

उत्तर प्रदेश राजर्षि टण्डन मुक्त विश्वविद्यालय, प्रयागराज

सांख्यिकी (परास्नातक) कार्यक्रम अधिन्यास सत्र 2022-23

Course Code: PGSTAT-109/MASTAT-109	Course Title: Decision Theory and Bayesian Analysis	Maximum Marks : 30
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Section- A

Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. State and Prove Minimax Theorem.
2. Discuss about the Optimal Decision Rules.
3. State and Prove complete class Theorem.
4. What is optional decision rule. Illustrate through an example.

Section - B

Short Answer Questions

Note: Answer any four questions. Answer should be given in 200 to 300 Words.

Maximum Marks: 12

1. Discuss about the Invariance and ordering.
2. What is the equalizer rule. Discuss about it.
3. Write a note on Extended Bayes Rule.
4. Write short notes on (a) Admissibility (b) Completeness
5. What is the criterion of optimal decision rule.

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Course Code: PGSTAT-110/MASTAT-110	Course Title: Multivariate Analysis	Maximum Marks : 30
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Section- A

Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. What is multivariate normal distribution? Estimate the moment generation function of MMD.
2. Discuss about the Wishart distribution. Also find its additive Property.
3. Discuss about the Maholanobis D^2 with its various applications.
4. Define multivariate normal distribution with its properties. Also, show that when x is normally distributed the components are mutually independent if the covariance matrix is diagonal.

Section - B

Short Answer Questions

Note: Answer any four questions. Answer should be given in 200 to 300 Words.

Maximum Marks: 12

1. Find the characteristic function of MMD.
2. Describe about the multiple and partial short.
3. Define Hotelling T^2 with its applications.
4. Write short notes on Discriminate Analysis.
5. Obtain MLE of mean vector for multivariate normal population.

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Course Code: PGSTAT-111/MASTAT-111	Course Title: Econometrics	Maximum Marks : 30
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Section- A
Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. Define linear regression model with assumptions.
2. Discuss about the SURE model and its estimation.
3. What is Dummy Variable. Discuss about the use of Dummy Variables.
4. Define econometrics. What is its limitation?

Section - B

Short Answer Questions

Note: Answer any four questions. Answer should be given in 200 to 300 Words.

Maximum Marks: 12

1. Discuss about the maximum likelihood method for estimation of the parameters.
2. What are the indirect least square estimators also define about two stage least square estimators.
3. Discuss about the Point and interval Predictors.
4. Write short notes on R^2 and adjusted R^2
5. What is multi co-linearity?

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Course Code: PGSTAT-113/MASTAT-113	Course Title: Demography	Maximum Marks : 30
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Section- A

Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. Write a note on stable and Stationary population theory.
2. Discuss about the migration with its type and deferent methods of estimation.
3. Discuss about the steps of construction of abridge life table Also define abridge life table.
4. Discuss about the life time survival ratio method and census survival method.

Section - B

Short Answer Questions

Note: Answer any four questions. Answer should be given in 200 to 300 Words.

Maximum Marks: 12

1. Write shout notes on (a) NRR (b) GRR
2. Write shout notes on (a) ASFR (b) TFR
3. Write shout notes on (a) CEB (b) Brass PIF ratio
4. Write shout notes on (a) Mean Length of Generation (b) Expectation of life
5. In-migration & immigration.

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Course Code: PGSTAT-114/MASTAT-114	Course Title: Survival Analysis and Reliability Theory	Maximum Marks : 30
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Section- A

Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. Calculate the moment generating function of exponential distribution.
2. Write a short note on Desh Pande test.
3. Discuss about the life tables. Also construct the life table.
4. What do you mean by censored data? Also, differentiate it from truncated data (in detail).

Section - B

Short Answer Questions

Note: Answer any four questions. Answer should be given in 200 to 300 Words.

Maximum Marks: 12

1. Write short notes on Mantel Haenzel test & Log rank test.
2. Describe Weibull distribution with its first four moments.
3. What is Ageing Classes. Write its properties.
4. Write a note on Rank test for the regression coefficient.
5. Define survival function. Establish its relationship with hazard function.

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<i>Course Code:</i> PGSTAT-115/ MASTAT -115	<i>Course Title :</i> Actuarial Statistics	<i>Maximum Marks : 30</i>
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Section - A

Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. Discuss about the utility theory.
2. Discuss about the life table.
3. Discuss about the principles about the compound interest.
4. Write a detailed note on multiple life functions.

Section - B

Short Answer Questions

Maximum Marks: 12

Note: Attempt any four questions. Answer should be given in 200 to 300 Words.

1. Discuss in brief about force of mortality.
2. What is survival function?
3. Discuss endowment insurance.
4. Discuss about the force of interest and discounts.
5. Brief the role of distribution theory on this.

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Course Code: <i>PGSTAT-116/ MASTAT -116</i>	Course Title : <i>Operation Research</i>	Maximum Marks : 30
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Section - A

Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. Discuss about the Linear Programming Also Define the different steps for Graphical solution to LPP.
2. Discuss about the principle of simplex method. Also define non basic variable and artificial variables.
3. Discuss about the different methods for the computation of an initial basic feasible solution.
4. Write a detailed note on classification of models used in operations research.

Section - B

Short Answer Questions

Maximum Marks: 12

Note: Attempt any four questions. Answer should be given in 200 to 300 Words.

1. Discuss in brief about the Hungarian method.
2. Discuss about the basic assumption of two person sum- zero game.
3. Write a note on pay off matrix.
4. Describe the graphical method for or games.
5. What is a dual problem? How do we get a dual of given primal?

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Course Code: PGSTAT-117/MASTAT-117	Course Title: Mathematical and Real Analysis	Maximum Marks : 30
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Section- A

Long Answer Questions

Note: Attempt any three questions. Each question should be answered in 800 to 1000 Words.

Maximum Marks: 18

1. Discuss about the Riemann Stieltjes integrals.
2. Write a note on Convergence of the sequence.
3. State and prove Baire's theorem.
4. State & Prove Riemann stiletos integrals.

Section - B

Short Answer Questions

Note: Answer any four questions. Answer should be given in 200 to 300 Words.

Maximum Marks: 12

1. Write short notes on (a) MP tests (b) UMP tests
2. Discuss about the CRK bound.
3. Discuss in short (a) BAN estimator (b) CAN estimator
4. Discuss about the Bhattacharya bound.
5. Define about the Hahn & Jordan decomposition.