

BE (Mining) 7th Semester Final Examination 2013
Principles of Mineral Economics
(MN 703)

Time : 3 hours

Full Marks : 70

Use separate answer scripts for each half

FIRST HALF

Answer Question No 1 any two from the rest

1 What are the objectives and strategies of National Mineral Policy ?

(13)

2. What is discounted cash flow ? Draw a curve showing cash flows at different stages of a mine cycle.

b) What are payback period and IRR ?

c) A mine started earning revenue from second year onwards at the rate of Rs 4 crores per year. Capital costs at the start of the project ($t=0$) on machinery and township are 1.5 crores and 1 crores respectively . In the first year investment is Rs 2 crores . Production started in the second year. Operating cost from second year onwards is 2 crores per year. Tax on mine production is 20 million rupees per year. Life of the project is six years. Comment on the viability of the project. Assume 12% discount rate and make other assumption

(4+2+5)

3 a) The expected life of a rope shovel is 16 years and the cost of shovel is 75 lakhs .. After which the mine will close down and the salvage value will be zero. What is the annual owning cost of the rope shovel? If the shovel works for 6000 hours per year what is the hourly owning cost?

b) The following two machines can perform job equally well .On the basis of the data given below and assuming a rate of return of 10% , which machine will be selected .

	Machine X	Machine Y
Initial investment (Rs 10,000)	150	200
Annual disbursement (Rs 10,000)	18	10
Life	5 yrs	10 yrs
Salvage value (Rs 10,000)	2	0
		(5+6)

- 4 a) What are the unique features of mining as an investment opportunity?
 b) Why mine investment is an iterative process?
 c) Discuss about UNFC classification of mineral reserve classification..

(3+3+5)

- 5 a) What are objectives and principles of mineral sampling?
 b) Calculate the ore reserve and average grade of the following ore block.

Bore hole no	Average ore thickness	Average grade (% Fe)
1	10	65
2	15	62
3	10	63
4	10	61
5	15	60
6	12	62

The boreholes are arranged in two rows, three in each row, at 25m grid interval. Assume all other data.

(5+6)

Second Half

Answer Question no 6 and any two from the rest

- 6 . What are the abundant and deficient strategic minerals in India ? Discuss about distribution of mineral resources in India.

(13)

- 7 a) What the major determinants of mineral demand?
 b) Express mathematically the demand function of a mineral industry.
 c) Explain by means of a mineral demand curve how companies will react to changes in mineral prices over different time period.

(3+2+6)

8 a) Discuss how sampling results are interpreted for the purpose of mine planning

b) What are different forms of business organizations in India?

(7+4)

9 a) What are different types of mine costing?

b) Give a brief account of global distribution of mineral resources.

(4+7)

10 Describe channel sampling technique in development headings and exploratory openings by means of neat sketches .

(11)