

**CS5001 Research Methodology
(AI and DS)**

PART 2 (Subjective Type)

Friday, 17th June, 2022

Course Instructors

Dr. Naveed Ejaz

Serial No:

Final Exam

Total Time: 2 hr,15 mins

Total Marks: 105

Signature of Invigilator

Student Name

Roll No.

Section

Signature

DO NOT OPEN THE QUESTION BOOK OR START UNTIL INSTRUCTED.

Instructions:

1. Attempt on question paper. Attempt all of them. Read the question carefully, understand the question, and then attempt it.
2. No additional sheet will be provided for rough work. Use the back of the last page for rough work.
3. If you need more space write on the back side of the paper and clearly mark question and part number etc.
4. After asked to commence the exam, please verify that you have eight different printed pages including this title page. There are a total of 3 questions and 8 pages.
5. Calculator sharing is strictly prohibited.
6. Use permanent ink pens only. Any part done using soft pencil will not be marked and cannot be claimed for rechecking.

	Part 1	Q-1	Q-2	Q-3	Total
Marks Obtained					
Total Marks	45	15	30	60	150

Question 1 [15 Marks]

As a philosophy, “positivism” adheres to the view that only “factual” knowledge gained through [observation](#) (the senses), including measurement, is trustworthy. In positivism studies the role of the researcher is limited to [data collection](#) and [interpretation](#) in an objective way. In other words, the researcher is an objective analyst and she distances herself from personal values in conducting the study. In these types of studies research findings are usually observable and quantifiable.

Many of the criticism done at the quantitative research is its “positivism”. In particular, interpretivists argue that it is misleading to treat the social world as if it were same as the natural world. Do you agree with the interpretivists view point? Justify your answer. The marks will be given based on the arguments provided. Please present your arguments pointwise.

Answers supporting any of the two point of views were considered correct. The marks were awarded based on arguments.

Some people got confused between social world and social media world. Natural science studies natural events whereas social science studies the human society. The study of human society is ofcourse much more subjective.

Question 2[15+15=30 Marks]

- i. Compare and contrast the main concerns of quantitative and qualitative researchers regarding the following:
- Goals
 - Data collection, sampling, and analysis
 - Conceptions of reliability, validity, and trustworthiness
 - Research ethics and positionality.

Goals of quantitative and qualitative researchers

Quantitative : Focuses on testing theories and hypotheses

Qualitative: Focuses on exploring ideas and formulating a theory or hypothesis

Data Collection and sampling

Quantitative data collection methods: Surveys, Experiments, Observations

Qualitative data collection methods: Interviews, Focus Groups, Ethnography

Sampling: Quantitative research is generally concerned with probability-based approaches, qualitative research typically uses nonprobability sampling approaches.

Conceptions of reliability, validity, and trustworthiness

Quantitative research method deals with a larger population and quantifiable data and will, therefore, produce a more reliable result than qualitative research.

Quantitative research have more validity as the results can be reproduced. They are also more trustworthy.

Research ethics and positionality

Positionality refers to the stance or positioning of the researcher in relation to the social and political context of the study. It mostly related with qualitative research.

Qualitative: Confidentiality, and the role of the researcher as a data collection instrument.

Quantative: voluntary participation, informed consent, anonymity, confidentiality, potential for harm, and results communication

Note: Marks have been awarded even if not all of the above requirements were fulfilled.

- ii. Provide one example of how qualitative and quantitative methods may be “mixed,” discussing the benefits and limitations of this approach.

There can be many examples that can be given. For example, **Spotify** is using Mixed Methods Research to combine rich user insights with actionable statistics for deeper user insights.

Question 3[60 Marks]

Attached is a research paper, “Improving the quality of education system using Data Science Technologies: Survey”. Read this paper and answer the following questions:

- i. Identify the problem statement in the research paper and write it down. [5]

The problem statement was not that clear in the paper. Many people were unable to identify the problem statement correctly. If you have got 3+3 marks in Part I and II, this means your answer was wrong.

The problem statement was quite long and was in the Abstract.

The last statement of Abstract should be read carefully as the answers of rest of the questions were based on that.

The main objective of this project is to facilitate a guide or a review for having data science technologies implemented in education sector in order to accomplish better education, as well as emphasize potential advantages of data technologies if it has been implemented in and around education systems.

- ii. Next, clearly identify the parts of the problem statement. Write your answers in the following table. Write “Missing” if a component is missing in the problem statement. [4x2=8]

Name of Problem Statement Part	Copy part from the paper

National University of Computer and Emerging Sciences

FAST School of Computing

Spring-2022

Islamabad Campus

iii. Since the attached paper is a survey paper, literature review part is very important. Identify the methodology used for literature review. Provide sufficient details. [8]

Many students made a mistake here. You were asked about the methodology of conducting LR as was required in first assignment/project. Any answer that analyzes the methodology of LR and supported by arguments was considered correct.

Overall the methodology of LR was not clearly written except one inclusion criteria. The survey was done in a haphazard way.

- iv. Clearly write down the strengths and weaknesses of the methodology used for literature review. Write your answers in the table below. [10]

Strengths	
1	
2	
3	

Weaknesses	
1	
2	
3	

--	--

- v. Comment on the quality of Abstract by identifying weaknesses and strengths. [6]

A bit lengthy and confusing though atleast it provides the objective of the study.

- vi. Comment whether the overall analysis presented in paper has been done qualitatively or quantitatively. Justify your answer. [8]

Overall it is qualitative and it lists the studies and their data.

vii. Are the conclusions drawn supported by the overall results/analysis provided in the paper? Justify your answer. [8]

For the most part, the conclusions are not supported well by the study.

viii. Provide point-wise comments on overall structure of the paper. [7]

1. LR not done properly.
2. Paper is too confusing as it talks about multiple things and end up focusing on few things.
3. The sturuture and presentation of the paper had many issues.