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

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

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

MINING ENGINEERING

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=20 Marks)

(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	Compare the profitability of coal and non-coal mining projects.	2	CO1	L1
2	Depict the salient features of national mineral policy for nation development.	2	CO1	L2
3	Write short notes on UNFC code for mineral classification.	2	CO2	L1
4	Illustrate the significance of geospatial model of orebody.	2	CO2	L2
5	How the project cost affected by time value of money factor?	2	CO3	L2
6	Distinguish between assets and liabilities with examples.	2	CO3	L1
7	Illustrate the role of NPV to estimate the ultimate pit limit of mine.	2	CO4	L4
8	What do you mean by IRR?	2	CO4	L1
9	Define the term 'sinking fund'.	2	CO5	L2
10	Elaborate the significance of profit and loss account for project appraisal.	2	CO5	L1

PART- B (5x 13=65 Marks)

(Restrict to a maximum of 2 subdivisions)

Q. No.	Questions	Marks	CO	BL
11 (a)	Discuss in detail of national contribution from the mineral industry. Explain the future growth scenario of mining industry in India.	13	CO1	L2
	OR			
11 (b)	Discuss in detail the sustainable framework to promote the mining industry in safe and systematic manner.	13	CO1	L2
12 (a)	Describe in detail of various reserves and resources classification system used in mineral industry for project appraisal globally.	13	CO2	L3
	OR			
12 (b)	Explain in detail of various sampling method. Also, describe the types of reserves estimation techniques with numerical expressions for each techniques.	13	CO2	L3

13 (a)	A company has purchased an equipment in the purchase cost of Rs.1,00,000 with an estimated life of eight years. The estimated salvage value of the equipment at the end of its lifetime is Rs.20,000. Determine the depreciation and book value at the end of various years using the straight line method and sinking fund method of depreciation with an interest rate of 12%, compounded annually. Justify your answer which method is better to consider in the mining industry.	13	CO3	L4
	OR			
13 (b)	A granite company is planning to buy a fully automated granite cutting machine. If it is purchased under down payment, the cost of the machine is Rs.16,00,000. If it is purchased under installment basis, the company has to pay 25% of the cost at the time of purchase and the remaining amount in 10 annual equal installments of Rs.2,00,000 each. Suggest the best alternative for the company using the present worth basis at rate of interest of 18%, compounded annually.	13	CO3	L4
14 (a)	Write short notes on (i) Types of funding (ii) Methods of project evaluation	 6 7	CO4	L3
	OR			
14 (b)	Write short notes on (i) Mine taxation (ii) Mine investment risk factors	 7 6	CO4	L3
15 (a)	Determine the operating cost and overall mining cost for a mining project proposed to produce 1000 tonne of ore per day deploying conventional mining techniques and indicate the types of equipment and number of equipment for the proposed production.	13	CO5	L4
	OR			
15 (b)	Describe in details of technical and economic indices to evaluate the mining viability based on pre-feasibility and detailed feasibility reports for an iron ore project.	13	CO5	L4

PART- C (1x 15=15 Marks)

(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16.	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 financially viable.	15	CO3	L5