

**INTERNAL ASSIGNMENT QUESTIONS
B.A.(Maths & Stats) III YEAR**

ANNUAL - 2024-25



PROF. G. RAM REDDY CENTRE FOR DISTANCE EDUCATION
(RECOGNISED BY THE DISTANCE EDUCATION BUREAU, UGC, NEW DELHI)

OSMANIA UNIVERSITY

(A University Accredited with A+ by the NAAC - A University with Potential for Excellence,
Hyderabad – 7, Telangana State)

**DIRECTOR
Prof. G.B. Reddy
Hyderabad – 7, Telangana State**

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

Dear Students,

Every student of B.A. (Maths & Stats) III year has to write and submit **Assignment** for each paper compulsorily. ***Statistics Assignment papers carries 20 marks and *Maths & Applied Mathematics Assignment papers 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 only in the academic year in which the examination fee is paid for the examination for the first time.**

NOTE: THE SUPPLEMENTRY CANDIDATES PAYING THEIR EXAMINATION FEE FOR THE FIRST TIME ARE ONLY ELGIBLE TO WRITE AND SUBMIT THEIR ASSIGNMENTS. THE CANDIDATES WHO PAID EXAMINATION FEE EARLIER AND NOT SUBMITTED THEIR ASSIGNMENT ARE NOT ELIGIBLE TO SUBMIT THEIR ASSIGNMENTS NOW.

Candidates are required to submit the Exam fee receipt along with the assignment answers scripts at the concerned counter on or before **05-03-2025** 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. Only HAND WRITTEN ASSIGNMENTS with blue pen 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 **05-03-2025** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

INTERNAL ASSIGNMENT- 2024 - 2025

Course : B.A. (Statistics) III year

Paper : III Title : Applied Statistics - I Year 2025

Total Marks: 20

Section - A

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

- 1 What are modified control limits ? Explain in Detail.
- 2 State Cochran's theorem and what is the significance of Cochran's theorem in Designs of Experiment.
- 3 Show that the maximum or minimum value are only at extreme points of a convex set.
- 4 What are the functions of CSO.
- 5 What are the uses of National Income

Section - B

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

- 1 How the principles of experimental design are involved in Randomised Block Design.
2. How can you detect in solving a linear programming problem using Big-M method having
i) Unbounded solution ii) Multiple solution iii) Infeasible solution
Illustrate with examples

Name of the Faculty : R. Lakshmi Himaja

Dept. of Statistics

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INTERNAL ASSIGNMENT QUESTION PAPER - 2023-24

COURSE : B.A.(Maths & Applied Maths) III year

Paper : IV Subject : Statistics Year III
Applied Statistics II

Total Marks: 20

Section - A

UNIT - I : Answer the following short questions (each question carries three marks) $5 \times 3 = 15$

- 1 In SRSWR, show that sample mean is unbiased estimate of the population mean.
- 2 Define (i) proportional Allocation (ii) Neyman allocation. Explain
- 3 Write about components of a Time series in detail.
- 4 Mention some problems in constructing the Index Number.
- 5 Explain Leontief's Method.

Section - B

UNIT - II : Answer the following Questions (each question carries Five marks)

$2 \times 5 = 10$

- 1) a) In SRSWOR prove $E(\delta^2) = S^2$
b) Prove $\text{Var}(\bar{y}_{st}) \leq \text{Var}(\bar{y}_{sys}) \leq \text{Var}(\bar{y}_n)$ Random
- 2) a) Write about Quality price Index number with an example.

(b) From the following data of the wholesale prices of a commodity, compute chain Base Indices.

Name of the Faculty : K. SWATHI

Dept. Statistics

Year:	1995	1996	1997	1998	1999	2000	2001	2002
Price :	140	200	210	230	250	260	280	300

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INTERNAL ASSIGNMENT QUESTION PAPER - 2023-24

COURSE : B.A.(Maths & Applied Maths) III year

Paper : III Subject : Integral Transforms and Complex Analysis Year IIIrd

Total Marks: 30

Section - A

UNIT - I : Answer the following short questions (each question carries three marks) 5x3=15

- 1 Find $L\left(\frac{\sin 3t \cos t}{t}\right)$
- 2 Find the Fourier transform of $f(x) = \begin{cases} 1-x^2, & |x| \leq 1 \\ 0, & |x| > 1 \end{cases}$
- 3 Solve $3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0$, $u(x,0) = 4e^{-x}$, using method of separation of variables.
- 4 Solve one dimensional Heat equation.
- 5 Express $1 + \sqrt{-3}$ in the modulus - Amplitude form.

