UNIVERSITY OF PRETORIA
DEPARTMENT OF GEOLOGY

GLY 352 – Geodynamics of Ore Deposits

September/October 2009 Examination/ Supplementary examination/ Auxiliary examination

INTERNAL EXAMINER/S Prof. W. Altermann:
EXTERNAL EXAMINER/S : Dr. S. Foya

Date 05.11.2009:
Duration 12.^{00}:15.^{00}h
Marks : 50

Instructions
Please read carefully the questions and try to answer as precisely as possible. If you are not sure what is asked for, ask your lecturer! Write CLEARLY and construct precise sentences. Unreadable hand writing and sentences that are not to the point and precise but of doubtful meaning will not be marked!

Questions:

1. (15 marks): How are Banded Iron Formations defined? What are the 3 major periods of deposition of Banded Iron Formations in Earth history and why were they deposited during these periods? What is the difference between Banded Iron Formations and Granular Iron Formations?

2. (10 marks): What are Mississippi Valley Type- deposits and which temperature conditions characterize these deposits? What is the difference between this and similar type of deposits containing fluorine, in the two major relevant subbasins of South Africa?

3. (15 Points): Which physical and chemical parameters of fluids influence metal transport and precipitation? Explain the term fluid/rock ratio in this context.

4. (5 Points): Explain in short, the following mineral sequence in a mineralization process:

microcline ← scheelite ← anhydrite ← calcite
[54] [47] [46] [37]
← kaolinite ← galena ← molybdenite ← siderite
[33] [31] [30] [29]
← cinnabar ← muscovite ← arsenopyrite
[28] [28] [26]
← bornite ← pyrite ← sphalerite ← chalcopyrite
[25] [24] [24] [22]
← pyrrhotite ← ilmenite ← hematite
[18] [16] [15]
← magnetite ← chalcocite
[15] [14]

(This sequence is from Seward and Barnes (1979);
[molar volumes] in $cm^3\ mol^{-1}$.)

Robb (2002)

5. (5 Points): Explain in short: What is the relationship between VMS and SEDEX deposits?