THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

SEPTEMBER – DECEMBER 2019 TRIMESTER

FACULTY OF ARTS AND SOCIAL SCIENCES

DEPARTMENT OF PSYCHOLOGY

REGULAR PROGRAMME

MCP 507: DATA PROCESSING AND COMPUTER APPLICATION

Date: DECEMBER 2019	Duration: 3 Hours
INSTRUCTIONS: Answer FOUR Questions. Question ONE is COMPULSORY	

Q1.   Distinguish between the following sets of statistical terms or concepts
   a. Population and sample
   b. Parameter and statistic
   c. Type I Error and Type II Error
   d. Null hypothesis and Alternative hypothesis
   e. Categorical variables and continuous variables
   f. Dependent and Independent variable
   g. Two-tailed and One-tailed test
   h. Alpha and p-value
   i. Descriptive and inferential statistics

(17.5 Marks)

Q2.   These data represent measures from students used to predict how they performed in an exam.

Student id	Exam Score	hours spent revising	Anxiety	A-level entry points
1	68	39	62	24
2	68	47	39	26
3	58	41	57	22
4	72	46	17	28
5	75	51	46	28
6	82	48	52	28

7	38	25	48	18
8	55	37	61	20
9	48	30	34	18
10	68	44	74	26
11	62	40	40	24
12	58	31	65	20
13	52	35	34	22
14	55	26	91	22
15	58	35	13	24
16	65	45	54	20
17	42	30	58	20
18	62	40	61	24
19	72	61	26	26
20	80	60	50	29

a) Prepare and enter the given dataset into SPSS.

(4 Marks)

b) Formulate a suitable Null and Alternative hypothesis for this study

(2 Marks)

c) Which of the variables in the dataset is **Dependent** and which ones are **Independent**?

(2 Marks)

d) Conduct a regression analysis and comment on the results

(4 Marks)

e) Use the results obtained in d) above and test the Null hypothesis formulated in b) above at 95% confidence level.   **(5.5 Marks)**

Q3.   A researcher was interested in determining the mean differences in IQ of three groups of students drawn from three disciplines. He obtained the IQ scores from three groups of undergraduates of different disciplines (Physics, Maths, and Chemistry) **as shown in the table below:**

Student Id	Discipline	IQ score
1.	Physics	44
2.	Physics	40
3.	Physics	44
4.	Physics	39
5.	Physics	25
6.	Physics	37
7.	Physics	31
8.	Physics	40

9.	Physics	22
10.	Physics	34
11.	Maths	36
12.	Maths	40
13.	Maths	37
14.	Maths	35
15.	Maths	39
16.	Maths	40
17.	Maths	36
18.	Maths	38
19.	Maths	24
20.	Maths	27
21.	Chemistry	52
22.	Chemistry	50
23.	Chemistry	51
24.	Chemistry	52
25.	Chemistry	45
26.	Chemistry	49
27.	Chemistry	47
28.	Chemistry	46
29.	Chemistry	47
30.	Chemistry	47

a) Prepare and enter the given dataset into SPSS.

(3 Marks)

b) Formulate a suitable Null and Alternative hypothesis for this study

(2 Marks)

c) Conduct F-test and write the results in APA style

(5 Marks)

d) Determine if there is a significant mean difference in the students' IQ from the three disciplines given alpha value of 0.05.

(5 Marks)

e) Explain why F–test is appropriate for testing the hypothesis in b) above

(2.5 Marks)

Q4. A psychologist student at The Catholic University of Eastern Africa sought to determine whether lactation had an effect on the number of hours mothers spent on their cellphones in a typical month.

Analyze the data in the table below to test the objective the student set out to tackle.

(17.5 marks)

Mother Id	% Time spent on cellphone	
	Lactating	Not Lactating
1	77.0	55.5.
2	62.35	43.80
3	55.77	66.80
4	59.98	68.00
5	51.60	57.88
6	61.48	61.90
7	52.57	45.4.
8	52.50	56.67
9	56.43	73.30
10	60.13	77.50
11	48.60	63.53
12	42.90	54.50
13	53.50	55.80
14	70.43	91.10
15	47.1.	64.05
16	50.08	71.40

Q5.   a)   What is a Chi-Square Test of Independence? What is its purpose?

b)   A study was conducted to look at who is more likely to own a smartphone--men or women. After asking a bunch of people (both men & women), the study come up with the following data:

Id	Gender	Type of cellphone
1	Male	Smartphone
2	Female	Smartphone
3	Male	Regular Phone
4	Male	Regular Phone
5	Female	Regular Phone
6	Male	Regular Phone
7	Female	Smartphone
8	Male	Smartphone
9	Male	Regular Phone
10	Female	Regular Phone
11	Male	Regular Phone
12	Female	Regular Phone

13	Male	Smartphone
14	Male	Smartphone
15	Female	Smartphone
16	Male	Smartphone
17	Male	Regular Phone
18	Female	Regular Phone
19	Male	Regular Phone
20	Female	Regular Phone

Use the chi-square test to determine if smartphone ownership is dependent on gender at 5% significance level.

(17.5 Marks)

END

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