

GLY 352

Mid-term test

Geodynamics of Ore Deposits

Total Marks: 50

12.10.2010

Student name

Student Number:

Please write CLEARLY and construct precise sentences. Unreadable hand writing and sentences that are not to the point and precise but of doubtful meaning will be marked accordingly!

Questions:

1. (10 Marks): What are the 8 main elements that constitute the mass of the Earth and in which shell are they mainly concentrated. What is the chemical character of these elements and which mineral group do they preferentially form in the crust?

Element Symbol	Wt%	Concentrated mainly in	Chemical character (Goldschmidt)	Mineral group in the crust
H	35	crust	atmophile	oxides
O ✓	30 ✓	crust ✓	atmophile	oxides ✓
C	20	crust	atmophile	carbonates
S ✓	14.7 ✓	mantle ✓	siderophile ✓	sulphides ✓
N ✓	0.24 ✓	core ✓	siderophile ✓	sulphides ✓
Fe ✓	0.14 ✓	core ✓	siderophile	sulphides ✓
Si ✓	0.10 ✓	core ✓	lithophile ✓	silicates ✓
Ca ✓	0.09 ✓	mantle	lithophile	silicates ✓

2. (5 Marks) Which 3 main factors define a mineral or ore deposit?

1. naturally occurring material or aggregate
2. it is of economic value (must be of economic value)
3. can be extracted at a profit

economic factors

3. (5 Marks) What is the meaning of the following ore description?

- 3/5
- Syngenetic:** ore occurs at the same period as the host rock
- Epigenetic:** ore occurs after or later period than the host rock
- Hypogene:** enrichment of ore from ascending hydrothermal fluids or minerals
- Supergene:** enrichment of ore from leaching or descending fluids or minerals
- Hypothermal:** equivalent to metamorphic but it is reworking of reactions of minerals to form new minerals favoured by the present conditions