UNIT I


UNIT II


UNIT III

Tabular and graphical description of data: Tables and graphs of frequency data of one variable, Tables and graphs that show the relationship between two variables, Relation between frequency distributions and other graphs, preparing data for analysis

UNIT IV

Soft Computing: Computer and its role in research, Use of statistical soft ware SPSS, GRETL etc in research. Introduction to evolutionary algorithms - Fundamentals of Genetic algorithms, Simulated Annealing, Neural Network based optimization, Optimization of fuzzy systems.

UNIT V


Text Books
1. C.R. Kothari, Research Methodology Methods and Techniques, 2/e, Vishwa Prakashan, 2006

Reference Books
KL University  
Pre-Ph.D Examination  
Research Methodology  
[COMMON TO ALL ENGINEERING STREAMS INCLUDING BIOTECH & MCA]  

Model Question paper  

Time: 3 hrs  
Max Marks: 100  

Answer any five questions:  

1. a) There are various steps involved in research process and they vary based on the research problem. 

   Explain the steps involved in the research process keeping in mind the contexts of the research problem.  

   b) Define research and discuss the objectives of research in detail.  

   a) Synthesizing and critical analysis of a problem are two important phases of research — Justify.  

   b) “Ethics in research is the need of the hour”. Justify the statement.  

2. a) Differentiate between the descriptive and analytical research methods.  

   b) Statistical Analysis and modeling plays a vital role in research — Justify.  

3. a) Explain the discrete probability distribution with an example.  

   b) Define multivariate analysis and give any four examples.  

4. The heights in inches of 30 students are as follows:  

   66, 68, 65, 70, 67, 64, 68, 64, 66, 64, 70, 72, 71, 69, 69, 64, 67, 63, 70, 71, 63, 68, 67, 65, 69, 65, 67, 66, 69, 67  

   Prepare a frequency distribution table showing relative frequency, cumulative frequency and percent frequencies.  

5. a) Discuss the role of computer in research.  

   b) Explain soft computing and learning in fuzzy systems with appropriate diagram.  

6. a) Explain the steps involved in simulated annealing algorithm.  

   b) Explain Genetic Algorithm.  

7. a) Mention the different types of reports, particularly pointing out the difference between a technical report and a popular report.  

   b) Describe, in brief the layout of a research report, covering all relevant points.  

8. a) Mention the different types of reports, particularly pointing out the difference between a technical report and a popular report.  

   b) Describe, in brief the layout of a research report, covering all relevant points.
K L University
Pre-Ph.D. Examination
RESEARCH METHODOLOGY
SYLLABUS
[COMMON TO MATHS, PHYSICS & CHEMISTRY]

Unit - I  INTRODUCTION TO METHODOLOGY:
Format of thesis and dissertation, Research article, Reviews, Monographs, Bibliography, Literature search, Significance of research, Research methods versus methodology, Research and Scientific methods, Defining the research Problem and Research design.

Unit-II Quantitative Methods for Problem Solving:

UNIT III : Physical Statistical Methods
Definition and Scope; Types of data; Collection and presentation of Data (Tables, Graphs, Diagrams); Measure of Central Tendency; Dispersion; Goodness of fit (X² Test).

UNIT IV: Sampling Fundamentals:
Census and sample Survey, Steps in sample design, Different types sample design, Selection of a random sample, Estimation, Estimating the population mean and population proportion.

Unit-V : Interpretation and Report Writing:
Meaning of interpretation; Techniques of interpretation; Precautions in Interpretation; Significance of Report writing; Different steps in Report writing; Layout of Research Project; Types of Reports; Patent writing and filing and Oral presentation.

Text Books:
1. Kothari, C.R; II ed. (2006), Research Methodology, Methods and techniques; New Age Internartional (p) Ltd., Publishers, New Delhi. :

References:
2. Tony Bates A.W. Technology, (2005), e-Learning and Distance Education, New York
Answer any FIVE questions: (5x20)

1. (a) What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem. Give suitable examples.
   (b) Discuss the format of thesis and dissertation.

2. (a) What is time series? Explain various components of time series.
   (b) Fit a straight line traced by the method of least squares for the following data.

   Year: 2005 2006 2007 2008 2009 2010 2011
   Production (in 1000 of tons): 77 88 94 85 91 98 100

3. (a) What are the various types of graphs used for presenting a frequency distribution?
   (b) Explain the different ways of presenting the data.

