B.Sc. in EEE, 6th Semester   22 May, 2024 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Semester Final Examination   Summer Semester, A. Y. 2022-2023
Course No.: EEE 4607   Time: 3 hours
Course Title: Research Methodology   Full Marks: 100

There are 4 (**four**) questions. Answer all 4 (**four**) questions. The symbols have their usual meanings.
Programmable calculators are not allowed. Marks of each question and corresponding COs and POs are
written in the brackets.

1. a)	Write the key components of research design. Justify the need for research design in the research process. (8+4)	12 (CO1, CO2, PO1)
b)	Outline the literature review process and its significance in research. Discuss the steps involved in conducting a literature review and how researchers can effectively synthesize existing knowledge to identify research gaps. (6+7)	13 (CO2, CO4, PO2)
2. a)	Define primary and secondary data, and discuss the advantages and disadvantages of using both types of data in research. Describe the characteristics of secondary data that a researcher must ensure before using it in research. (6+6)	12 (CO1, PO1)
b)	Describe the process of data processing, including data editing, coding, and classification. Discuss why data processing is crucial in ensuring the accuracy and integrity of research data. (9+4)	13 (CO1, CO3, PO2)
3. a)	Discuss the structure and purpose of each section of a scientific paper, including the abstract, introduction, methods, results, discussion, and conclusion. How does each section contribute to communicating research findings effectively?	20 (CO2, CO5, PO3)
b)	Compare and contrast the components of a research proposal with those of a scientific paper.	5 (CO4, PO2)
4. a)	Discuss different methods for primary data collection, including observation, interview and questionnaires. Discuss the ethical considerations that researchers should consider when conducting empirical research involving human participants. (11+4)	15 (CO2, PO1)
b)	Explain the different types of data analysis techniques used in research, such as statistical analysis, correlation analysis, and regression analysis. Provide examples of research scenarios where each technique would be most appropriate.	10 (CO2, CO4, PO2)