THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

JANUARY – APRIL 2022

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF SOCIAL SCIENCES & DEVELOPMENT STUDIES

REGULAR/ODEL PROGRAMME

DSW 905: SOCIAL STATISTICS

Date: APRIL 2022	Duration: 3 Hours
INSTRUCTIONS: Answer any FOUR Questions	

Q1. Using the following exam scores data from the statistical techniques class:

33; 42; 49; 49; 53; 55; 55; 61; 63; 67; 68; 68; 69; 69; 72; 73; 74; 78; 80; 83; 88; 88; 88; 90; 92; 94; 94; 94; 94; 96; 100

- a. Create a frequency distribution table using a class interval of ten (10) **(3 marks)**
- b. From the GROUPED data, calculate the following to one decimal place;
    - i.   The mode   **(4 marks)**
    - ii.   The median   **(4 marks)**
- c. Draw a bar graph for the frequency distribution   **(4marks)**

Q2. Using the following data from a sociological study, calculate;

Class Interval	Frequency
24.5 – 25.5	3
25.6 – 26.6	9
26.7 – 27.7	11
27.8 – 28.8	8
28.9 – 29.9	4

- **i.**   The mean   **(3 marks)**
- ii.   The interquartile range   **(6 marks)**
- iii. The sample standard deviation   **(6 marks)**

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Q3. Four brands of flashlight batteries are to be compared by testing each brand in five flashlights. Twenty flashlights are randomly selected and divided randomly into four groups of five flashlights each. Then each group of flashlights uses a different brand of battery. The lifetimes of the batteries, to the nearest hour, are as follows.

Brand A	Brand B	Brand C	Brand D
42	28	24	20
30	36	36	32
39	31	28	38
28	32	28	28
29	27	33	25

Preliminary data analyses indicate that the independent samples come from normal populations with equal standard deviations. At the 5% significance level, does there appear to be a difference in mean lifetime among the four brands of batteries?

(15marks)

Q4. The table below shows the number of absences, x, in a statistics course and the final exam grade, y, for 7 students

X	1	0	2	6	4	3	3
Y	95	90	90	55	70	80	85

    i.   Plot a scatter diagram on exam grade, y, against the number of absences, x. **(3 marks)**
    ii.   Calculate the equation of the regression line of y on x **(5 marks)**
    iii.   Calculate the value of the Pearson's product–moment correlation coefficient, r and interpret your result. **(7 marks)**

Q5. The marks of 1000 students in an examination follows a normal distribution with mean of 70 and standard deviation of 5. Find the number of students whose marks will be;

    I.   Less than 65 **(3 marks)**
    II.   Between 65- 75 **(4 marks)**
   III. More than 75 **(3 marks)**
  IV. Suppose 95% of the scores are to be selected, what is the minimum score that one has to obtain to be selected? **(5 marks)**

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Q6.   A researcher wanted to investigate if marital status and education level were independent. The study yielded the following observations;

	Primary	High.Sch	College	Undergraduate	Postgraduate	Total
Married	12	36	45	36	21	150
Divorced	6	9	9	3	3	30
Widowed	3	9	9	6	3	30
Unmarried	18	36	21	9	6	90
Total	39	90	84	54	33	300

Using a significance level of 0.01; are marital status and education level independent?
                                                                                      (15 marks)

END

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