INTERNAL ASSIGNMENT QUESTIONS
M.Sc. (Mathematics) SEMESTER III

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)

Upload

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Prof. N. Ch. Bhatracharylu

Hyderabad – 7 Telangana State

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

Dear Students,

Every student of M.Sc. (Mathematics) Semester III 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 fee only remaining Examination fee pay to Examination Branch, OU, after notification separately to be issued.**
Candidates are required to submit the Assignment fee receipt of Rs.500/- along with the assignment answers scripts at the concerned counter on or before **25-10-2025** and obtain proper submission receipt.

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 to use Blue Pen only.

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 **25-10-2025** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE: M.Sc. (Mathematics) – III Semester

Paper: I **Subject: Topology**

Total Marks: 30

Section – A

Answer the following short questions (each question carries two marks) **5 × 2 = 10**

1. State and prove Lindelöf's Theorem.
2. Prove that a continuous image of a compact space is compact.
3. State and prove Heine–Borel Theorem.
4. Prove that every compact Hausdorff space is normal.
5. Prove that the components of a totally disconnected space are its points.

Section – B

Answer the following Questions (each question carries ten marks) **2 × 10 = 20**

1. State and prove Lebesgue Covering Lemma.
2. State and prove Tietze Extension Theorem.

Name of the Faculty: Prof. V. Nagaraju

Dept. : Mathematics

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : M.Sc. (Mathematics) III Semester

Paper : II : Linear Algebra Subject : Mathematics

Total Marks: 30

Section – A

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

1 Show that similar matrices have the same characteristic polynomial

2 Let $E: V \to V$ be a projection. Show that $\beta \in R(E) \Leftrightarrow E\beta = \beta$

3 under usual notation, show that $fz(\alpha; T) = z(f\alpha; T)$

4 State and prove polarization identity.

5 Find the minimal polynomial of the matrix $A = \begin{bmatrix} 0 & 0 & 4 \\ 0 & 0 & 2 \\ 0 & 0 & 0 \end{bmatrix}$

Section – B

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

1 Show that a linear operator $T: V \to V$ is diagonalizable if and only if the minimal polynomial is the product of distinct linear factors.

2. State and prove the primary decomposition theorem.

VKishan

Name of the Faculty : Dr Kiran . V

Dept. of Mathematics

Date : 25-08-2025

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : M.Sc. (Mathematics) III Semester

Paper : III Subject : Operations Research

Total Marks: 30

Section – A

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

1 Write the algorithm of graphical solution for LP Models.

2 Prove that the dual of the dual of a given primal is again primal

3 Explain the Vogel's Approximation Method of soking a T.P.

4 State and prove Reduction Theorem of Assignment Problem

5 State and explain Bellman's Principle of Optimality in D.P.

Section – B

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

1 Solve the LPP by Simplex Method :

Max $Z = 5x_1 + 3x_2$

STC $3x_1 + 5x_2 \le 15$

$5x_1 + 2x_2 \le 10$

$x_1, x_2 \ge 0$

2. Write Hungarian Assignment Method for Assignment problem.

Write a note on Travelling Salesman Problem

Name of the Faculty Dr. G. Shyam Sunder

Dept. 20.8.2025

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : M.Sc. (Mathematics) III Semester

Paper : IV **Subject :** Mechanics

Total Marks: 30

Section – A

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

(1) Define Rectilinear Motion Uniform Acceleration

(2) Find Moment of Inertia of a rigid Rod of Length 2a & Mass M

(3) Define Relation between Lagrangian and Eulerian Method

(4) Define General Motion of A cylinder in two Dimensions.

(5) Define Liquid streaming past a fixed sphere.

Section – B

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

(1) Explain Equation of A continuity in cylindrical & polar coordinate system.

(2) Explain Motion of A cylinder in a uniform stress.

Name of the Faculty : Dr. A. Srisailam

Dept. of Mathematics O.U.C.S