INTERNAL ASSIGNMENT QUESTIONS
M.Sc. (MATHEMATICS) PREVIOUS (YWS)

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
Prof. N.Ch. Bhatracharyulu
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. PREVIOUS / FINAL (Year Wise Scheme) :
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 **10th June, 2026** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

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

DIRECTOR

INTERNAL ASSIGNMENT- 2026
Course: MATHEMATICS

Paper: I **Title: Algebra** **Year: Previous**

Section – A

Answer the following short questions (each question carries two marks) ($5 X 2 = 10M$)

1. Let $G = [a]$ be a finite cyclic group of order n generated by an element a, then prove that the map $\sigma: G \to G$ defined by $\sigma(x) = x^m$ is an automorphism if and only if $(m, n) = 1$

2. Show that the group $(Z/(4), +)$ cannot be written as the direct sum of two non-trivial subgroups

3. If H is a normal subgroup of a finite group G and if the index of H in G is prime to p then prove that H contains every sylow p – subgroup of G

4. Let R be a commutative ring and P a prime ideal then prove that $S = R - P$ is multiplicative set and R_s is a local ring with unique maximal ideal $P_s = \{a/s \quad a \in P, s \notin P\}$

5. Let $f: R \to S$ be a homomorphism of a ring R into a ring S, then prove that (i) $f(R)$, the homomorphic image of R by f is a subring of S (ii) kernel of f is an ideal of R

Section – B

Answer the following questions (each question carries five marks) ($2X5 = 10M$)

1. Let $n = \prod_{j=1}^{k} P_j^{f_j}$, P_j distinct primes then prove that the number of nonisomorphic abelian groups of order n is $\prod_{j=1}^{k} |P(f_j)|$.

2. Let R be an integral domain then prove that R is right Ore domain if and only if there exists a division ring Q such that R is a subring of Q and every element of Q is of the form ab^{-1} for some $a, b \in R$.

Name of the Faculty: **Dr. G. Upender Reddy**
Dept. **Mathematics**

M.SC. MATHEMATICS (PREVIOUS)
INTERNAL ASSESSMENT

PAPER - II: REAL ANALYSIS

SECTION - A

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

1. Prove that every neighbourhood is an open set.
2. Prove that continuous image of a compact metric space in compact.
3. If f in continuous as [a,b], then prove that f ER(a) on [a, b].
4. State and prove Cauchy's criterion for uniform convergence of sequence of functions.
5. If f is continuous on [0, 1] and if {f(²) x^n dx = 0 n=0,1,2 , Prove that f(x)=0 on [0,1].

SECTION – B

UNIT – I : Answer the following questions (each question carries two marks) 2x5=10

1. Prove that every continuous function defined on a compact metric space is uniformly continuous.
2. State and prove Weirstrass approximation theorem.

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INTERNAL ASSIGNMENT QUESTION PAPER- 2026

Course : M.Sc. (Mathematics)

Paper : III Title : Topology & Functional Analysis Year: Previous / ~~Final~~

Section – A

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

1 Define finite subcover and compactness
2 prove that a completely regular space is a Hausdorff space.
3 Define normed space and Banach space
4 prove that $(S+T)^* = S^* + T^*$
5 State and prove parallelogram Law

Section – B

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

1. Prove that any continuous image of a connected space is connected
2. State and prove schwarz inequality

Name of the Faculty : Dr. K. prudhvi

Dept. Mathematics

19/02/23

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QUESTION PAPER INTERNAL ASSIGNMENT

M.Sc Mathematics (Previous) 2026

Paper-IV Title : Elementary Number Theory

Section -A

Note: Answer the following questions (5 x 2 =10 Marks)

(1) Show that there are infinitely many primes.

(2) Show that $\sum_{d/n} \varphi(d) = n$ for any $n \geq 1$.

(3) State and prove Euler -Fermat's theorem.

(4) Evaluate (11|13).

(5) State and prove Euler's criterion.

Section – B

Note: Answer the following questions (2 x 5 =10 Marks)

(6) (i) If f , g are any two multiplicative functions , then show that $f * g$ is also a multiplicative function.

(7) (i) State and prove Lagrange theorem for polynomial congruences.

(ii) State and prove Jacobi's triple product identity.

(Dr V.Kiran)

Department of Mathematics

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INTERNAL ASSIGNMENT QUESTION PAPER- 2026

Course : M.Sc. (Mathematics)

Paper : V **Title :** Mathematical Methods **Year:** Previous / Final

Section – A

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

1. Solve in series $2x\frac{d^2y}{dx^2}+(1+2x)\frac{dy}{dx}-5y=0$
2. Show that $xJ_n'(x)=nJ_n(x)-xJ_{n+1}(x)$
3. State and prove Abel's formula
4. State and prove contraction principle
5. Solve $(p^2+q^2)y=qz$

Section – B

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

1. Show that $J_n(x)=\sum_{r=0}^{\infty}\frac{(-1)^r}{r!\,\Gamma(n+r+1)}\left(\frac{x}{2}\right)^{n+2r}$
2. Solve one dimensional heat Equation

$$\frac{\partial u}{\partial t}=c^2\frac{\partial^2 u}{\partial t^2}$$

Name of the Faculty : Dr. A. Srisailam
Dept. Mathematics, O.U.C.S