



PROGRAM : NATIONAL DIPLOMA
MINING ENGINEERING

SUBJECT : GEOLOGY: MINING III

CODE : MWG 3211

DATE : FINAL EXAMINATION
19 NOVEMBER 2019

DURATION : (X-PAPER) 12:30 - 15:30

WEIGHT : 40 : 60

TOTAL MARKS : 120

EXAMINER : MR K S PHOGOLE 150505503

MODERATOR : MS Z. MDLULI 5052

NUMBER OF PAGES : 3 AND 2 ANNEXURES

INSTRUCTIONS : 1. ANY CALCULATOR IS ALLOWED.
2. SKETCHES ARE NOT DRAWN TO SCALE.
3. DRAWING INSTRUMENTS ARE ALLOWED.

INSTRUCTIONS TO CANDIDATES:

1. PLEASE ANSWER ALL THE QUESTIONS.
 2. MARKS WILL BE ALLOCATED FOR NEATNESS AND CHECKS
 3. NUMBER THE QUESTIONS CLEARLY
 4. FREE HAND DRAWN SKETCHES WILL LEAD TO MARKS
BEEN DEDUCTED
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QUESTION 1

Map B shows an area of ground where a gold – bearing reef is to be mined. A major fault is expected through the area and six (6) exploration boreholes were drilled from surface to investigate the nature and position of this fault in relation to the reef.

The plan shows surface contours at 100 metre intervals.

The scale of the plan is 1: 2 000.

Drilling results are shown in the table below:

POINT	DEPTH OF REEF INTERSECTION BELOW COLLAR	DEPTH OF FAULT INTERSECTION BELOW COLLAR
A	“Outcrop”	250 m
B	“Outcrop”	-
C	100 m	-
D	400 m	-
E	-	100 m
F	-	200 m

Answer the following questions:

- 1.1 Graphically plot the outcrop of the fault on the plan. (5)
- 1.2 Graphically plot the outcrop of the fault on the plan. (8)
- 1.3 Determine the true dip, direction of true dip and the strike of the fault. (4)
- 1.4 Determine the true dip, direction of true dip and the strike of the reef. (4)
- 1.5 Draw the lines of intersection between the reef and the fault (3)
- 1.6 Shade in the area on the map underlain by the reef. (**DO NOT SHADE IN ANY OTHER AREAS AS THIS WILL MAKE YOU LOOSE MARKS**) (6)
- 1.7 Determine the vertical throw on the fault. Classify the fault. (normal or reserve) (4)
- 1.8 Draw a section line Z – W on the graph paper provided. Use a vertical scale of 1 : 1 000 and a horizontal scale the same as the plan. (10)
- 1.9 A reef winze must be developed from point “A” on the true dip of the reef. Determine the direction of this winze and also determine the horizontal and slope distance at which this winze will intersect the fault. (6)

[50]

QUESTION 2

Map A is a plan showing surface borehole positions resulting from a major exploration project. The reason for the drilling program was to determine the amount and extent of a reef deposit which will be available for mining. A major fault is expected to dislocate the orebody.

The plan shows surface contours at 30 metre intervals.

The scale of the plan is 1: 2 000.

Given Borehole information:

POINT	DEPTH OF REEF INTERSECTION BELOW COLLAR	DEPTH OF FAULT INTERSECTION BELOW COLLAR
A	"Outcrop"	-
B	60 m	-
C	30 m	90 m
D	-	"Outcrop"
E	60 m	-
F	-	"Outcrop"

Answer the following questions:

- 2.1 Graphically plot the outcrop of the fault on the plan. (6)
- 2.2 Graphically plot the outcrop of the reef on the plan. (10)
- 2.3 Determine the true dip, direction of true dip and the strike of the fault. (5)
- 2.4 Determine the true dip, direction of true dip and the strike of the reef. (5)
- 2.5 Draw the lines of intersection. (3)
- 2.6 Shade in the area underlain by the reef. (**DO NOT SHADE IN ANY OTHER AREAS AS THIS WILL MAKE YOU LOOSE MARKS**) (6)
- 2.7 Determine the vertical throw on the fault. Classify the fault. (normal or reserve) (5)
- 2.8 Draw a section line X – Y on the graph paper provided. Use a vertical scale of 1 : 1 000 and a horizontal scale the same as the plan. (10)

