DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY
University Examinations 2014/2015

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONIC ENGINEERING AND BACHELOR OF SCIENCE IN TELECOMMUNICATION AND INFORMATION ENGINEERING

HRD 2114 : RESEARCH METHODOLOGY

DATE: 12TH AUGUST 2014 ~~ ~~ **TIME: 8.30AM – 10.30AM**

Instructions:
1. Answer **QUESTION ONE** and any other **TWO QUESTIONS**.
2. Show clearly your work and the number of questions attempted.

QUESTION ONE (30 MARKS)

a) Given that the general problem area is the relationship between family background and students' academic performance;
     (i)   Identify three variables that can be considered in this study.   (3 marks)
     (ii)   Formulate the research questions   (4 marks)

b) Distinguish between the following types of research;
     (i)   Pure And Applied Research   (2 marks)
     (ii)   Explanatory And Exploratory Research   (2 marks)

c) What is the difference between conceptual definition and operational definition?
            (2 marks)

d) Discus the factors that should be considered in selecting a research problem.
            (5 marks)

e) Discuss three types of hypothesis.   (3 marks)

f) You are expected to carry out a study in attitude of females towards engineering courses, what would be the functions of literature reviewing in your research
            (3 marks)

g) Distinguish between the ratio and interval scales of measurements   (2 marks)

h) Distinguish between descriptive and inferential data analysis   (4 marks)

QUESTION TWO (20 MARKS)

a) Assume you wish to analyze the car traffic that passes the Dedan Kimathi University gate. You are interested in determining how many vehicles pass by the gate and you would like to classify them on various relevant dimensions.

       (i) What other information might you find useful to observe?   (3 marks)

       (ii) How would you decide what information to collect?   (3 marks)

       (iii)Devise the operational definition you would need.   (3 marks)

       (iv) How would you sample the vehicle traffic?   (3 marks)

b) Distinguish between probability and non- probability sampling   (4 marks)

c) What are some of the considerations in the preparation of a research design?

     (4 marks)

QUESTION THREE (20 MARKS)

a) Briefly describe the three main experimental research designs   (10 marks)

b) Which of the secondary sources would you recommend for the following topics?

   (i) Recent research on the integration of ICT in education.   (1 marks)

   (ii) A brief overview on poverty eradication in Korogocho slums in Nairobi.

     (2 marks)

   (iii) A survey of students' attitude towards Engineering.   (1 mark)

c) Discuss the various characteristics of research   (3 marks)

d) Discuss the various steps in problem formulation   (3 marks)

QUESTION FOUR (20 MARKS)

   a) Compare concepts of validity and reliability as used in research.   (2 marks)
   b) Discuss three procedures used to determine the reliability   (6 marks)
   c) Discuss the procedures of establishing predictive validity of research instruments.
     (6 marks)
   d)   Distinguish between probabilistic and non-probabilistic sampling methods.
     (2 marks)

   e) Discus the snowball and stratified sampling methods   (4 marks)

QUESTION FIVE (20 MARKS)

A software company which develops customized software solutions for its clients worldwide is facing internal problems with its employees. The company's employee productivity which had reached record levels is now decreasing. The firm also observed that the attrition rates which were very low previously are now beginning to increase as the market is gaining momentum. The management of the company has decided to carry out a study to seek reasons for its employee behavior.

(i) Explain the type of research design that is suitable for the above study

(7 marks)

(ii) Explain the possible dependent and independent variables of the study

(6 marks)

(iii)Formulate three possible specific objectives of the study   (3 marks)

(iv)Explain how you can construct the sample size   (4 marks)