**FACULTY OF SCIENCE AND TECHNOLOGY**

**END OF SEMESTER EXAMINATIONS -APRIL 2025**

**PROGRAMME: MIT**

**YEAR/SEM: YEAR 1 SEM 1**

**COURSE CODE: MIT710**

 **NAME: COMPUTER APPLICATIONS IN RESEARCH**

**DATE: 16/04/2025**

**TIME: 2.00 PM – 5.00 PM**

**INSTRUCTIONS TO CANDIDATES:**

- **SECTION A IS COMPULSORY (40 MARKS)**
- **ATTEMPT THREE QUESTIONS IN SECTION B (60 MARKS)**
- **SUBMIT A FLASH DISK FOR YOUR OUTPUTS**
- **FOOD AND DRINKS ARE NOT ALLOWED IN THE EXAM VENUE**
- **FOLLOW THE INSTRUCTIONS IN EACH SECTION TO ATTEMPT THE APPROPRIATE NUMBER OF QUESTIONS. (100 MARKS)**
- **DO NOT OPEN THIS EXAMINATION UNTIL YOU ARE TOLD TO DO SO**
- **THE TIME ALLOWED FOR THIS EXAMINATION IS STRICTLY THREE HOURS.**
- **CANDIDATES MUST SIGN-IN AND SIGN-OUT OF THE EXAM VENUE.**

## Section A (Compulsory, 40 marks)

1. Imagine you are conducting a study on the relationship between **age**, **income**, **gender**, and **education level** for a group of 15 individuals. Create a fictional dataset with the following variables:
   - **(i)**     **Participant ID** (a unique identifier for each person)
   - **(ii)**    **Age** (between 18 and 50 years)
   - **(iii)**   **Income** (between $25,000 and $100,000)
   - **(iv)**   **Gender** (Male or Female)
   - **(v)**     **Education Level** (Choose from: High School, Bachelor's, Master's, Doctorate)

Ensure the data makes sense, for example, higher education levels might correspond with higher income, and older participants might have higher incomes. Enter the data into SPSS and use it to answer the questions in Section B.

## Section B (Attempt three, 60 marks)

2.  (a) How many male/female respondents are there in the dataset? Did any respondent fail to indicate their gender? (05 Marks)
   (b) How many respondents fall into each education level category (High School, Bachelor's, Master's, Doctorate)? (05 Marks)
   (c) What is the mean and median income of the respondents? (05 Marks)
   (d) What is the range and standard deviation of income values (from the lowest to the highest) among the respondents? (05 Marks)
3. (a) How many low/medium/high-income respondents are there? Define low, medium, and high income based on the data. (05 Marks)
   (b) What is the average age of respondents in each income group (low, medium, high)? (05 Marks)
   (c) What is the standard deviation for the **Age** and **Income** variables? (05 Marks)
   (d) Are there any missing values for age or income in the dataset? (05 Marks)
4. (a) Produce a bar chart comparing the average income across different education levels. (06 Marks)
   (b) Produce histograms illustrating the distribution of **Income** and **Age** of respondents. What do the distributions look like? Are they skewed? (07 Marks)
   (c) Produce boxplots comparing **Age** by **Gender**. What can you conclude about the spread and central tendency of age by gender? (06 Marks)
5.  Are there gender differences in the distribution of **Income** across respondents? (20 Marks)
6. Is there a relationship between **Age** and **Education Level**? How does education level affect the age distribution? (20 Marks)
7. (a) Is there a relationship between **Age** and **Income**? (10 Marks)
   (b) Create a scatterplot of **Age** and **Income** to visually assess the relationship. What patterns do you see? (10 Marks)