4. (a) Describe the steps in sample design.
   (b) A random sample of 200 measurements from an infinite population gave a mean value of 50 and a standard deviation of 9. Determine the 95% confidence interval for the mean value of the population.

5. What is meant by report? What are various stages of writing report?

6. (a) Distinguish between correlation and regression.
   (b) Ten students got the following percentage of marks in the course principles of Economics and Statistics.

<table>
<thead>
<tr>
<th>Roll No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marks in Economics:</td>
<td>78</td>
<td>36</td>
<td>98</td>
<td>25</td>
<td>75</td>
<td>82</td>
<td>90</td>
<td>62</td>
<td>65</td>
<td>39</td>
</tr>
<tr>
<td>Marks in Statistics:</td>
<td>84</td>
<td>51</td>
<td>91</td>
<td>60</td>
<td>68</td>
<td>62</td>
<td>86</td>
<td>58</td>
<td>53</td>
<td>47</td>
</tr>
</tbody>
</table>

   Calculate the coefficient of Correlation.

7. (a) The following information is obtained concerning an investigation of 50 ordinary shops of small size.

<table>
<thead>
<tr>
<th>Shops</th>
<th>In town</th>
<th>In villages</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run by Men</td>
<td>17</td>
<td>18</td>
<td>35</td>
</tr>
<tr>
<td>Run by Women</td>
<td>3</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>30</td>
<td>50</td>
</tr>
</tbody>
</table>

   Can it be inferred that shops run by women are relatively more in villages than in towns? Use $\chi^2$ test ($\chi^2$ value for one degree of freedom at 5% level of significance is 3.84)

   (b) Discuss the characterization of materials by various spectroscopic techniques.

8. Explain the following terms.
   a) Research reviews  b) Monographs  c) Census and sample survey  d) Applications of spectra Analysis.
UNIT – A  INTRODUCTION (common to all)

1. Philosophy & Meaning of Research
2. Nature of Inquiry in the Physical Sciences & Social Sciences- a comparison
3. The Researcher – his temperament & qualities
4. The Identification of the Research problem: the definition of the problem
5. Literature survey: the search for facts; the verification of facts; the analysis of evidence; truth & causation; Sources of prejudice and bias.
6. Library references schemes; Note making, Internet.
7. The structure of a thesis.
8. Foot – notes, Diagrams, Bibliographies, Index, Quotation & Translation.
10. Preparation of Manuscripts & Type scripts, Proof-reading

Books prescribed

1. G. Watson. The Literary Thesis
2. F.W. Batson – The Scholar-Critic
3. Altick – The Art of Literary Research

UNIT-B  LITERARY THEORY  (For Research in Literature)

1. Nature of Creativity, imagination & Invention
2. Literature as an Art Form: Literature and the other Arts.
6. Modern Literary trends;
7. Comparative Literature

Books Prescribed

1. Wellek & warren. The Theory of Literature
2. Peter Barry Beginning Theory
4. K.M. Newton- 20th Century Literary Theory
UNIT-C LANGUAGE STUDIES  (For Research in Language)

1. Nature & Scope of Linguistics
2. Branches of Linguistics – Phonetics & Phonology, Lexis, Syntax, Semantics
3. Language Variation – Registers, Dialects, Styles
4. Fundamentals of Language Teaching – aims, objectives, methods, materials
5. Evaluation, First & Second Language
6. Major approaches and Methods of Language teaching
7. Use of Technology for language teaching

**Books Prescribed**

1. John Lyons. *New horizons in Linguistics*
KL University
Pre-Ph.D Examination
Research Methodology
[COMMON TO ALL ENGLISH AND COMMUNICATION & SOFT SKILLS]
MODEL QUESTION PAPER

Time: 3 hours  
Marks : 100

Answer FIVE questions choosing at least THREE questions from Unit – I. Candidates in the area of Literature should answer TWO Questions from Unit – II – Literary Theory, while those in the area of Language Studies should answer TWO questions from UNIT – III- Language Studies. UNIT-1 is Compulsory.

