

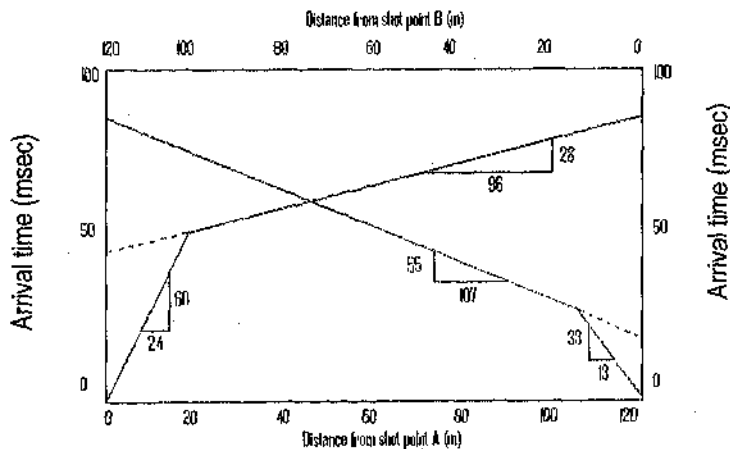
**Department of Geology & Geophysics
End-Spring-Semester Examination 2010**

**Subject Name: Adv Techniques in Min Exploration
1st year M.Tech (Exploration Geosciences)
Total marks: 100**

**Subject No. EX60001
No. of Students: 6**

Answer all the questions **Marks**

1. What is regolith? Give an idealized cross section of regolith and briefly state about its evolution. How can the knowledge on regolith be useful in geochemical exploration? [10]
2. Give a brief idea about how ground water chemistry can be effectively utilized to explore for mineral deposits under cover. [10]
3. Geochemical anomaly can be visualized in as low as local to as high as megaprovincial scales and can be successfully applied to exploration. Elaborate taking the Chinese examples. [10]
4. What are genetic dispersion patterns? Briefly explain the principal types of primary dispersion patterns. [4+6=10]
5. Briefly explain about geochemical exploration of any one of the following: [10]
 - a) Petroleum
 - b) Gas hydrates
6. Explain the anomalies found in the residual overburdens. [10]
7. Secondary dispersion patterns are consequences of dynamic processes of dispersion – Explain. [10]
8. Discuss different geophysical techniques for gold exploration though it is almost impossible to get a direct geophysical response from gold. [10]
9. The Arrival time-distance diagrams for the forward and reverse profiles plotting of a seismic refraction survey between two shot points located 120 m apart are given as,



Determine the apparent dip angle and depths of the layer boundary at shot point A and B.
(given $T_{id} = 29$ msec, $T_{iu} = 53$ msec) [12]

10. (a) What is reflector?
(b) Show the geometry of reflected path and the time-distance curve for reflected rays from a horizontal reflector and also mark the normal moveout on the t-x curve.
(c) How the velocities can be determined by using normal moveout?
(d) Define Dix's formula to calculate interval velocity. [1+2+2+3=8]