PROGRAM	: NATIONAL DIPLOMA *MINERALS SURVEYING*	
SUBJECT	: **STRUCTURAL GEOLOGY 111**	
CODE	: **MSG 3121**	
	SUMMER EXAMINATION 2014	
DATE	: 7 NOVEMBER 2014	
DURATION	: (SESSION 1) 08:30 - 11:30	
EXAMINER	: MR D.N.WILSON	150505803
ASSESSOR	: Mr H GROBLER	
NUMBER OF PAGES	: 3 PAGES AND 3 ANNEXURES	

INSTRUCTIONS

: ALL ANSWERS MUST BE SHOWN IN THE ANSWER BOOKS (SCRIPTS) AND NOT ON THE PLAN.
: ALL SHADING MUST BE DONE NEATLY ACCORDING TO THE INSTRUCTIONS IN THE QUESTIONS.
: ALL THE MAPS (ATTACHMENTS) MUST BE INSERTED INTO THE EXAM SCRIPT EVEN IF THE STUDENT DID NOT ATTEMPT THE QUESTION.
: STUDENTS MUST ENSURE THAT THEIR STUDENT NUMBER IS WRITTEN ON ALL THE MAPS.

REQUIREMENTS

: CALCULATORS ARE PERMITTED (ONLY ONE PER STUDENT) – DIP DIAGRAMS MUST BE SHOWN
: DRAWING EQUIPMENT

2/...

INSTRUCTIONS TO STUDENTS:

1. ANSWER ALL QUESTIONS.

QUESTION 1

The plan shows the surface contours at 10 metre intervals.
The scale is shown on the plan (1 : 1500) .

Given (borehole information): **Note that one reef intersection is on the opposite side of the fault !**

Point	Depth of coal seam intersection below collar	Depth of fault intersection below collar
P	"Outcrop"	- - - - - - - - - - - - - - - - - - -
Q	"Outcrop"	- - - - - - - - - - - - - - - - - - -
R	- - - - - - - - - - - - - - - - - - -	"Outcrop"
S	- - - - - - - - - - - - - - - - - - -	"Outcrop"
T	- - - - - - - - - - - - - - - - - - -	20 m
U	40 m	- - - - - - - - - - - - - - - - - - -
V	10 m	- - - - - - - - - - - - - - - - - - -

1.1 Graphically plot the outcrop of the fault on the plan.

(4)

1.2 Graphically plot the outcrop of the coal seam on the plan.

(8)

1.3 Determine the true dip, the direction of true dip and the strike of the fault.

(3)

1.4 Determine the true dip, the direction of true dip and the strike of the coal seam.

(3)

1.5 Draw the lines of intersection.

(2)

1.6 Shade the opencastable area on the map if no more than 30 metres of overburden must be removed to expose and mine the coal seam.
DO NOT SHADE ANY OTHER AREAS – this shading must be neat and cover the entire opencastable area.

(8)

1.7 Determine the vertical throw of the fault. Classify the fault (normal or reverse).

(2)

[30]

QUESTION 2

The plan shows a younger fault (fx), and a older fault (fo) and a reef on the seventh level (7 th level) of a mine.

All the given strike lines are on the 7 th level of the mine.

The younger fault has displaced (moved) the older fault and the reef.

The true dips of the fault and the reef are shown on the plan.

The vertical distance between levels is **40 metres**.

The scale of the plan is 1:1000

Complete the plan. Show all the Fault and Reef strike lines on the seventh and eighth levels of the mine.

Clearly label all the strike lines. Show all the lines of intersection. Shade (clearly) the blocks of ground.

Show all the gains or losses of reef-bearing areas. Show all construction lines and check lines.

Draw a section on line C – D.

[35]

QUESTION 3

The plan shows a younger fault (fx), and a older fault (fo) and a reef on the second level (2 nd level) of a mine.

All the given strike lines are on the 2 nd level of the mine.

The younger fault has displaced (moved) the older fault and the reef.

The true dips of the fault and the reef are shown on the plan.

The vertical distance between levels is **35 metres**.

The scale of the plan is 1:1000

Complete the plan. Show all the Fault and Reef strike lines on the second and third levels of the mine.

