INTERNAL ASSIGNMENT QUESTIONS

M.Sc. (Statistics) IV Semester

2026-2027

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)

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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) :

- 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 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 :**

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

Submit the assignments on or before **17.11.2026** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

ASSIGNMENT QUESTIONS
M.Sc. (STATISTICS) IV-SEMESTER
PAPER-I: Operations Research

SECTION-A (5 Q X 2 M = 10 MARKS)

1. Define and distinguish the basic solution and basic feasible solution. Illustrate the same for the system of equations: $X_1+2X_2 \leq 10$and $3X_1+5X_2 \leq 15$.

2. Write the need of study the duality and write the relationship in finding the optimal solution to its primal?

3. A manufacturer has to supply his customers 600 units of his product per year. Shortages are not allowed and the inventory carrying cost amount to Rs. 0.60 per unit year the setup cost per run is Rs. 80. Find the economic order quantity, minimum average yearly cost and the optimum number of orders per year?

4. Explain in detail about perishable inventory models when demand in uniform, with and without shortages, where the units are discrete and continuous.

5. Express the Assignment and transportation problems are special cases of a Linear programming problem

SECTION-B (2Q X 5 M = 10 MARKS)

6. Find the optimal solution to the following LPP using revised simplex method

Minimize $Z= X_1+2X_2+3X_3+4X_4$subject to the constraints

$$X_1+3X_2+X_3+X_4 \geq 18;\ X_1+2X_2+3X_3+4X_4 \geq 25;$$

$$5X_1+3X_2+2X_3+4X_4 \geq 35;\ X_1, X_2, X_3, X_4 \geq 0;$$

7. How can you solve the given game of two players with m x n strategies under with and without saddle points.

8. Find the optimal solution to the following unbalanced transportation problem using modified distribution through Vogels approximation method initial basic feasible solution.

Origin	Destination					Availability
	D_1	D_2	D_3	D_4	D_5	
O_1	73	40	49	79	20	28
O_2	62	93	96	58	33	27
O_3	96	65	80	50	55	29
O_4	57	58	29	12	87	23
O_5	56	23	87	18	12	25
Requirement	26	28	10	24	25	

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ASSIGNMENT QUESTIONS

M.Sc. (STATISTICS) IV-SEMESTER

PAPER--II: Applied Regression Model

SECTION-A (5 Q X 2 M = 10 MARKS)

1. Obtain growth models from monomolecular model.
2. Define a probit model and illustrate with an example.
3. Explain the Gauss-Newton Method in obtaining solution for parameters of non-linear regression. Illustrate it with a suitable example.
4. How can you estimate the parameters with dichotomous independent variable in case of in logistic regression model. Explain?
5. Explain the methods: (i) Least Absolute Deviations Regression and (ii) Robust Regression with Ranked Residuals

SECTION-B (2Q X 5 M = 10 MARKS)

6. Explain "All Possible Regression" method to select a best linear regression with four variables and discuss its limitations
7. Derive the procedure for obtaining the Multiple-logistic Regression model. Also obtain the procedure for testing the significance of the coefficients in the model.

ASSIGNMENT QUESTIONS
M.Sc. (STATISTICS) IV-SEMESTER
PAPER-P-III: Time Series Analysis
SECTION-A (5 Q X 2 M = 10 MARKS)

1. What are the various smoothing techniques used in time series model fitting and which method when we have to use?Write the step-by-step procedure for any two methods?
2. Derive stationarity, invertibility and Auto-covariance generating function of a general linear process?
3. Explain, how can you identify the time series model for the given data? Write its step-by-step procedure?
4. Define ARIMA (p, d, q) model and derive the random shock form of ARIMA model with an example.
5. What is diagnostic checking and explain model diagnostic checking for residuals

SECTION-B (2Q X 5 M = 10 MARKS)

6. Define Moving average Model of order q. Derive the ML estimator of variance of MA(q) model. write the model for q=1,2. Explain model and writs its significance.?
7. Derive the estimates of parameters, autocovariance and in auto regressive (2), moving average (2) models using maximum likelihood estimation method.

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ASSIGNMENT QUESTIONS
M.Sc. (STATISTICS) IV-SEMESTER
PAPER-IV: Statistical Process for Quality Control
SECTION-A (5 Q X 2 M = 10 MARKS)

1. Describe Single sampling plan procedure
2. Derive control limits for exponentially weighted moving chart for mean
3. Explain in brief about OC and ARL functions of Shewhart control charts for mean and range
4. Discuss rectifying inspections with AOQ and ATI curves?
5. Explain Dodge continuous sampling plans and its properties

SECTION-B (2Q X 5 M = 10 MARKS)

6. What is meant by acceptance sampling plan and rectifying inspection program? Describe designing of Rectifying sampling plan?
7. Explain CUSUM chart. How do you improve CUSUM responsiveness for large shifts?What are the disadvantages of v-mask procedure?

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