



**PMFT 711: STATISTICS I**  
**EXAMINATION –APRIL 2024**  
**TIME: 3 HOURS**

**INSTRUCTIONS: Answer question one and any other three**

**QUESTION ONE [COMPULSORY] [10 Marks]**

- a) Define the following terms giving examples relevant to your counselling profession.
- Statistics
  - Probability
  - Correlation Analysis
  - A cumulative frequency curve [ 6 marks]
- b) The data below are scores of six students competing in a Psychology debate. Find the standard deviation.
- |     |     |     |     |     |     |            |
|-----|-----|-----|-----|-----|-----|------------|
| 200 | 203 | 205 | 206 | 207 | 209 | [ 4 marks] |
|-----|-----|-----|-----|-----|-----|------------|
- c) The two data sets given below are rewards given to two counsellors who were visited by six students. Calculate the rank correlation coefficient and comment on the relationship between X and Y. [5 marks]
- X: 77, 62, 54, 93, 86, 89
- Y: 73, 85, 53, 58, 84, 90

**QUESTION TWO [10 Marks]**

The following are distances in meters travelled by 80 Counselling Psychologists in search for patients in need of their services.

482, 470, 469, 423, 471, 442, 505, 472, 453, 450, 415, 433, 420, 459, 424, 444, 455, 462, 495, 426, 502, 447, 438, 436, 498, 474, 515, 454, 453, 447, 511, 416, 443, 449, 421, 445, 452, 478, 407, 433, 466, 413, 452, 412, 450, 407, 500, 451, 508, 477, 430, 419, 456, 439, 413, 435, 479, 463, 462, 474, 408, 451, 459, 403, 421, 448, 462, 438, 475, 436, 457, 460, 432, 509, 441, 468, 481, 498, 432, 431.

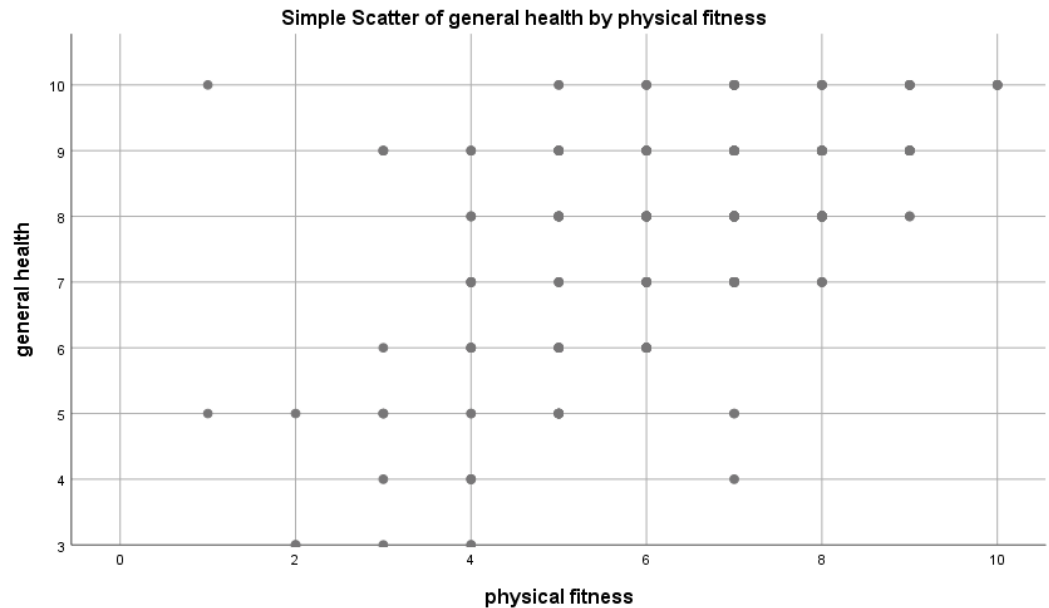
- a) Prepare a frequency distribution table starting with the class 400 – 419. [2 marks]
- b) Draw a cumulative frequency curve on a graph paper. [3 marks]

Use the graph to obtain the following:

- The median distance. [1 mark]
- The 4<sup>th</sup> decile and 65<sup>th</sup> percentiles [2 marks]
- Number of Counsellors who travelled more than 460 meters. [2 marks]

### QUESTION THREE [10 Marks]

- The scatterplot given below is a plot of general health against the physical fitness of Marriage therapists to assess their health condition before partaking in an assignment in their place of work. Critically analyse the scatter plot. [3 marks]



- Two sets of counselling patients (male and female) were put in different rooms. Room A had 4 male and 3 female and room B had 6 male and 5 female. The Counsellor attended to two patients one after the other , after which each went back home.  
Draw a tree diagram and find the probability that
  - The two were of same gender [3 marks]
  - At least one was a man [2 marks]
  - Only two were female [2 marks]