Clearly label all the strike lines. Show all the lines of intersection. Shade (clearly) the blocks of ground.

Show all the gains or losses of reef-bearing areas.

[35]

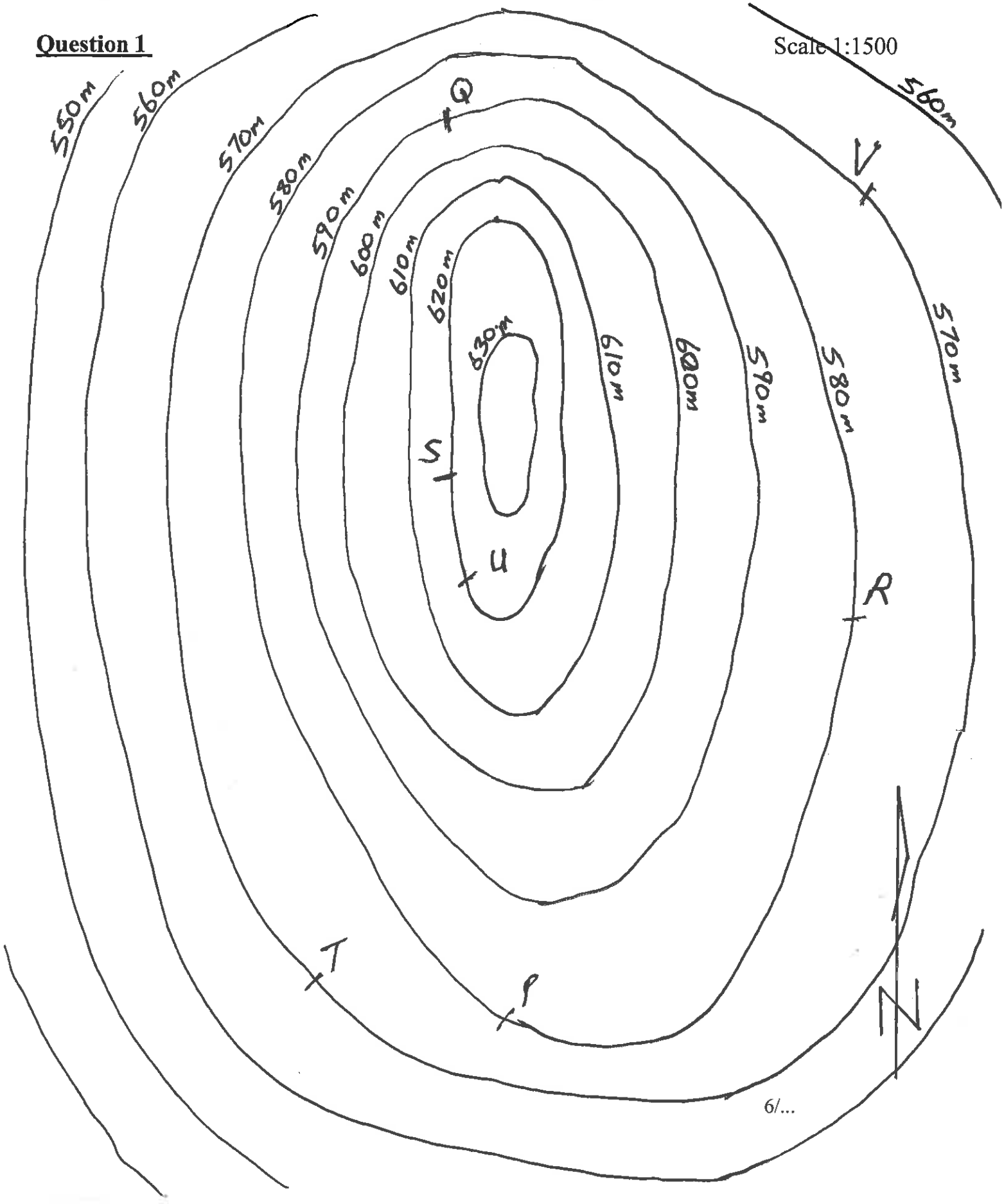
Total = 100 marks

Structural Geology 111 – MSG 3121 **Date : 07 November 2014**

Student Number: ..... **Surname: .....**

