



GWANDA STATE UNIVERSITY
FACULTY OF ENGINEERING AND ENVIRONMENT
DEPARTMENT OF GEOMATICS AND SURVEYING

MINING SURVEY

ESG 3109

FINAL EXAMINATION PAPER

JUNE 2025

Time Allowed: 3 hours

Examiner's Name: Miss M.M.Shoko

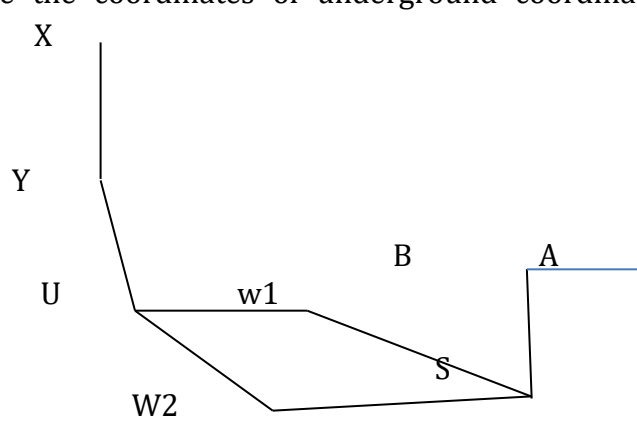
INSTRUCTIONS

- 1. Answer all questions**
- 2. Each question carries 25**
- 3. Total marks 100**

This Examination paper consists of 4 pages

1)	a) Distinguish between following the terms:	
	(i) Ore pass and Chute	(2)
	(ii) Dip and Strike	(2)
	(iii) Tunnel and Adit	(2)
	(iv) Level and Cross cut	(2)
	(v) Gangue and Waste	(2)
	b) In the method of mine survey orientation by means of one shaft and two wires, maintaining the verticality of the wires is very important. What sources of error can be encountered in maintaining verticality of the wire and what methods can be used to reduce such errors.	(5)
	c) Briefly describe the methods of mine orientation using a Gyrotheodolite	(5)
	d) What is a mine surveyor? Discuss the roles of a mine surveyor in mining operations.	(5)

2.

2)	a) Describe in detail the Weissbach method of transferring control from surface to under-ground. (10)	(10)
	<p>b) A surface traverse ABS is connected to an underground traverse UYX by a double Weissbach triangle as shown in Fig. 1 below. Using the data given below determine the coordinates of underground coordinates U, Y, X. [15]</p>  <p style="text-align: center;">Fig. 1</p>	10

	<p>Coordinates</p> <table> <thead> <tr> <th></th> <th>Y</th> <th>X</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>1000.00</td> <td>942.25</td> </tr> <tr> <td>B</td> <td>900.00</td> <td>942.25</td> </tr> </tbody> </table> <p>Distances</p> <p>W1W2= 7.32m W1S = 6.10m W2U = 4.00m BS = 57.75m UY = 35.50m YX = 105.35m</p> <p>Angles measured clockwise</p> <p>ABS = 90° 00' 00" BSW₂ = 270° 00' 00" W₂U W₁= 09° 01' 50" W₁SW₂ = 00° 00' 80" W₁U Y = 200° 00' 00" UYX = 240° 00' 00"</p>		Y	X	A	1000.00	942.25	B	900.00	942.25	
	Y	X									
A	1000.00	942.25									
B	900.00	942.25									
	C) Describe the survey procedures that you are required to adopt when you carry out mine survey using the method mentioned in part b.	5									

3)	a) Describe in detail how one can peg a claim of precious metals on the lands of Zimbabwean government.	(10)
	b) You are required to justify the need to establish mine planning section and employ a mine planning manager at your mine, write a paper describing the different stages of mine planning and its importance at a mining location.	(10)
	c) Discuss the meaning of mine subsidence and the role of a surveyor in controlling the effects of mine subsidence at a mine.	(5)

4)	a) Ventilation is an integral part of mining operation, define ventilation and what is its role in mining?.	(5)
	b) Mining operations produce a lot of dust, which is hazardous to health, what are the sources of dust in a mine and how is it prevented?	(5)
	c) Mining operations produce a lot of gases, state the sources, properties, detection method and legal limits of the following gases: i) Methane, ii) Hydrogen Sulphide, and iii) Nitrious fumes and Ammonia.	(10)
	d) As a mine surveyor, give a detailed account of how you can ensure safety of workers at a mine through adopting drones as a critical tool on your ventilation system?	(5)

-THEEND