[50]

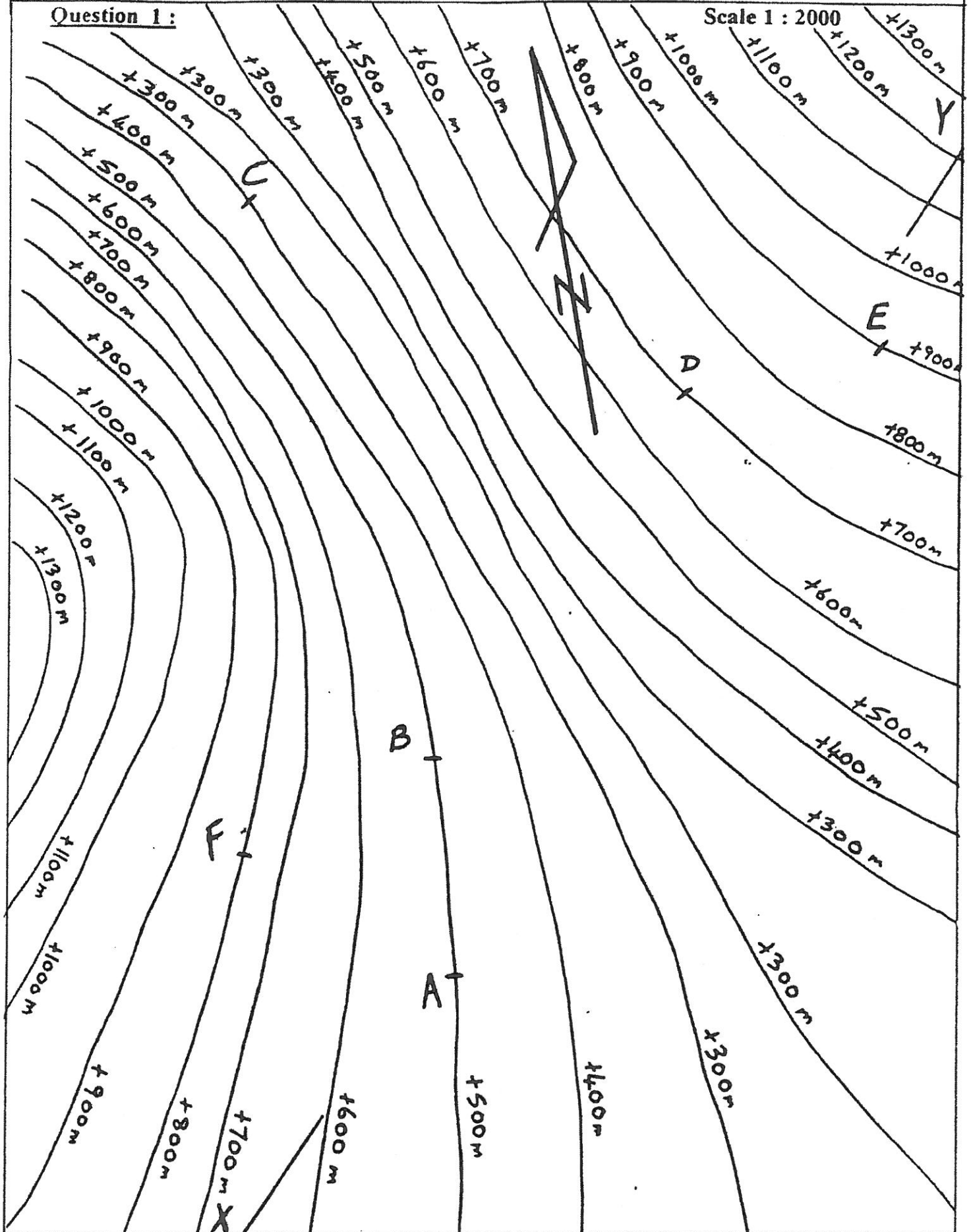
[TOTAL = 100]

SURNAME and INITIALS: STUDENT No :

MAP A

Question 1 :

Scale 1 : 2000



STUDENT No :

MAP B

Question 2 :

Scale 1 : 2000

