PROF. G. RAM REDDY CENTRE FOR DISTANCE EDUCATION

(Recognised by the Distance Education Bureau, UGC, New Delhi)

OSMANIA UNIVERSITY, HYDERABAD – 500 007

(A University Accredited with "A+" by the NAAC — A University with Potential for Excellence)

INTERNAL ASSIGNMENT QUESTIONS

B.A. (Maths & Stats) — III YEAR

SUPPLEMENTARY - 2026

Dear Students,

Every student has to write and submit an Assignment for each paper compulsorily. The marks awarded will be forwarded to the Examination Branch, OU for inclusion in the marks memo. If the student fails to submit Internal Assignments before the stipulated date, the internal marks will not be added in the final marks memo under any circumstances. Assignments will not be accepted after the stipulated date. Only HAND WRITTEN ASSIGNMENTS (with blue pen) will be accepted and valued; printed, photocopied or typed assignments will not be accepted at any cost.

Methodology for writing the Assignments (Instructions):

- First read the subject matter in the course material that is supplied to you.
- If possible read the subject matter in the books suggested for further reading.
- 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).
- Give a final reading to the answer you have written and see whether you can delete unimportant or repetitive words.
- The cover page of each theory assignment must have information as given in the FORMAT below.

FORMAT

1.	NAME OF THE STUDENT	:
2.	ENROLLMENT NUMBER	:
3.	NAME OF THE COURSE	:
4.	SEMESTER / YEAR	:
5.	TITLE OF THE PAPER	:
6.	DATE OF SUBMISSION	:

- Write the above said details clearly on every subject assignment paper, otherwise your paper will not be valued.
- Tag all the assignment papers subject-wise and submit them at the concerned counter.

Submit the assignments on or before **30/11/2026** at the concerned counter at PGRRCDE, OU on any working day and obtain a receipt.

DIRECTOR **Prof. Dr. N.Ch. Bhatracharyulu**

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : B.A. (Maths & Stats) — III Year

Paper : III Subject : Applied Statistics – I

Total Marks: 20

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.

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. Statistics

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : B.A. (Maths & Stats) — III Year

Paper : IV Subject : Applied Statistics – II

Total Marks: 20

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

1. In SRSWR, show that sample mean is unbiased estimate of the population mean.

2. Explain (i) Proportional Allocation (ii) Neyman allocation.

3. Write about components of a Time Series in detail.

4. Mention some problems in constructing the Index Numbers.

5. Explain Leontief's Method.

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

1. (a) In SRSWOR prove $E(s^2) = S^2$. (b) Prove $Var(\bar{y}st) \leq Var(\bar{y}sys) \leq Var(\bar{y}n)$ 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.

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

Name of the Faculty : K. Swathi
Dept. Statistics

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : B.A. (Maths & Stats) — III Year

Paper : III Subject : Integral Transforms and Complex Analysis

Total Marks: 30

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

1. Find L(sin3t cost / t).

2. Find the Fourier transform of $f(x) = 1-x^2$, $|x|\leq 1$, $= 0$, $|x|>1$.

3. Solve $3\partial u/\partial x + 2\partial u/\partial y = 0$, $u(x,0) = 4e^x$, using method of separation of variables.

4. Solve one dimensional Heat equation.

5. Express $1+\sqrt{3}\,i$ in the modulus-Amplitude form.

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

1. Solve $dx/dt - 2x + 3y = 0$, $dy/dt - y + 2x = 0$ with $x(0)=8$, $y(0)=3$.

2. If $f(x) = 2-x$, $0<x<4$; $x-6$, $4<x<8$, 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

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : B.A. (Maths & Stats) — III Year

Paper : IV Subject : Differential Geometry

Total Marks: 30

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

1. Define equation of tangent line when the equation of the curve is the 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.

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

1. Explain Equation of Osculating Plane (plane of curvature).

2. Show that the curves bisecting the angles between the parametric curves are given by $E\,du^2 - G\,dv^2 = 0$.

3. State and prove Rodrigues' Formulae.

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

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : B.A. (Maths & Stats) — III Year

Paper : III Subject : Rings and Linear Algebra

Total Marks: 30

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: $R^2 \rightarrow R^2$ defined by $T(a_1,a_2) = (a_1+a_2, 0, a_1-a_2)$ is a linear transformation on R^2.

3. Reduce the matrix [[1,2,3],[4,6,8],[3,4,5]] to normal form and hence find its rank.

4. Find the Eigen values of the matrix A = [[1,1,3],[1,5,1],[3,1,1]].

5. In any inner product space V, the norm satisfies the parallelogram law: $\|x+y\|^2 + \|x-y\|^2 = 2\|x\|^2 + 2\|y\|^2$ for all $x,y \in V$.

UNIT – II : Answer the following Long questions (each question carries 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 = [[1,2,-1],[3,1,0],[-2,1,4]].

Name of the Faculty : V. Venkateshwarlu
Dept. Mathematics

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INTERNAL ASSIGNMENT QUESTION PAPER

COURSE : B.A. (Maths & Stats) — III Year

Paper : IV Subject : Numerical Analysis

Total Marks: 30

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

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

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

1. Find the smallest root of $xe^x = 1$ which is correct to 3 decimal places by Ramanujan's method.
2. Using Gauss-Seidal method solve $9x-2y+z-t=20$, $x-7y-3z+t=20$, $-2x+2y+7z+t=22$ and $x+y-2z+6t=18$.
3. Using Newton's divided difference formula find f(8) given the table.

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

Name of the Faculty : Ramalingaiah, Nizam College
Dept. Mathematics