Examination: B. Tech (Mining Engineering) Session:Mid-Semester '02 Semester: VI
Subject: **Surface Mining** (283002) Time:3 Hours
Instructions (If Any): *ANSWER ALL QUESTIONS* Max. Marks: 60

Question No.	Questions	Marks
	Group-A	
1.	a. Illustrate with neat sketches various deposits that are amenable to surface mining.	7
	b. Mention the phases of life cycle of a surface mines along with the operations involved and equipment used in each phase.	6
2.	a. Draw a schematic cross sectional diagram of opencast mines for each of the following: I. Horizontal deposit II. Inclined deposit.	4 ×2
	OR	
	a. Discuss *applicability* **OR** *selection criteria* of electric rope shovel.	4
	b. Illustrate the components of hoist mechanism of an electric rope shovel	4
3	In a particular site with medium jointing a ripper is capable of penetrating up to 0.75 m. The ripper teeth is of width 0.25 m. The ripper geometry allows to make a furrow with a side wall of 40^0. Considering that the depth of effective ripping is 45% of ripper penetration, determine the required spacing between adjacent passes of the ripper.	9
	Group-B	
5.	a. Discuss the criteria for the selection of a suitable drilling operation	5
	b. Calculate the total number of 250 mm diameter drills, required for an opencast iron ore mine working on both western and eastern side with the following specifications:	10

	Western Pit	Eastern Pit
Target Production (tpy)	9,688,896	22,607,424
No. blast holes to be drilled	4140	13733
Av. Hole-Depth	13.7 m	13.7 m
Drilling Rate (m/shift)	91.4	76.2

(ASSUME YOUR OWN CONDITIONS)

6.	a. Describe the function of various parts of a tricone roller drill bit with a suitable cross section of the bit.	5
	b. Derive an expression for penetration rate (PR) for tricone roller drilling in terms of the wWeight on Bit (W); Rotational Speed (N), Diameter of the Bit (D) and shear strength of rock (S).	10