KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN SCIENCE IN BIOMEDICAL SCIENCES

FIRST SEMESTER, 2021/2022

(FEBRUARY - JUNE, 2022)

DPBS 912: DATA AND SCIENTIFIC INFORMATION MANAGEMENT

STREAM: Y1 S1 **TIME: 3 HOURS**

DAY: **DATE:**

INSTRUCTIONS:

1. ***Do not write anything on this question paper.***
2. ***Answer question ONE (Compulsory) and any other TWO questions.***

1. Assuming that your PhD thesis is titled 'In-vivo efficacy profiles of *Plasmodium falciparum* to Artemether-Lumefantrine', discuss the steps that you will follow to write a scientific article from this work [20 marks]
2. Discuss the advantages of computer database systems [20 marks]
3. After carrying out your research, the information should be presented in a clear, concise way with key findings and recommendation that are actionable. Discuss the principles of communicating data arising from scientific research [20 marks]
4. Use the following excerpt to answer the questions that follow:

Abstract: The antiviral activity of hydro-distilled essential oils obtained from *Allium cepa L.* (bulbs), *Allium sativum* (bulbs), *Cuminum cyminum* (seeds), *Corriandrum sativum* (herb and seeds), *Petroselinum sativum* (herb) and *Ocimum basilicum* (herb) cultivated in Egypt against (HSV1) were tested by using cytopathicity (CPE) assay. African green monkey kidney (Vero) cell line (virus infected cells) were incubated with different levels of the seven essential oils[onion, garlic, cumin, coriander (herb and seeds), parsley and basil] 200, 500 and 1000µg/ml and the EC_{50} were 1060, 320, 400, 2045, 341, 386 and 615 µg/ml, respectively. On the other hand the antioxidant activity of essential oils against DPPH radical were determined *in vitro* by treated with different concentrations of 7 essential oils 25, 50, 75, 100, 200 µg/ml and the percentages of DPPH˙ inhibition and EC_{50} were recorded. Chemical compositions of essential oils were examined by gas chromatography-mass spectrometry (GC/MS). Onion, garlic, cumin, coriander (herb and seeds), parsley and basil essential oils were found to contain 33, 21, 20, 19, 24, 17 and 33 compounds, respectively.

Key words: *Allium cepa L.*, *Allium sativum*, *Cuminum cyminum*, *Corriandrum sativum*, *Petroselinum sativum, Ocimum basilicum*, essential oils, antioxidant, antiviral.

a) Identify the title of this study [2 marks]
b) State the broad objective and any two specific objectives from this research topic [3 marks]
c) State any two research questions from this research topic [4 marks]
d) State two null hypotheses for this research topic [4 marks]
e) Develop the problem statement from the above research topic [7 marks]

5. The following table lists length of stay in hospital (days) for a sample of 25 patients: 5, 10, 6, 11, 5, 14, 30, 11, 17, 3, 9, 3, 8, 8, 5, 5, 7, 4, 3, 7, 9, 11, 11, 9, 4.
   a) By hand, construct a frequency/relative frequency table for these data using 5-day class intervals [11 marks]
   b) What percentage of hospital stays were less than 5 days? [3 marks]
   c) What percentage of hospital stays were less than 15 days? [3 marks]
   d) What percentage of hospital stays were at least 15 days in length? [3 marks]