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**University Examinations 2015/2016**

FOURTH YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS INFORMATION TECHNOLOGY, BACHELOR OF SCIENCE IN COMPUTER TECHNOLOGY

AND

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

**CCS 3353/CIT 3378: RESEARCH METHODOLOGY**

**DATE: NOVEMBER 2015 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Differentiate between the following types of research. (4 Marks)
2. Basic research and applied research
3. Exploratory research and descriptive research
4. Explain the following measurement techniques indicating situations where they are appropriate: (4 Marks)
5. Nominal
6. Ordinal
7. Point out the possible sources of error in measurement. Describe the tests of sound measurement. (4 Marks)
8. Use examples to illustrate situation where the following research design can be applied.

(6 Marks)

1. Survey
2. Case study
3. Experiment
4. Briefly explain purpose of literature review section in a research study report. (6 Marks)
5. In each of the area listed below identify any 2 products and 3 quality factors for a research investigation. (6 Marks)
6. Artificial Intelligence
7. Software Engineering
8. Network Security

**QUESTION TWO (20 MARKS)**

1. A researcher would wish to devise a tool for testing mobile applications upon realizing a gap in existing mobile application testing techniques. Write the following for the research.
2. An appropriate title (2 Marks)
3. A problem statement (two paragraph) (5 Marks)
4. At least 4 objectives (4 Marks)
5. A research involves finding relationship between 2 variables. Identify the most appropriate statistical tool to find the cause and effect of the two variables. Justify.
6. Marks)
7. Discuss the following as used in measurement. (4 Marks)
8. Test for validity
9. Test for reliability

**QUESTION THREE (20 MARKS)**

A software engineering researcher would wish to investigate the relationship between size, encapsulation and complexity of an object oriented application to its reliability.

1. Use a Goal definition template to identify the research objects, subjects, purpose, quality of focus, perspective and context. (6 Marks)
2. Will the researcher use a survey / Case study / Experiment? Justify. (4 Marks)
3. Show/outline the variable in the research to be measured then indicate the most appropriate measurement scale for each variable and briefly discuss their validity and reliability. (6 Marks)
4. Which are the most appropriate statistical tools for this research? Justify.

 (4 Marks)

**QUESTION FOUR (20 MARKS)**

a) As Network researcher and you have come up with a better method for improving network security.

1. Write an appropriate title for the research project (3 Marks)
2. Write the problem statement (2 paragraph) (4 Marks)
3. Draw the conceptual framework. (5 Marks)
4. Write the research hypothesis statements (3 Marks)

b) Differentiate between descriptive statistics and inferential statistics explaining situations where

 each is applied in research. (5 Marks)

**QUESTION FIVE (20 MARKS)**

1. Using examples describe how you would work out the following statistical measures.

(4 Marks)

1. Correlation of X and Y
2. Standard deviation
3. Under what circumstance would you recommend: (6 Marks)
4. A probability sample
5. A stratified sample
6. A cluster sample
7. Describe the different methods of scale construction giving an advantage and disadvantage in each case. (5 Marks)