Section - B

UNIT - II : Answer the following Questions (each question carries Five marks) 3x5=15

- 1 Solve $\frac{dx}{dt} - 2x + 3y = 0$, $\frac{dy}{dt} - y + 2x = 0$ with $x(0) = 8$, $y(0) = 3$
- 2 If $f(x) = \begin{cases} 2-x, & 0 < x < 4 \\ x-6, & 4 < x < 8 \end{cases}$, Find the Fourier expansion of $f(x)$.
- 3 Show that $u = x^3 - 3xy^2 + 3x^2 - 3y^2 + 1$, is harmonic. Find its harmonic conjugate. Find also the corresponding analytic function $f(z)$ in terms of z .

Name of the Faculty:

Dr. P. Thirupathi

Dept. Mathematics

INTERNAL ASSIGNMENT QUESTION PAPER - 2023-24

COURSE : B.A.(Maths & Applied Maths) III year

Paper : IV Subject : Differential Geometry Year 2024

Total Marks: 30

Section - A

UNIT - I : Answer the following short questions (each question carries three marks) $5 \times 3 = 15$

- ① Define Equation of Tangent line when the equation of the Curve is intersection of two Surfaces?
- ② Define Radius of Curvature, Torsion, Serret, Frenet Formulae?
- ③ Prove that The necessary and sufficient condition for a curve to be a helix is that its Curvature and torsion are in a constant ratio?
- ④ Explain properties of locus of centre of spherical curvature?
- ⑤ Define Double Family of Curves?

Section - B

UNIT - II : Answer the following Questions (each question carries Five marks) $3 \times 5 = 15$

- ① Explain Equation of osculating plan (plan of curvature)
- ② Show that the curves bisecting the angles between the parametric curves are given by $Edu^2 - Gdv^2 = 0$
- ③ State and prove Rodrigues Formulae.

Name of the Faculty : Dr. A. Srisaibam

Dept. Mathematics, O.U.C.S.
Osmania University.

INTERNAL ASSIGNMENT – 2024-25

Course B.A. III Year (Mathematics)

Paper : III Tittle : Rings And Linear Algebra

Section - A

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

- 1) Every field is an integral domain
- 2) To Prove that If $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ defined by $T(a_1, a_2) = (a_1 + a_2, 0, a_1 - a_2)$ is a linear Transformation \mathbb{R}^2 .

3) Reduce the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 6 & 8 \\ 3 & 4 & 5 \end{bmatrix}$ to normal form and hence find its rank.

4) Find the Eigen values of the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$

5) In any inner product space V , the norm satisfies the parallelogram law :

$$\|x + y\|^2 + \|x - y\|^2 = 2\|x\|^2 + 2\|y\|^2 \text{ for all } x, y \in V$$

Section -B

UNIT– II Answer the following Long questions (each question ten marks) **2x10= 20**

- 1) State And Prove Fundamental theorem of homomorphism
- 2) State and Prove Cayley-Hamilton Theorem and Using this theorem

find A^{-1} if $A = \begin{bmatrix} 1 & 2 & -1 \\ 3 & 1 & 0 \\ -2 & 1 & 4 \end{bmatrix}$

Name of the Faculty : V. Venkateshwarlu

Department : Mathematics

INTERNAL ASSIGNMENT QUESTION PAPER - 2023-24

COURSE : B.A.(Maths & Applied Maths) III year

Paper : IV Subject : Numerical Analysis Year 2024

Total Marks: 30

Section - A

UNIT - I : Answer the following short questions (each question carries three marks) 5x3=15

- 1 Explain types of errors.
- 2 perform 10 iterations of the Bisection method to obtain root of $f(x) = x^3 - 5x + 1 = 0$
- 3 Use Trapezoidal rule evaluate $\int_0^1 x^3 dx$ taking 4 subintervals.
- 4 If $f(x) = \frac{1}{x^2}$ find $[a, b]$.
- 5 Define forward and Backward differences with example.

Section - B

UNIT - II : Answer the following Questions (each question carries Five marks) 3x5=15

1 Find the smallest root of $x e^x = 1$ which is correct to 3 decimal place by Ramanujan's method.

2 using Gauss-Seidel method solve

$$\begin{cases} 9x - 2y + z - t = 0, & x - 7y - 3z + t = 20, & -2x + 2y + 7z + 2t = 22 \text{ and} \\ x + y - 2z + 6t = 18 \end{cases}$$

(3) using Newton divided difference formula find $f'(8)$ given the table. Name of the Faculty: Ramalingiah, Kachhi

Dept. Mathematics, GCEJ

x	1	3	6	10	11
f(x)	3	31	223	1011	1343

Ramalingiah