



MINING

Serial No.

1000049

Time : 1:30 Hours]

[Full Marks : 100

Instructions :

- The figures in the margin indicate full marks.
- Answer **five** questions including Question No. 1 which is compulsory.
- Candidates are required to give their answers in their own words as far as practicable
- All questions have been printed in English.
- Parts of the same question must be answered together and must not be interposed between answers to other questions.

1. Write short answers for the following questions. Give the sketches wherever necessary. [10×2=20]

- a) What do you mean by sub grade drilling? Why is it adopted in surface mines? How much would you like to propose in a lime stone surface mine?
- b) What do you mean by co-relation surveying? List the various methods to be used for this in different conditions with their limitations.
- c) Differentiate prospecting and exploration. List the various methods used for prospecting giving their applicability.
- d) Submit a brief comparison between Shovel and Dragline.
- e) What is life of mine? How is it calculated?
- f) With the aid of a neat and suitable sketch explain the "Coward Diagram" in relation to methane explosibility.
- g) Narrate the rules regarding the shaft winding in case of man and material winding. Also submit the list of various safety provisions to be made with shaft winding.
- h) Briefly explain the detrimental effects of mining on the environment.

- i) With the aid of sketch explain the “Bench slope angle” and “Ultimate pit slope angle”.
- j) How blasting in “Dimensional Stone Mining” is different from the “Conventional blasting”.

2. a) Write down the advantages of inclined drilling in surface mining. [10]
- b) Calculate : Burden, Spacing, Sub grade Drilling, Quantity of rock broken, Explosive Consumption and Powder Factor for an iron ore mine (open cast) using following parameters : [10]

Bench Height : 15 M

Hole Dia : 5” (125 mm)

Specific Gravity of ore : 2.7

Specific Gravity of explosive : 1.2

3. a) With the aid of sketch explain any one method of setting out a curve to join two road ways at right angles in an underground coal mine. [10]
- b) The following details were obtained in levelling along the centre line of a proposed roadway : [10]

BS	IS	FS	Station	Remark
0.0410	--	--	A	BM – 156.000 M
--	1.165	--	20	
--	1.590	--	40	
1.360	--	1.100	50	
--	2.835	--	60	
1.635	--	3.775	80	
--	2.530	--	90	
--	--	3.180	100	Station B

Calculate the RL of station B, total fall and rate of fall between station A and B.

4. a) What do you understand by relative humidity? Explain the method of its determination using “Whirling Hygrometer” giving suitable sketch. [10]
- b) A total quantity of 1960 cubic meters of air per minute passes into split whose particulars are as follows : [10]

Split S1..... 1.83 m × 1.525 m and 457.5 m long

Split S2..... 1.83 m × 1.83 m and 360.0 m long

Split S3..... 1.83 m × 1.22 m and 320.25 m long

Split S4..... 1.525 m × 1.22 m and 274.5 m long

Calculate the quantity of air going in each split. Assume that ventilating pressure and coefficient of friction for each split are identical.



5. a) List out the various geological parameters which are to be considered for the planning of an underground mine. [10]
b) Explain with the help of sketch a diamond wire saw to be used for the marble (Dimensional Stone) cutting. [10]
6. a) Through light on Reclamation in mines. Differentiate it with restoration and rehabilitation. Give the list of various reclamation methods for an open pit. [10]
b) In an underground coal mines, the coal transportation is through rope haulage. List the various safety devices used on this. Explain any one of them giving suitable sketch. [10]
7. a) Narrate the factors affecting operating cost of the mine. [10]
b) Provide the list of crushers which can be used for crushing lime stone to be fed to a cement factory. Explain its construction with the aid of sketch. [10]
8. Write a brief note on any four of the following : [4×5=20]
- Stripping Ratio
 - Cut of Grade
 - Miners Dial
 - Coal Bed Methane
 - Tailing Dam
 - Free face (Dimensional Stone Mining)
 - Magnetic Separator in relation to mineral processing
 - Depreciation and list of methods to determine

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