CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN ELECTRICAL AND ELECTRONIC ENGINEERING

EENG 222: TECHNICAL WRITING

STREAMS: BSc. EENG **TIME: 2 HOURS**

DAY/DATE: MONDAY 14/04/2025 **11.30 A.M. – 1.30 P.M.**

INSTRUCTIONS:

1. *This paper contains **FIVE** questions*
2. *Question **ONE** is **COMPULSORY** and carries **30 MARKS***
3. *The other questions carry **20 MARKS** each*
4. *Attempt question **ONE** and any other TWO questions.*
5. *The marks for each part of a question are as indicated*
6. *All symbols have their usual meaning unless specified otherwise*
7. *Use clear and neat sketches and show all your working*
8. *You should have the following for this examination:*
    - *Answer booklet*
    - *Pencil, ruler, and biro pen*
9. *Mobile phones and any written materials relevant to the examination are prohibited in the examination room*
10. ***DO NOT WRITE ON THE QUESTION PAPER***

QUESTION ONE (COMPULSORY) [30 MARKS]

(a) Define plagiarism and explain how you can avoid it during technical writing **[2 Marks]**

(b) Distinguish between Scientific writing and business communication and give **TWO** examples of each **[4 Marks]**

(c) Explain the importance of visual aids in project presentation. **[4 Marks]**

(d) Discuss the THREE basics of improving writing skills **[6 Marks]**

(e) Explain **FIVE** common sources of information **[5 Marks]**

(f) The abstract below was obtained from a journal article, read and answer the questions that follow.

Load measurements on hydropower turbines and generators are usually expensive and troublesome due to the need of sensor installation on the rotating parts. Often a longer stop of the unit is required when the sensors are to be installed or removed from the turbine in the waterway, which results in production disturbances.

This article presents a methodology and results for estimation of loads acting on turbines and generators during operation without installation of sensors on the turbine or in the generator. The measured quantities are shaft displacement in the bearings and the bending moment on the shaft between the turbine guide bearing and the lower generator guide bearing.

To enable calculation of the loads acting on the turbine and the generator, it is necessary to have as many measurement points as the number of unknown loads acting on the shaft train. By using the displacement in the three radial bearings, six of the eight unknown forces can be determined. The remaining two unknown loads can be calculated by measuring the bending moment in the shaft connecting the generator to the turbine. In journal bearings the stiffness is a non-linear function of eccentricity, which means that the obtained stiffness function must be integrated to achieve the force as a function of the shaft eccentricity.

By applying the measured time history of displacement and moment on the numerical model, the time history for the unknown loads can be solved. The time history of the external loads is then converted into load spectra.

(i) Identify three problems to be addressed by the research **[3 Marks]**

(ii) State the proposed solution for the problem **[2 Marks]**

(iii) Using your own words explain how the proposed solution was implemented **[3 Marks]**

QUESTION TWO [20 MARKS]

(a) Giving examples, describe the **THREE** main classes of technical writing. **[6 Marks]**

(b) State the **FOUR** elements of an abstract **[2 Marks]**

(c) Highlight the THREE secondary data collection methods **[3 Marks]**

(d) What are the advantages of tabular data presentation? **[4 Marks]**

(e) The table below shows the frequency distribution table for the marks scored by 25 students.

Marks	**Frequency**
19.5-29.5	2
29.5-39.5	5
39.5-49.5	8
49.5-59.5	6
59.5-69.5	4

i. Using the data construct a frequency polygon **[5 Marks]**

ii. Briefly discuss the data based on the frequency polygon **[3 Marks]**

QUESTION THREE [20 MARKS]

(a) Discuss forms of author misconduct as outlined in guide for authors for the Tylor Francis publishers **[5 Marks]**

(b) Describe the following terms as used in ethical writing

i. Integrity **[2 Marks]**

ii. Social responsibility **[2 marks]**

iii. Legal responsibility **[2 Marks]**

iv. Copyright **[2 Marks]**

(c) Construct a network diagram for the task of construction of a shed using the following activities **[7 Marks]**

i. Select shed design- 0.5 days

ii. Buy materials -1 day

iii. cut wood- 2 days

iv. build shed base- 3 days

v. supervise cement hardening- 2 days

vi. Assemble shed - 3 days

vii. commission shed - 1 day

QUESTION FOUR [20 MARKS]

(a) List hierarchically the major sections of a research proposal **[4 Marks]**

(b) Discuss any THREE scaling methods used in research design and methodology **[3 Marks]**

(c) State any SIX advantages of Gantt Charts **[3 Marks]**

(d) Explain FOUR logical dependencies that are followed in a network diagram **[4 Marks]**

(e) Schedule the project for planning the design, ordering of parts and building of a hydraulic motor where the following activities are to be carried out;

Scheming-1 week, material selection- 1 week, Detail parts 2 weeks 3days, check details- 2 weeks, Issue to buying- 1 week, Issue to production- 1 week, make parts - 3 weeks, Assemble motor - 1 week, Test motor - 1 week, Modify drawings after test - 5 days, Re-issue drawings to production- 1 week. **[6 Marks]**

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