

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, APRIL-2019

Subject: Introduction to Mineral Processing

Branch: Mining

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. What are characteristics of coal that are useful in separation from waste?
2. What is the principal of flowing film concentration?
3. What is a depressant? Give some examples of depressants.
4. Write short notes on the leaching and its applicability in extraction of base metals.
5. Define ferro-magnetic materials with suitable example.

PART-B

Answer any FIVE Questions of the following

5x10 Marks= 50Marks

1. a) How are mineralogical studies helpful for mineral processing?
b) Write about closed circuit and open circuit crushing?
- 2.a) Define Jigging and explain the principle of operation of fixed screen air-pulse jig with a neat sketch. (4M)
b) Discuss the method of size wise segregating of ore particles below 0.1 mm. (3M)
c) Discuss the principle of operation of Hydro-cyclone. State its fields of application. (3M)
3. a) Explain why flotation is used for fine particles only.
b) Discuss the importance of froth flotation over gravity concentration process
4. a) How does a roll type electrostatic separator work?
b) What are the steps involved in ion bombardment in electrostatic separation?
5. a) Draw the flow sheet for iron ore.
b) Write about the high intensity dry magnetic separator with neat diagram.
6. a) Write about the scope and objective of mineral processing.
b) What are the advantages of mineral processing?
7. a) Explain the industrial screens of grizzlies and trommels with neat diagram.
b) Explain the process of float and sink method in dense media separation.
8. Write short notes on any **two** of the following
(a) Principle of hydraulic Classifier.
(b) Comminution and stages in comminution.
(c) Flotation reagents.

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, APRIL-2019Subject: Mine Ground Control

Branch: MINING

Time: 3 hours

Max. Marks: 60

PART – AAnswer **ALL** questions of the following**5x2Marks=10 Marks**

1. Give the objectives and functions of supports (ground control). Also state which places of the mine requires ground control?
2. What is residual stress?
3. What are the factors influencing subsidence
4. List the various properties of the rock mass that influence the design of various types of structures in mines
5. What are the different types of supports used in underground mines?

PART-BAnswer any **FIVE** Questions of the following**5x10 Marks= 50Marks**

- 1.a) Explain the constraints in mine ground control design.
- b) Explain with neat sketches various methods of supporting a four-way junction formed by two mutually perpendicular roadways of 4.5 m width X 3.0 m height each and compare these methods.
2. a) List the different types of methods used to measure insitu stress? [3]
- b) Explain about flat jack method for insitu stress measurement with neat diagram. [7]
3. a) Explain different equations for predicting subsidence using any method known to you and state which method it is.
- b) What factors influence surface and sub-surface subsidence due to underground mining.
4. a) Coal pillar strength is represented by $S = S_1 h^a w^b$, where S_1 = in-situ strength of the pillar, h = mining height, w = pillar width. Two bord and pillar panels are developed in the similar geological conditions at depths of D_1 and D_2 with mining heights h_1 and h_2 . If the gallery width and the pillar width in both the panels remain same, find out the ratio of pillar safety factors, $\frac{SF_1}{SF_2}$.
- b) Define embankment. Write down different factors to be considered during design of an embankment.
5. a) Write down the factors affecting the load bearing capacity of timber props.
- b) Explain the principle and design of friction props.
6. a) Describe the need of ground control in longwall mines.
- b) Justify how characteristics of coal measure roof strata gives an idea for better ground control.
7. a) What are the objectives of strata monitoring in a longwall panel? State the different instruments used to monitor various parameters.
- b) Explain the procedure to install and monitor an instrument to measure load exerted by roof in the gate roadways of a longwall face.
8. Write short notes on any **TWO** of the following
 - a) Load on pillar
 - b) Application of structures in non-mining projects
 - c) Theory of elastic beams and plates for layered rocks

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, APRIL 2019Subject: Under Ground Metal Mining Technology

Branch: MINING

Time: 3 hours

Max. Marks: 60

PART – AAnswer **ALL** questions of the following**5x2Mark=10 Marks**

1. Give the name of different shapes of mine developments.
2. Write any four raising method for metal mine.
3. What is sill pillar?
4. Write the suitable conditions for block caving.
5. Define ore and rock.

PART-BAnswer any **FIVE** Questions of the following**5x10 Marks= 50Marks**

1. What are the different developments required for exploitation of a mineral deposit? Briefly explain various factors to be considered during deciding the location of the Raise and Winze.
2. Explain slot preparation with Jora raise method. Explain importance of slot preparation in stopes.
3. a) Give applicability conditions of shrinkage stoping method and draw its neat sketch.
b).Give applicability conditions of sub level caving method and draw its neat sketch.
4. a) Write the applicability conditions for room & pillar, sublevel open stoping.
b) Draw the stope layout of block caving.
5. Briefly describe various leaching techniques to mine low grade ore deposit.
6. a) Describe layout of drifts, level and cross cut in develop stope.
b) Explain machines/equipment required during development work in veins, lodes and tabular deposit.
7. a) What are the factors influencing selection of suitable stoping method?
b) Describe merits and demerits of Jora raising method?
8. Write short notes on any **TWO** of the following
 - a) Alimark Raise Climber method
 - b) Sublevel stopping
 - c) salient features of Indian metal mining industry