INTERNAL ASSIGNMENT QUESTIONS

Advanced Diploma in Mathematics

Semester - II

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)

upload

DIRECTOR

Prof. N.Ch. Bhatacharyulu

Hyderabad – 7 Telangana State

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. I & II SEMESTER :
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 **30-04-2026** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

PROF. G. RAMREDDY CENTRE FOR DISTANCE EDUCATION
Osmania University. Hyderabad. 500007.

INTERNAL ASSIGNMENT QUESTION PAPER.

COURSE: Advanced Diploma in Mathematics.

II Semester: Paper I: Basics in Discrete Mathematics

Total Marks: 30

Section: A

UNIT-1: Answer the following Short Questions. $5 \times 2 = 10$
(Each Question carries two marks)

1. Give the truth table for $\sim(p \wedge q) \vee -(q \leftrightarrow p)$
2. Show that i) $a + (a * b) = a$ (ii) $a * (a + b) = a$
3. Prove that if $m, n \in N$ be such that $m = n$, then $m \cdot p = n \cdot p$ for every $p \in N$.
4. State and prove the property of existence of the inverse of a rational number.
5. i) Convert $(324)_6$ to base 10
   ii) Convert the base 10 number 1865 to base 8.

Section: B

UNIT: II: Answer the following Questions $2 \times 10 = 20$
(Each Question carries ten marks)

1. a) Prove that the conditional operation distributes over the operation of conjuction
   $p \rightarrow (q \wedge r) \equiv (p \rightarrow q) \wedge (p \rightarrow r)$
   b) Show that the following 4 conditions are equivalent
   (a) $a * \bar{b} = 0$ (b) $a + b = b$ (c) $\bar{a} + b = 1$ (d) $a * b = a$
2. Show that $(a + b) \cdot (a + c) = a + b \cdot c$
   by i) Boolean manipulation ii) Truth table demonstration.
   Draw the corresponding Logic circuits.

Dr. J. L. Shyam Sunder
Name of the Faculty:
Dept of Mathematics.

P. G. RAMREDDY CENTRE FOR DISTANCE EDUC
OSMANIA UNIVERSITY, HYDERABAD - 500007
INTERNAL ASSIGNMENT QUESTION PAPER
COURSE: ADVANCED DIPLOMA IN MATHEMATICS
II Semester: Paper II: Algebra and Operations Research

Total Marks: 30

Section: A

UNIT. I: Answer the following short Questions: $5 \times 2 = 10$
(Each Question carries two marks)

1. Prove that a finite integral domain is a field.
2. Show that the set $\{(1,i,0), (2i,1,1), (0,1+i,1-i)\}$ is a basis for $V_3(C)$.
3. Using the Gram-Schmidt orthogonalization process, construct an orthonormal basis to the basis of R^3 given by $\{(1,1,0), (0,1,1), (0,0,1)\}$.
4. Solve the LPP by Graphical Method:

$$\text{Max } Z = 8000x_1 + 7000x_2$$
$$\text{STC } 3x_1 + x_2 \leq 66$$
$$x_1 + x_2 \leq 45$$
$$x_1 \leq 20$$
$$x_2 \leq 40$$
$$x_1, x_2 \geq 0$$

5. Obtain an IBFS to the T.P. by North West corner Method

	A	B	C	D	available
I	6	3	5	4	22
II	5	9	2	7	15
III	5	7	8	6	8
Demand	7	12	17	9	

Section: B $2 \times 10 = 20$

UNIT: II: Answer the following questions. (Each question carries 10 marks)

1. State and prove Fundamental Theorem of Homomorphism of groups.
2. Solve LPP by Simplex Method:

$$\text{Max } Z = 3x_1 + 2x_2$$
$$\text{STC } 2x_1 + x_2 \leq 10$$
$$x_1 + 3x_2 \leq 6$$
$$x_1, x_2 \geq 0$$

Name of the Faculty: Dr. I. G. Shyam Sunder.

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

INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : Advanced Diploma in Mathematics - Semester – II

Paper : III Subject : Differential Equations.

Total Marks: 30

Section – A

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

1. Find the differential equation of all parabolas with foci at the origin and x-axis along x-axis.
2. Solve $(2x^3+3y)dx+(3x+y-1)dy=0$
3. Solve $(D^2+9)y = 2\sin 3x$
4. Obtain partial differential equation by elimination the arbitary constant from $z=(x+a)(y+b)$
5. Expand $f(x)$ in fourier series for $f(x)=x+x^2$, $-\pi<x<\pi$.

Section – B

UNIT – II : Answer the following Questions (each question carries ten marks) 2x10=20

1. Solve $x^2\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} - 4y = x^4$
2. Solve the 1-D wave equation $\frac{\partial^2 y}{\partial t^2} = \alpha^2\frac{\partial^2 y}{\partial x^2}$ by separation of variables method.

Name of the Faculty : Dr. P. Thirupathi

Dept. mathematics

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

INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : Advanced Diploma in Mathematics - Semester – II

Paper : IV Subject : Statistics

Total Marks: 30

Section – A

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

1. Define mean, median and mode for grouped data.
2. Explain sampling distribution.
3. Define Null-Hypothesis and Alternate Hypothesis.
4. Find MLE for the parameter of a Poisson distribution on the basis of a sample of size n.
5. Write construction of $\bar{x}$, R charts.

Section – B

UNIT – II : Answer the following Questions (each question carries ten marks) **2x10=20**

1) Calculate the variance of the following frequency distribution.

Marks Group :	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of Students :	5	6	9	15	18	7	2	1	1	1

2) Fit a Poisson distribution to the following data and test the goodness of fit.

x :	0	1	2	3	4	5	6
f :	275	72	30	7	5	2	1.

Name of the Faculty : Dr. P. Thirupathi

Dept. Mathematics.