**ACADEMIC YEAR 2021 – 2022**

| Program | Year | Semester | Paper |
|---|---|---|---|
| LTM | 2 | 1 | MAIN |

| | |
|---|---|
| **MODULE NAME:** | **Statistics-1** |

| | | | |
|---|---|---|---|
| **MODULE CODE:** | **PCALC-II-I** | **EXAM DATE:** | **11/01/2022** |
| **TEACHER'S NAME:** | **Dr. Yaqoob Mubarak Al Rahbi** | **DURATION:** | **120 mins.** |

| Questions to be answered on: | Allowed requirements | Number of pages |
|---|---|---|
| Space provided on the question paper | Pen, Pencil & Calculator | (Incl. Cover Page): **10** |

**Points of Attention:**

- For each question, the maximum earned points are mentioned between brackets at the end of each question.
- Write very clearly! Answers that are not readable are not marked and don't get points!
- Make sure your answers are written to the point.
- All answers should be written **in English**.
- Write all the answers **in blue or black pen only (No pencil)**.
- Answer written in **Pencil** will not be marked.
- Use the **pencil** only for **diagrams & graphs & drawing**.
- Show all the calculation steps in the given space.
- When finished submit the question paper, together with the answer scripts and the signed cover page to the invigilator.
- Any cheating/copying may result in an instant failing of the examination.

| | |
|---|---|
| **STUDENT NAME:** | |
| **STUDENT ID:** | **Section: ……..** |

**FINAL MARKS**

| | |
|---|---|
| | **40** |
| | **10** |

**Number of answer scripts**: ……

**Invigilator:** …….…….....

**Student's signature:** ……

**Time of receipt:** …….....

**Question 1**. **[6 marks]**

A) Confirmed Measles Cases The data show a sample of the number of confirmed measles cases over a recent 12-year period. Find the range for the data.

212 63 71 140 43 55 66 37 56 44 116 86

B) Write the boundaries of each value.

i. 32 minutes. ii. 0.48 millimeter. iii. 12.1 quarts.

**Question 2**. **[8 marks]**

The fuel capacity in gallons for randomly selected cars is shown as the follwing.

| Class | Frequency |
|---|---|
| 10–12 | 6 |
| 13–15 | 4 |
| 16–18 | 14 |
| 19–21 | 15 |
| 22–24 | 8 |
| 25–27 | 2 |
| 28–30 | 1 |

a) Evaluate the variance and standard deviation for the data.

b) Find the mode.

**Question 3**. **[8 marks]**

The following data shown the relationship between a driver's age and the number of accidents he or she has over a 1-year period.

| **Driver's age $x$** | 63 | 65 | 60 | 62 | 66 | 67 | 59 |
|---|---|---|---|---|---|---|---|
| **No. of accidents $y$** | 2 | 3 | 1 | 0 | 3 | 1 | 4 |

If there is a significant relationship, then:

a) Use the given data to find the equation of the regression line.

b) Predict the number of accidents of a driver who is 64.

**Question 4**. **[10 marks]**

The number of murders and robberies per 100,000 population for a random selection of states is shown.

| | | | | | |
|---|---|---|---|---|---|
| Murders | 2 | 2 | 5 | 2 | 2 |
| Robberies | 25 | 14 | 15 | 9 | 8 |

