $A = \{x/x \epsilon Z, x^2 = 9\}$
3. Let A={a,b,c,d}, B={b,d,f,h} Write $A U B$
4. Determine $A \cup U$ and $A \cap U$ where U is the Universal set
5. Prove A-B=A if and only if $A \cap B = \varphi$

UNIT-II Answer the following questions   (each question carries five marks)

2x5=10

1. For any set A, prove that
   (i) $A \epsilon P(A)$ and $\varphi \epsilon P(A)$
   (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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INTERNAL ASSIGNMENT QUESTION PAPER- 2023 - 2024

Course : **P. G. Diploma in Maths**

Paper : **II** .   Title : **ALGEBRA** .   Year: Previous / Final

Section – A

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

1. State and Prove Wilson's Theorem.

2. Solve by Cramer's Rule: $8x+3y-6z=1$; $x-y-z=1$; $-4x-y+3z=1$

3. Prove that every subgroup of a cyclic group is cyclic.

4. Prove that every field is an integral domain.

5. Solve the LPP by Graphical Method :
   $$Max\ z = 5x_1 + 3x_2$$
   $$STC \quad 3x_1 + 5x_2 \le 15$$
   $$5x_1 + 2x_2 \le 10$$
   $$x_1, x_2 \ge 0$$

Section – B

UNIT – II : Answer the following Questions (each question carries Five marks)   2x5=10

1. Find the eigen values and corresponding eigen vectors of $\begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$

2. Solve the LPP by Simplex Method :
   $$Max\ z = 5x_1 + 3x_2$$
   $$STC \quad 3x_1 + 5x_2 \le 15$$
   $$5x_1 + 2x_2 \le 10$$
   $$x_1, x_2 \ge 0$$

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INTERNAL ASSIGNMENT QUESTION PAPER- 2023 - 2024

Course : _P.G. Diploma in Maths_

Paper : _III_   Title : _Calculus & Diff Equns_   Year: Previous / Final

Section – A

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

1. Solve $\dfrac{dy}{dx} = (4x+y+1)^2$

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 $\sum \dfrac{1}{n(n+1)}$

5. Show that a sequence defined by $s_n = (-1)^n$ is bounded but not Congt.

Section – B

UNIT – II : Answer the following Questions (each question carries Five marks)   2x5=10

1. Solve $x^2 y\,dx - (x^3 + y^3)\,dy = 0$

2. State and prove Lagrange's mean value theorem.

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INTERNAL ASSIGNMENT QUESTION PAPER- 2023 - 2024

Course : P.G. Diploma in Maths

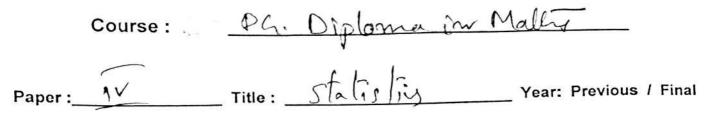Paper : IV   Title : Statistics   Year: Previous / Final

Section – A

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

1. If $nP_{\gamma} = 3024$, find n and γ

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 are 4 and 4/3 resp. Find $P(x \geq 1)$

5. Define M.G.F in Normal Distribution

Section – B

UNIT – II : Answer the following Questions (each question carries Five marks)   2x5=10

1. Find the mean values of the variable x and y and correlation coefficient from the following regression equation
   $2y - x - 50 = 0$ and $3y - 2x - 10 = 0$

2. Fit a B.D to the following data

x	0	1	2	3	4	5
f	2	14	20	34	22	8