ALL QUESTIONS CARRY EQUAL MARKS

UNIT – I

1. What is literary research? Elucidate its characteristics.
2. How do you identify a research Problem? Discuss the steps involved in the investigation process.
3. “The first stage in research is discovering where to look for information and opinions on your topic” Discuss.
4. “The more you know about the library and the materials and services it provides, the more successful you will be in gathering information and ideas for your research paper”. Discuss.
5. Write short notes on any four of the following
   a) Working Bibliography
   b) Taking Notes
   c) Avoiding Plagiarism
   d) Deductive Method
   e) Language and style in a thesis

UNIT – II

1. How do you distinguish between Modernism and Post – modernism?
2. Illustrate the importance and use of image and metaphor in poetry.
3. “The relationship of literature with fine arts and music is various and complex”. Discuss.
4. Trace the evolution of Feminist criticism touching its main qualities.
5. Write short notes on any four of the following.
   a) Functions of literature
   b) Nature of Literary Theory.
   c) Myth and Modern Literature
   d) Symbolism
   e) Expressionism
   f) Romanticism
   g) Realism
   h) Linguistics
UNIT – III

1. What are the different branches of Linguistics? Explain with examples.

2. Write an essay on varieties of Language.

3. How does Communicative Language Teaching differ from the Audio lingual Method?

4. Discuss how technology can aid Language Teaching.

5. Write Short notes on any four of the following.
   a) Direct Method
   b) Langue and Parole.
   c) Testing & Evaluation
   d) Sociolinguistics
   e) Structural Linguistics.
   f) Psycholinguistics
   g) Task – based Approach
UNIT-I: Fundamentals of Research

Definition and Objectives of Research – Types of Research: Qualitative vs Quantitative Research-The Scientific Research Process- Meaning of research problems, sources of research problems, characteristics of good research problems- Identification, Selection and Formulation of research problem- Review of literature- Identification of sources for review of literature- Formulation of Hypothesis.

Unit-II: Measurement and Research Design:


Unit III: Data Collection and Analysis

Primary and secondary data: Methods of collecting primary data: observation, Interview, questionnaire and schedule; Sources of secondary data - Processing of data: Editing, coding and classification of data- Data analysis: Univariate analysis, Bivariate analysis: correlation, Regression-

linear and Logistic Regression-Association of attributes-Factor analysis-
Fundamentals of Time Series Analysis-Use of SPSS in data analysis.

Unit IV: Testing of hypothesis.


Unit V: Research For Business Decisions

Reference Books:


Reference Journals

2. Journal of Marketing Research.
4. Journal of Consumer Research
5. Harvard Business Review
KL University
Pre-Ph.D Examination
Research Methodology
[COMMON TO MANAGEMENT & COMMERCE]
Model Paper

Time allotted: 3 hours. Maximum Marks:100

Answer any five questions, Each question carries twenty marks (5 x 20 =100).

1. a) Define Research and explain how qualitative research differs from quantitative research.
   b) What is a research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem. Give suitable examples to support your answer.

2. a) Describe some of the important research designs used in experimental hypothesis testing research study.
   b) What is meant by measurement in research ? What difference does it make whether we measure in terms of nominal, ordinal, interval or ratio scale ? Explain giving examples.

3. a) If you are conducting an interview survey of around 500 respondents in Hyderabad, what type of probability sampling you choose and why?
   b) What is Likert’s Scale ? Why it is used? How to construct it ? Explain.

4. a) What is the purpose of a questionnaire ? Why are closed questions are preferred to open ended questions in survey research ?
   b) What is the role of SPSS in data analysis?

5. a) What is meant by processing of data? What are the various steps in data processing?
   b) What is Logistic Regression? When is it used ? Describe the syntax of logistic regression in SPSS.

6. a) What is meant by testing of hypothesis? Draw a flow chart for executing hypothesis testing procedure with a suitable example.
   b) What are the various components of a time series data ? Explain a technique for smoothing time series data.

7. a) As per theory the proportion of beans, in the four groups A,B,C, D should be 9:3:3:1. In an experiment among 1600 beans, the number in the four groups were 882, 313,287 and 118. Does the experimental result support the theory? Apply $\chi^2$ test .
   b) A sample of 400 males is found to have a mean height of 67.47 inches. Can it be reasonably regarded as a sample from a large population with a mean height of 67.39 inches and S.D of 1.3 inches ? . Test at 5% level of significance.

8. a) Develop the management-research question hierarchy, citing management dilemma, management question and research questions, citing some examples.
   b) Suggest a research strategy for identifying the employee motivating factors in a MNC.