FACULTY OF ENGINEERING AND THE ENVIRONMENT

DEPARTMENT OF MINING ENGINEERING

SURVEYING FOR ENGINEERS

EMI 2204

Final Examination Paper

January 2021

This examination paper consists of 3 pages

Time Allowed: **3 hours**

Total Marks: **100**

Examiner's Name: **Miss B Mwabvu**

INSTRUCTIONS

1. Answer ALL 4 questions
2. Each question carries 25 marks
3. Use of calculators is permissible, but programmable calculators are not allowed in the exam

Additional Requirements

None

MARK ALLOCATION

Question 1 to 4	**25Marks**
Part Questions	**As shown in each part question**
Total Attainable	**100**

Question 1 [25 Marks]		
a)	Given that coordinates of A are X=1870.74 and Y=953.56 and coordinates of B are X=2013.53 and Y=1020.23, and distance AP and BP are 143.94m and178.08m respectively, calculate i. Join AB ii. Polar AP	[10]
b)	Distinguish between the following terms; i. Longitude and latitude ii. True north and magnetic north iii. Join and polar iv. Differential leveling and reciprocal levelling	 [2] [2] [2] [3]
c)	Define Traversing Explain the difference between open traverse and closed traverse	[2] [4]

Question 2 [25 Marks]		
a)	Using different diagrams for each scenario, briefly explain and show the following scenarios: i. Accurate and Precise ii. Accurate and Not Precise iii. Not Accurate and Precise iv. Not Accurate and Not Precise	 [2] [2] [3] [3]
b)	A distance of 210.380m was measured with a steel band of normal length 30m. On standardizing the band it was found to be 30.002m. Calculate the corrected measured distance assuming the error is evenly distributed throughout the tap.	[6]
c)	A 30m band standardised at 20°C was found to be 30.003m. At what temperature is the tape exactly 30m? Given that the coefficient of expansion of steel = 0.000011/°C.	[3]

c)	Calculate the length that a 50m tape with cross sectional area of 5mm2, a standard tension of 50N and a value of modulus of elasticity E = 210kN/mm².	[3]
d)	Calculate the sag correction necessary in the case of a 50m heavy tape of 1.5kg with a standard tension of 80N.	[3]

Question 3 [25 Marks]		
a)	The advent of technologically advanced machinery and software has promoted the ease of doing engineering business. Discuss this clearly stating the merits and demerits.	[15]
b)	Define the terms (i) Geographic Information System (GIS) (ii) Topographic Survey	 [5] [5]

Question 4 [25 Marks]		
a)	State and explain three classifications of surveying basing on the following: (i) Classification based on the instrument used. (ii) Classification based on the surface and area of survey. (iii) Classification based on the purpose of survey.	[15]
b)	The survey profession has widely embraced Unmanned Aerial Vehicles (UAVs), and mining Surveying has not been spared in this technological race. Outline some of the advantages of using UAVs technology in mining surveying.	[5]
c)	Distinguish between Photogrammetry and Remote Sensing	[5]