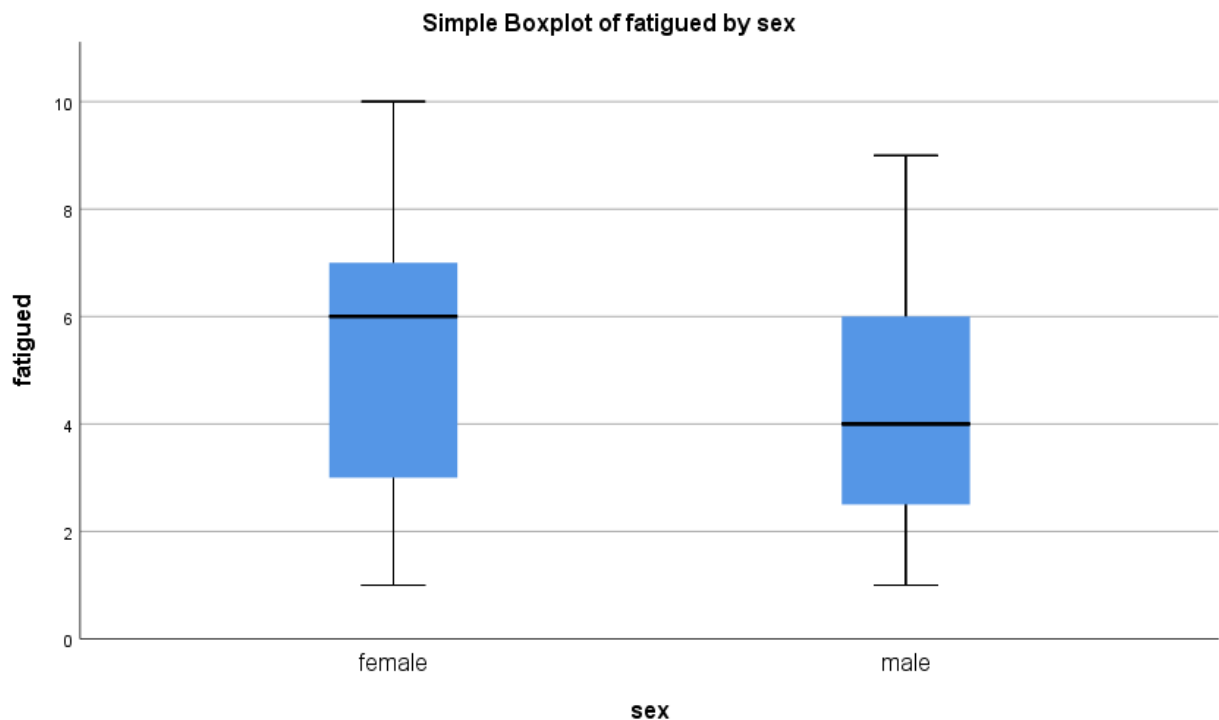
### QUESTION FOUR [10 Marks]

- The following data indicate the rate of recovery from drug abuse versus the number of weeks in the program of 6 students.

|                   |    |    |     |     |    |    |
|-------------------|----|----|-----|-----|----|----|
| No of weeks (X)   | 2  | 3  | 8   | 11  | 4  | 5  |
| Recovery rate (Y) | 21 | 42 | 102 | 130 | 52 | 57 |

- Fit a simple regression equation of Y on X for the above data. [6 marks]
- Estimate the recovery of a student who plans to take the program for 10 weeks. [1 mark]

- ii) The Whiskers box plot shown below is an SPSS output for male and female in a rehabilitation centre. Critically analyse the plot. [3 marks]



#### QUESTION FIVE [10 Marks]

- a) Using the data given in question two (above), calculate the following using the assumed mean method
- The mean distance travelled [3 marks]
  - The mode of the distance travelled [2 marks]
  - The standard deviation of the distance travelled [3 marks]
- b) Define the term Regression analysis using an example in counselling [2 marks]

#### QUESTION SIX [10 Marks]

- a) You are given the following table of descriptive statistics of overall well-being of Psychology counsellors by gender.

| Sex    | N  | Minimum | Maximum | Mean | Std. Dev. |
|--------|----|---------|---------|------|-----------|
| Female | 70 | 1       | 10      | 6.07 | 2.241     |
| Male   | 52 | 1       | 9       | 5.12 | 2.373     |

Highlight and discuss the findings that can be drawn from the results [2 marks]

- b) Outline and briefly explain the laws of probability and briefly explain the three approaches to probability using relevant examples in counselling. [8 marks]