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

ANNUAL EXAMINATION APRIL / MAY - 2021

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. Each assignment carries **20 marks.** The marks awarded to you will be forwarded to the Controller of Examinations, OU for inclusion in the University Examinations marks. If you fail to submit Internal Assignments before the stipulated date, the internal marks will not be added to University examination marks under any circumstances. The assignments will not be accepted after the stipulated date. **The assignments have to be submitted by the candidates in the same academic year when they pay the examination fee for exams in first instance only.**

are required to submit the Exam fee receipt along with the assignment answers scripts at the concerned counter on or before **10-07-2021**. and obtain proper submission receipt.

ASSIGNMENT WITHOUT FEE WILL NOT BE ACCEPTED

Assignments on Printed / Photocopy / Typed papers will not be accepted and will not be valued at any cost. Only hand written Assignments 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 including Sunday 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 **10-07-2021** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

Prof. K. Bhaskar
Joint Director

Prof.G.B.Reddy
Director

BA (Maths & Stats) III YEAR ANNUAL EXAMINATIONS APRIL/MAY - 2021

INTERNAL ASSIGNMENT

Sub: (Maths & Stats)

Paper – III : APPLIED STATISTICS

Section – A

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

1. Replication
2. Efficiency
3. ANOVA
4. Blocks
5. Assumptions of ANOVA

Section – B

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

1. Statistical Analysis of **CRD**
2. Partition sum of squares of RBD

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

INTERNAL ASSIGNMENT QUESTION PAPERS - 2020 - 2021

Course : B.A. (Maths & Stats) IIIrd Year

Paper : IV **Title :** Applied statistics

Total Marks: 20

Section – A

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

1, Sample mean is an unbiased estimate of population mean in case of SRSWOR.

2 In Stratified random sampling show that the variance of sample mean is $V(\bar{y}_{st}) = \frac{1}{N^2}\sum_{i=1}^{k} N_i(N_i - n_i)\frac{S_i^2}{n_i}$

3 Explain Method of least squares?

4 Define Index numbers. write any two uses?

5 Define (i) Demand (ii) Supply

Section – B

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

1 If the population consists of a linear trend, then prove that

2. $Var(\bar{y}_{st}) \leq Var(\bar{y}_{sys}) \leq Var(\bar{y}_n)_{Random}$.

2. Explain pareto's Law of income distribution.

Name of the Faculty : A. Kiran

Dept. of Statistics

INTERNAL ASSIGNMENT – 2020-2021

Course B.A. III Year (Mathematics) Total : 30 Marks

Paper : III Tittle : Rings And Linear Algebra Year : III

Section - A

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

1) Every field is an integral domain

2) If T = { (1, 1 , 0) , (1, 0 , 1) , (0 , 1 , 1) } then show that T spans $\mathbb{R}^3$.

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

4) Find the Eigen values of the matrix A = $\begin{bmatrix} 3 & -9 & -12 \\ 1 & 3 & 4 \\ 0 & 0 & 1 \end{bmatrix}$

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

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

Section -B

UNIT– II : Answer the following Longt questions (each question carries five marks) 3x5 =15

1) State And Prove Fundamental theorem of homomorphism

2) State and Prove Cayley-Hamilton Theorem and Using this theorem

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

3) State and Prove that Dimension theorem

V. Venkateshwarlu

Name of the Faculty : V. Venkateshwarlu

Department : Mathematics

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

INTERNAL ASSIGNMENT QUESTION PAPERS - 2020 - 2021

Course : B.A. (Maths & Stats) Mathematics – III year

Paper : IV **Title :** Numerical Analysis

Total Marks: ~~20~~ 30

Section – A

5×3=15

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

1 Explain Bisection method.

2 Find a root of $f(x) = xe^x - 1$ using false position method.

3 Define Lagrange interpolation

4 Find $\int_0^1 \frac{1}{1+x} dx$ using Simpson's $\frac{3}{8}$ rule.

5 Using Picard's method obtain a solution upto fifth approximation of the equation $\frac{dy}{dx} = y + x$, $y(0) = 1$

Section – B

Marks - 15
3×5= 15

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

1) Construct the forward difference table and find interpolating polynomial for the data.

x	4	6	8	10
y	1	3	8	16

2) using Gauss-Seide iteration method solve the equations

$8x + y + z = 5$
$2x + 4y + z = 4$
$x + 3y + 5z = 5$.

3) Evaluate $\int_0^1 \frac{1}{1+x^2} dx$ using simpson's $\frac{3}{8}$ rule.

Name of the Faculty : Ravalingaiah. K

Dept. of Mathematics, UCE, OU.

PROF. G. RAM REDDY CENTRE FOR DISTANCE EDUCATION

OSMANIA UNIVERSITY, HYDERABAD–500 007

INTERNAL ASSIGNMENT QUESTION PAPER - 2020 - 2021

COURSE : B.A. (Maths & Stats) III Yr

Paper : III Subject : Integral Transforms and complex Analysis

Total Marks: 20

Section – A

5x3=15

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

1 Evaluate $L\{\frac{e^{3s}}{s^3}\}$

2 write Dirichlet's conditions

3 Find Fourier sinetransform of xe^{-ax}

4 solve $\frac{\partial u}{\partial x} = 3\frac{\partial u}{\partial y} + u$, $u(x,0) = e^{5x}$ by method of separation of variables.

5 If $u = 3x^2y + 2x^2 - 2y^2$ is the real part of an analytic function $f(z)$, find $f(z)$.

Section – B

~~3x5=15~~ 2x5=10

3x5=15

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

1 solve $y'' + y' - 2y = t$, $y(0) = 1$, $y'(0) = 0$.

2. obtain the Fourier series expansion of $f(x) = x^2$ in $(-\pi, \pi)$

3) Express $1 + \sqrt{-3}$ in the modulus – Amplitude form.

Name of the Faculty :
Dr. P. Thirupathi

Dept. mathematics.

Prof. G. Ram Reddy Cenntre for Distance Education

Osmania University – Hyderabad

BA-III YEAR (MATHS & STATS)

SECTION – I

Paper : IV - DIFFERENTIAL GEOMETRY

SECTION – A

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

Marks :10 x 2 = 20

1. Derive Tangent line at a point on a space curve
2. Derive Equation of Osculating plane.
3. Show that the necessary and sufficient condition for the curve to be straight line is that k = 0 at all points of the curve.
4. Find the radius of curvature and torsion of the helix
   $x = a\cos\theta$, $y = \sin\theta$ $z = a\theta\tan\alpha$
5. Find the coordinates of the cylindrical helix whose intrinsic equations are
   $k = \tau - 1/5$
6. Show that the involutes of a circular helix are plane curves.
7. A curve is drawn on a parabolic cylinder so as to cut all the generators at the same angle then. Find the curvature and torsion.
8. Prove that the principal normal to the helix
   $r = (a\cos\theta, a\sin\theta, \theta)$ is the normal to cylinder.
9. Show that F=0 is the necessary and sufficient condition for the parametric curves on a surface to be orthogonal.
10. Find the Fundamental Magnitudes of surface.

SECTION – II

UNIT – I : Answer the following questions (each question carries five marks)

Marks : 2 x 5 = 10

1. Derive Serrat – Frenet Formulae ?
2. Find the properties of the Locus of the centre of curvature.