Question 1

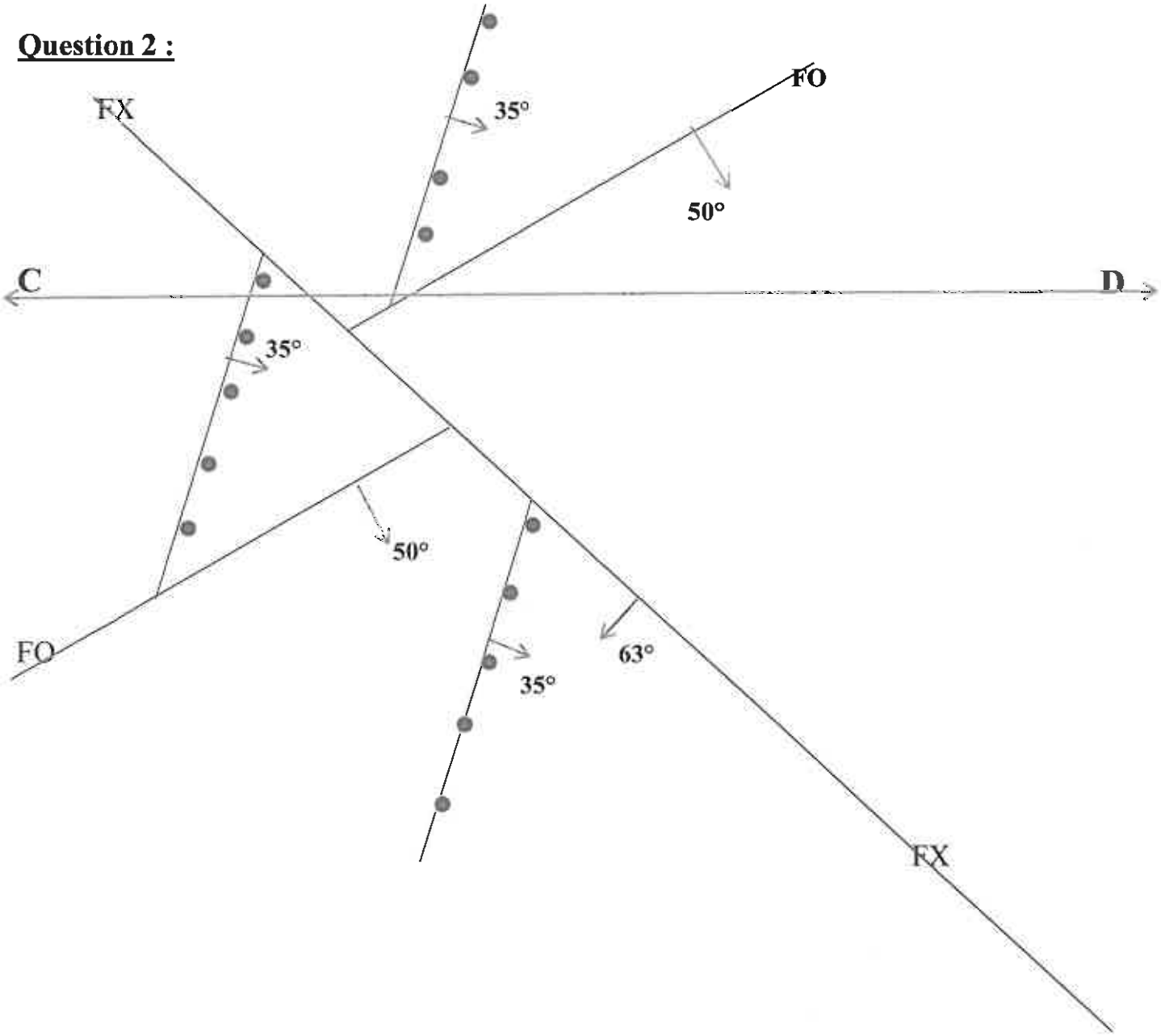
Scale 1:1500



Structural Geology 111 – MSG 3121 **Date : 07 November 2014**

Student Number: ..... **Surname: .....**

Question 2 :



Structural Geology 111 – MSG 3121 **Date : 07 November 2014**

Student Number: ..... **Surname: .....**

Question 3 :