

**REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF MINERALS AND ENERGY
EXAMINATION FOR THE MINE SURVEYORS CERTIFICATE OF COMPETENCY**

DATE: 15 October 2004 (Friday)
TIME: 12:30 to 14:30 (2 Hours)

TOTAL MARKS: 100
TO PASS: 50

GEOLOGY

Note: (1) Answer all questions

QUESTION 1

- a) Draw a section along the line A-B on the attached plan , which must be returned with your answer book.
- b) Give a brief description of the geological history of the area. (20)

QUESTION 2

Regarding the formation of economic deposits name five (5) deposits formed by mechanical concentration. Discuss each deposit (Placer) giving an example associated with each. (10)

QUESTION 3

Minerals can be classified by their various properties.
Complete the attached tabulation to indicate some of these properties. (15)

QUESTION 4

- 4.1 Define the “the process of coalification”.
- 4.2 Name the four agents of coalification.
- 4.3 What is meant by the “rank of coal”? (5)

QUESTION 5

“Hardness” is a Physical Characteristic of a Mineral.
Define Hardness and discuss (show table) in detail the “Mohs Hardness Scale”. (10)

QUESTION 6

Name five metals of the Platinum Group, their uses, and where they occur in South Africa. (10)

QUESTION 7

7.1 Explain what is meant by “Denudation of the earth’s crust”.
7.2 Describe fully the agents which are responsible for the Denudation of the earth’s crust considering both the mechanical and the chemical processes. (10)

QUESTION 8

8.1 When confined and subjected to immense forces that slowly build up, rocks can be folded. Name five types of folding that can occur in strata.
8.2 Name five different types of coal. (5)

QUESTION 9

Define or describe the following terms :
9.1 Calorific value (c.v.) and give it’s unit of measurement.
9.2 Moisture content.
9.3 Streak of a mineral.
9.4 Lustre of a mineral.
9.5 Normal fault. (5)

QUESTION 10

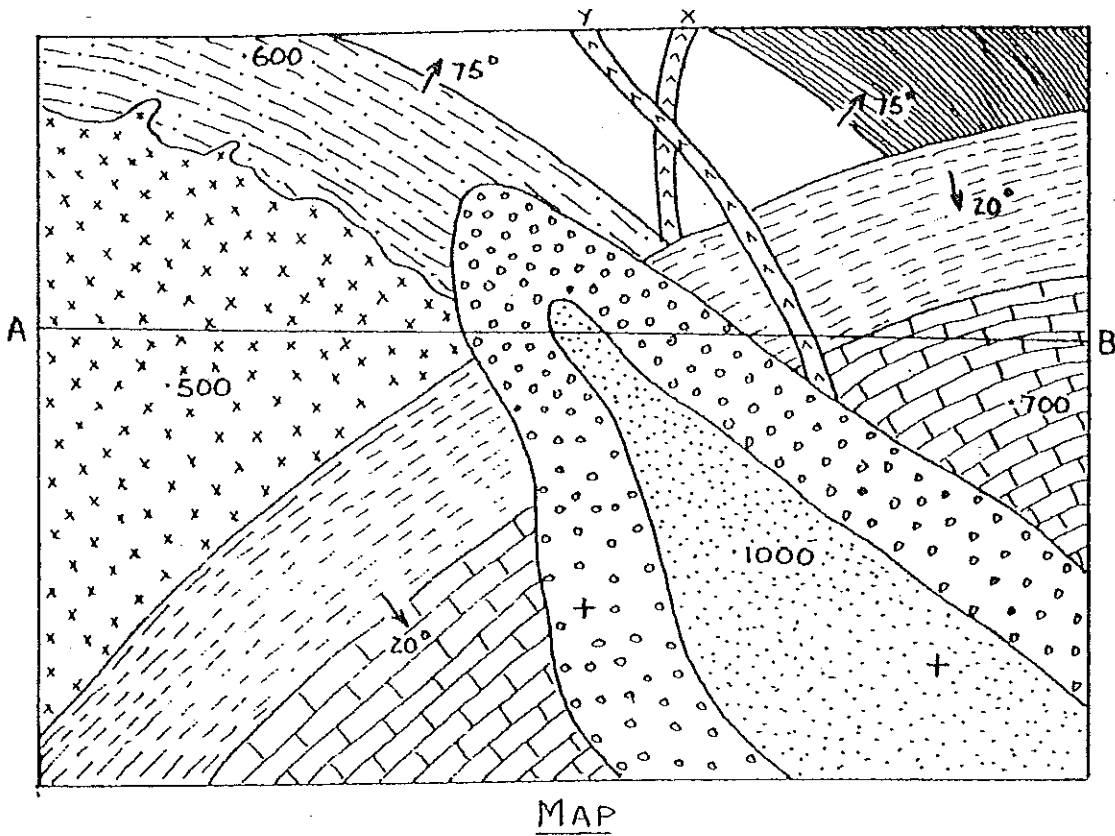
Name the five groups into which common sedimentary rocks can be classified. (5)

QUESTION 11

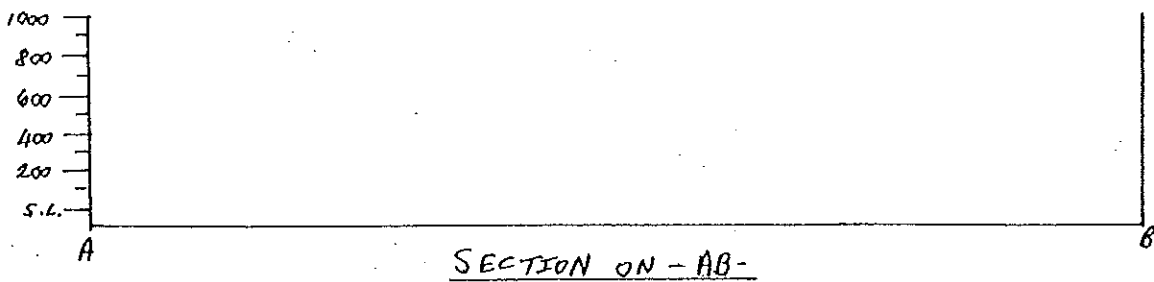
Discuss “Tin” in South Africa with reference to the following :
Uses , properties and location of tin deposits. (5)

TOTAL 100

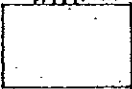
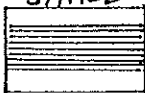


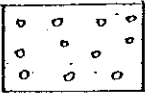

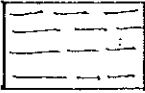
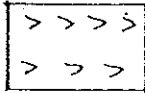
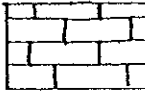
a)



MAP



SECTION ON - AB -

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|--|---|---|---|---|---|---|----------|-----------|
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|  |  |  |  |  |  |  | | |
| MARL | SHALE | GRANITE | SANDSTONE | CONGLOMERATE | QUARTZITE | SHALE | DOLERITE | LIMESTONE |

QUESTION 3

15 OCTOBER 2004

EXAM NO.

MINERAL					
Physical Properties	Gold	Diamond	Corundum	Quartz	Calcite
Crystal System					
Colour					
Lustre					
Density					
Use					
Hardness					