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**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF SPATIAL PLANNING**

**UNIVERSITY EXAMINATION FOR THE DIPLOMA IN ISASTER MANAGEMENT**

**SEMESTER2 2016/2017 ACADEMIC YEAR**

**CENTRE: NAIROBI CITY CAMPUS**

**COURSE CODE: PDM 2216**

**COURSE TITLE: QUANTITATIVE TECHNIQUES**

**EXAM VENUE: STREAM: SPATIAL PLANNING**

**DATE: EXAM SESSION:**

**TIME: 2 HOURS**

**Instructions:**

1. **Answer question 1 ( compulsory ) and ANY other 2 questions.**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

Q1. a) i) Differentiate between inferential and descriptive statistics? (3 mks)

ii) What is the role of statistics in research? (3 mks)

iii) Name any **FOUR** statistical measures that are used to summarize the survey/ research data.

(3 mks)

iv) What is chi square test? (3 mks)

v) Explain the significance of chi square test in statistical analysis. (3 mks)

#()\* +#,###"$+

-&

. /  0

1223 42""1 "313 12566

1225 178"2 4"51 731"

1227 11653 2 644

122" 3573 2262 66

1226 7282 364" 131"

9:\*;<==$$=

>?:

@(#(##

!($ %"&'

#()\* +#,###"$+

-&

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!($ %"&'

b) The following are GDP figures from three East African state for a period of 5 years. The figures are in US$M

Year Kenya Uganda Tanzania

2008 30,552 15,828 20,744

2007 26,950 13,572 16,825

2006 22,478 11,011 14,331

2005 18,768 10,040 14,141

2004 16,090 8,435 12,825

\*source; United National Statistics Dept, http://unstats.un.org/

Required;

Compute any **TWO** measures of central tendency and any two measures of dispersion for each country and comment on the results comparing between the three states. (15 Marks)

Q2. a) what is a hypothesis? (3 mks)

b) A manufacturer considers his production process to be working properly if the mean length of the rods manufactured is 8.5’’. The standard deviation of the rods always runs about 0.26’’. Suppose a sample of 64 rods is taken and this gives a mean length of rods equal to 8.6’’.

i) What are the null and alternative hypotheses for this problem? (8mks)

ii) Infer at 5% level of significance to confirm that the process is working properly (9mks)

Q3. The weight of 10 students is as follows;

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S. No | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Weight (kg) | 38 | 40 | 45 | 53 | 47 | 43 | 55 | 48 | 52 | 49 |

Can it be said that the variance of the distribution of weight of all the students from which the above sample of 10 students was drawn is equal to 20kg? Test this at 5% and 1% level of significance.(20 mks)

Q4. In a random selection of 64 out of 2400 intersections in a small city, the mean number of scooter accidents per year was 3.2 and the sample standard deviation was 0.8.

a) Make an estimate of the standard deviation of the population from the sample standard deviation. (6 mks)

b) Work out the standard error of mean for this finite population. (6 mks)

c) If the desired confidence level is 0.90, what will be the upper and lower limits of the confidence interval for the mean number of accidents per intersection per year? (8 mks)

Q5. a) The procedure of testing hypothesis requires a researcher to adopt several steps. Describe these steps. (10 mks)

b) There are several limitations of hypothesis tests which should always be borne in mind by a researcher. Describe such limitations and point out precautions the researcher must take while drawing inferences as per the results of the said tests. (10 mks)