JHARKHAND Rai University
RANCHI

End Semester /Reappear (Semester VI) Examination May 2025

Programme: Diploma (MiE) **Full Marks: 70**
Course: Fuel Technology & Mineral Processing **Time: 3 Hrs.**
Course Code: 8D.352
Enrolment no. _____

Section I

1. **Short Answer type questions. Answer any four.** **4 x 5 = 20**
   a. Define mine sampling. Why is it important in mineral exploration and production?
   b. Classify the coal on the basis of their size. Discuss the uses of coal.
   c. State the triangular method of determination of average grade of ore for bore hole of same diameter & different diameter.
   d. Write a proper definition of Mineral Processing or Ore Dressing.
   e. How do volatile matter and ash content influence the combustion quality of coal?
   f. Discuss the determination of average grade of ore in a horizontal section.

Section II

Long Answer type questions. Answer any three. **3 x 10 = 30**

2. Determine the grade of iron ore in an underground metal mine using the triangular method, based on the given thickness values (45 mm, 43 mm, and 41 mm) and corresponding iron grades (38 gm/tonne, 56 gm/tonne, and 59 gm/tonne).
3. What is salting? Mention any two methods used in salting and state why it is done. How can salting be prevented?
4. Find the average grade of gold ore when ore are in vertical section in stope. The grade & length is as follows:

GRADE (gm/te)	124	159	113	109	131
Length (m)	9.2	13.6	22	19	11.4

5. Illustrate about grinding. Differentiate between Rod Mill and Ball Mill.
6. Differentiate between high temperature and low temperature carbonization.

Section III

Application based questions. Answer any one. **1 x 20 = 20**

7. Coal is of two grades coking & Non-coking Coal. Can you differentiate between coking and non-coking coal. Provide the grading of coking & non coking coal as notified by Government of India.
8. What do you understand by mineral dressing? Write down its objectives, scope and limitations.
9. A coal sample weighing 3.0 grams was analyzed for proximate constituents with the following observations: • Weight after drying at 105°C = 2.7 g • Weight after heating at 950°C in the absence of air = 1.8 g • Residue left after complete combustion in air = 0.45 g. Calculate the following: a. Moisture (%) b. Volatile matter (%) c. Ash (%) d. Fixed carbon (%)

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