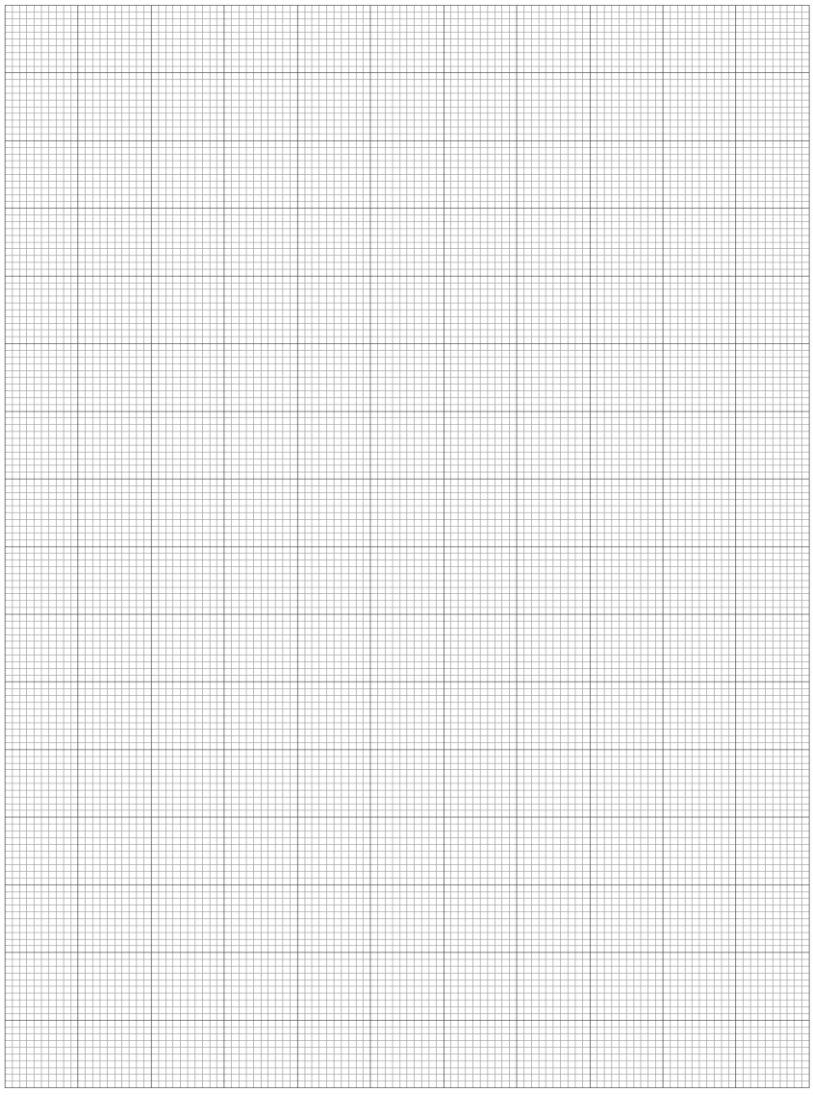
a) Compute the value of the correlation coefficient.

b) Is there any relationship between the variables? Explain.

**Question 5.** **[8 marks]**

Construct an ogive for the following data.

| Class limits | Frequency |
|---|---|
| 90–98 | 6 |
| 99–107 | 22 |
| 108–116 | 43 |
| 117–125 | 28 |
| 126–134 | 9 |



# Formula sheet

1) $\bar{x} = \frac{\sum x}{n}$

2) $\bar{x} = \frac{\sum fx}{n}$, n $= \sum f$

3) $s = \sqrt{\frac{\sum (x-\bar{x})^2}{n(n-1)}}$

4) $s = \sqrt{\frac{n(\sum x^2)-(\sum x)^2}{n(n-1)}}$

5) $s = \sqrt{\frac{n(\sum fx^2)-(\sum fx)^2}{n(n-1)}}$

6) $r = \frac{n(\sum (xy)-(\sum x)(\sum y)}{\sqrt{[n(\sum x^2)-(\sum x)^2][n(\sum y^2)-(\sum y)^2]}}$

7) Median $= L + \frac{\left(\frac{n}{2}-B\right)}{G} \times W$

8) Mode $= L + \frac{(f_m - f_{m-1})}{(f_m - f_{m-1})+(f_m - f_{m+1})} \times W$

9) $y = a + bx$

$\sum y = na + b\sum x$

$\sum xy = a\sum x + b\sum x^2$