



**PROGRAM** : BACHELOR OF ENGINEERING TECHNOLOGY  
(MINE SURVEYING)

**SUBJECT** : **UNDERGROUND MINING METHODS**

**CODE** : **UMMMNA2**

**DATE** : 25 MAY 2019  
FINAL EXAMINATION

**DURATION** : 3 HOURS (08H30 - 11H30)

**TOTAL MARKS** : 100

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**EXAMINERS** : T MMOLA

**MODERATOR** : S NHLEKO

**NUMBER OF PAGES** : 3 PAGES incl. COVER PAGE

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**REQUIREMENTS**

1. ONE ANSWER SCRIPT

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## **INSTRUCTIONS**

1. ANSWER ALL QUESTIONS
  2. UNDERLINE AFTER EACH QUESTION
  3. SUBMIT QUESTION PAPER WITH ANSWER SCRIPT
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### **QUESTION 1**

- 1.1 Explain what is an open stope. (6)
- 1.2 Discuss briefly the following mining strategies:
- (a) Stope and retreat (4)
  - (b) Stope and fill (4)
  - (c) Underhand stoping (2)
  - (d) Overhand stoping (2)
- 1.3 Give a brief description of the following variations of room-and-pillar (R&P) mining and state under which conditions each variation would be applied.
- (a) Classic R&P (4)
  - (b) Step R&P (4)
  - (c) Post R&P (4)

**[30]**

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### **QUESTION 2**

- 2.1 What are the reasons for backfilling mined openings? (5)
- 2.2 Name the various forms of backfill. (4)
- 2.3 Give a brief description of the Drift-and-Fill mining method and (5)
- 2.4 Indicate the type of conditions in which Drift-and-fill can generally be applied. (6)

**[20]**

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### **QUESTION 3**

- 3.1 Describe the sequential grid mining method as applied in a conventional gold mine. (6)
- 3.2 State the limitations of longwall mining. (4)
- 3.3 What is the purpose of a gully? Name the types of gullies found in narrow tabular mines. (5)

- 3.4 Explain how broken rock is handled from an underground stope to the surface in a conventional narrow tabular mine using a scraper system and trackbound transportation. (15)
- [30]**
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**QUESTION 4**

- 4.1 Describe briefly the sublevel caving method (4)
- 4.2 State three advantages and three disadvantages of sublevel caving (6)
- 4.3 What is the purpose of the undercut level in a block cave operation? (2)
- 4.4 Describe the contemporary undercutting strategies that can be employed to initiate a block cave (6)
- [20]**

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<b>TOTAL</b>	<b>[100]</b>
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