

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: MUP  
BRANCH: ARCHITECTURE AND PLANNING**

**SEMESTER : II  
SESSION : SP/2025**

**SUBJECT: AR658 RESEARCH METHODOLOGY**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
- 

Q.1(a)	Define and differentiate between Applied Research and Fundamental Research.	[5]	CO1	II
Q.1(b)	Discuss the major motivations for conducting research in the field of sustainable urban development.	[5]	CO2	III
Q.2(a)	What are the key components of a good research design? Explain with suitable examples.	[5]	CO2	III
Q.2(b)	Differentiate between exploratory and descriptive research designs. Illustrate their relevance using urban case studies.	[5]	CO4	IV
Q.3(a)	Define Mean, Median, Mode, and Standard Deviation. How are these measures used in planning-related research?	[5]	CO3	IV
Q.3(b)	Explain the concept of Standard Error. How is it different from Standard Deviation, and why is it important in hypothesis testing?	[5]	CO4	V
Q.4(a)	Describe the use of ANOVA (One-way and Two-way) in urban planning data analysis.	[5]	CO4	V
Q.4(b)	What is Factor Analysis? Outline its steps and relevance in urban research.	[5]	CO6	VI
Q.5(a)	Discuss the relevance of SPSS/R/Python in statistical data analysis for planning research.	[5]	CO5	VI
Q.5(b)	Discuss key ethical considerations in research with respect to plagiarism and IPR.	[5]	CO7	V

:::01/05/2025:::E