Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APRIL / MAY 2024

MINING ENGINEERING
VIII Semester
GE5003 MINE ECONOMICS AND INVESTMENT
(Regulation 2019)

Time:3 hrs | Max. Marks: 100

CO1	The students will have understanding of mine economics and mineral policy
CO2	The students will have understanding of ore deposit estimation
CO3	The students will have knowledge on valuation of mineral deposits
CO4	They will possess basic knowledge about project appraisal
CO5	They will learn about finance and accounting.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2=20Marks)
(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	List out the uncertainty conditions in mine investment strategy.	2	CO1	L1
2	Depict the mineral industry contributions for nation development.	2	CO1	L2
3	Classify the various sampling methods.	2	CO2	L1
4	Distinguish between total reserves and mineable reserves.	2	CO2	L2
5	Give an expression for NPV and explain each parameters briefly.	2	CO3	L5
6	Explain the term 'liabilities'.	2	CO3	L1
7	Illustrate the significance of NSDL.	2	CO4	L2
8	What do you mean by inflation rate?	2	CO4	L1
9	Elaborate the significance of balance sheet for project appraisal.	2	CO5	L2
10	Mention various types of company ownerships.	2	CO5	L1

PART- B (5x 13=65Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No.	Questions	Marks	CO	BL
11 (a)	Discuss in detail of GRI frameworks for mining sector. Indicate the significance of GRI report for mining companies.	13	CO1	L2
	OR			
11 (b)	Discuss in detail the salient features and strategy of mineral development of national mineral policy.	13	CO1	L1
12 (a)	Describe in detail of classification of reserves and mention its significance for project appraisal.	13	CO2	L3
	OR			
12 (b)	Explain the scientific methodology to develop a geospatial modelling of coal seam and significance for mine investment planning.	13	CO2	L4

13 (a)	A purchase value of a tipper equipment is Rs. 2,00,00,000. Its salvage value after ten years is Rs. 2,00,000. The capacity of equipment the can be operated during its lifetime is 1,00,000 km. In its sixth year of operation, the machine is operated upto the capacity of 45,000 km. Find the depreciation and book value of the equipment for that particular year.	13	CO3	L4
	OR			
13 (b)	A mining company is evaluating two investment options for expanding its operations. Option A requires an initial investment of Rs.30,00,000 and is expected to generate cash flows of Rs.8,00,000 per year for the next 6 years. Option B requires an initial investment of Rs.45,00,000 and is expected to generate cash flows of Rs.12,00,000 per year for the next 5 years. Calculate the payback period for each option and recommend the better investment.	13	CO3	L4
14 (a)	Describe in detail the significance of feasibility study of proposed mine project and depict the contents of project appraisal report for a case study of limestone mine.	13	CO4	L4
	OR			
14 (b)	Discuss in detail about various risk factors in mine investment.	13	CO4	L3
15 (a)	A coal mine needs to remove the overburden materials of 3 million cubic meter in various benches to win the coal deposit. Estimate the cost of operations of each mining activities and overall cost of operations with details of HEMM used and method of mining deployed.	13	CO5	L4
	OR			
15 (b)	A mining company is considering acquiring a new mine with proven reserves of 10 miilion tons of ore. The current market price of the ore is Rs.500 per ton. The mining operation is expected to incur annual operating costs of Rs.5,00,000. Calculate the discounted cash flow (DCF) valuation of the mine using a discount rate of 12% and determine whether the acquisition is financiaiiy viabie	13	CO5	L4

PART- C (1x 15=15Marks)

(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16.	A mining company is considering investing in a new project that requires an initial investment of Rs. 5,00,00,000. The project is expected to generate cash flows of Rs.1,50,00,000 per year for the next 8 years. The discount rate is 10%. Calculate the net present value (NPV) of the project and determine whether the investment should be made.	15	CO4	L5