Code No.: **407A4** MR14

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad.

IVB.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER - 2017

SUBJECT: **ROCK FRAGMENTATION ENGINEERING**

(BRANCH: **MINING**)

Time: **3 Hours** Max Marks:**75**

PART-A

I. Answer all the questions **5 x1=5M**

1. What is drillability?
2. What is cast blasting?
3. What is difference between blast and blasting?
4. What is difference between fly rock and throw?
5. What instruments are used for monitoring blast vibrations.

II Answer all the questions **10 x 2=20M**

1. What is borehole hydrostatic pressure?
2. List out the factors to be considered on drill bit wear.
3. What is ANFO?
4. What is pneumatic drilling?
5. What are the remedial measures for blow out of shots?
6. What are the statutory duties of Blaster incase of misfires?
7. Why presplit blasting is beneficial?
8. What factors affect PPV?
9. What is blasting instrumentation?
10. How stemming ejection can be prevented?

PART-B

Answer all the questions **5 x 10=50M**

1. Discuss the factors affecting the selection of a drill and drill bit.

OR

2. Comparison between pneumatic and hydraulic rock breaking machines.
3. Design the blasting operation for protecting the surface structure located 500 m far from the face.

OR

4. Explain and differentiate between cut blasting and solid blasting in UG coal mines.
5. Describe about transient ground motion during blasting with neat sketch.

OR

6. What do you mean by maximum charge per delay? Give the permissible limits of ground vibration adopted for Indian mining condition to safe guard the structures existing near blasting site.
7. Write the following: i. Pre-split blasting ii. Muffled blasting

OR

8. Write the threshold value of PPV for surface mining. How to predict the ground vibration due to blasting?
9. Discuss the working principle of bore hole probe with neat diagram.

OR

10. Explain how to use instrumentation for better productivity of a mine.

Code No.: **407B4**

MR 14

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IV B.Tech I Sem Regular End Examinations, NOVEMBER-2017

SUBJECT: **STRATA CONTROL TECHNOLOGY**

(Branch: **MINING**)

Time: **3 Hours** Max Marks: **75 Marks**

PART-A

I. Answer all the questions **5 x1=5M**

1. Write the 5 parameters of RMR
2. What is main fall?
3. What is the full form of SSR
4. What are strata control techniques?
5. What is pre planning of strata control cell?

II Answer all the questions **10 x 2=20M**

1. For a core drilling of shale, the average number of fractures per meter of core length is found to be 20.Calculate the RQD (%) of the rock.
2. What are the factors contributing to strata control problems in mines?
3. Why corner pillars are affected by overriding?
4. Explain creep with neat diagram.
5. What are different types of supports used for roof in a coal mine having RMR 45 to 55?
6. Mention the supports that are commonly used for depillaring operations?
7. How to monitor roof convergence?
8. What is convergence? Which instrument will be used to measure convergence in mines?
9. What are the stages of strata control organisation?
10. How to organize the strata control cell?

PART-B

Answer all the questions **5 x 10=50M**

1. On what factors the RQD is measured? Give an example of how RQD is measured?

OR

2. Explain the effect of orientation on strata control. Why it is important to know the geotechnical properties of rock.

3. Describe the basics of safety in coal mines.

OR

4. a. Write a note on roof fall.
   b. Discuss the causes and impact of air blasts in ug mines.

5. In a Longwall mining method of working the carrying capacity of powered support is 20 tonnes and the supports are arranged by 1.2 m centre to centre. The canopy length of a powered support is 2 m and the length of unsupported face is 0.5 m. Calculate the load density of that area.

OR

6. Discuss the factors to be considered while designing supporting system for longwall workings.

7. Describe about demonstration of geotechnical instruments and softwares which are related to strata behavior study.

OR

8. Explain the role of geo technical instrumentation along with a case study of a mine known to you?

9. Describe how training and implementation are interrelated for latest strata control technologies by giving a suitable case study.

OR

10. Discuss the role of strata control cell in mines. Is it really required to control strata problem in mines?

Code No.: **40720**

MR14

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IVB.TECH I SEMESTER REGULAR END EXAMINATIONS, OCTOBER - 2017SUBJECT:

MINERAL PROCESSING

(BRANCH: **Mining**)

Time: **3 Hours** Max Marks:75

PART-A

I. Answer all the questions **5 x1=5M**

1. Define comminution?
2. What is meant by jigging?
3. Explain why flotation process is used for fine particles only?
4. What is meant by electrical separation?
5. What is the ore of Iron?

II Answer all the questions **10 x 2=20M**

1. Why beneficiation of minerals is required?
2. List the scope of Mineral Processing.
3. What do you understand by equal settling particles?
4. What is the working principle of shaking table?
5. Write down the purpose of frothers in flotation process?
6. What are collectors?
7. What are the different types by which charge on material is acquired?
8. Explain about Belt-type electrostatic separator?
9. What are the field applications of magnetic separators?
10. List the limitation of Magnetic separator?

PART-B

Answer all the questions **5 x 10=50M**

1. List out different types of grinding operations with brief note. What are the Process requirements in wet & dry grinding?

(OR)

2. Explain briefly rittingers kicks, dobies and bonds law of size reduction?

3. What is meant by screening? Explain about various types of screens?

(OR)

4. Explain dense media separation. with neat sketch.

5. Define Flotation process? List different types of flotation processes. How do Different flotation reagents like collector Frother, Activator and Depressant affect flotation process?

(OR)

6. Explain the working of Denver flotation cell with neat sketch?

7. Discuss the working of dielectric constant electrical separation with neat sketch.

(OR)

8. What is Electrical Separation? Explain High Tension Separator in brief?

9. Write the flow sheet of coal and explain.

(OR)

10. Draw a simplified flow sheet for the various stages involved in the processing of iron and explain in Detail

Code No.: **40722/30722**

MR14 - Regular & MR13 - Supply

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IVB.TECH I SEMESTER REGULAR & SUPPLEMENTARY EXAMINATIONS, NOVEMBER - 2017

SUBJECT: **MINE LEGISLATION**

(BRANCH: **Mining**)

Time: **3 Hours** **Max Marks:75**

PART-A

I. Answer all the questions **5 x1=5M**

1. What is the provision for drinking water in underground mines?
2. What do you understand the word 'Compensation'?
3. In which year, the Coal Mines (Nationalization) Act was enacted in India?
4. List out different occupational diseases.
5. How safety consciousness can be created among the miners?

II Answer all the questions **10 x 2=20M**

1. What is "gassy seam of second degree"?
2. What are the shot firer's tools?
3. Which of the components of a main cable satisfy the statutory requirement of earthing and what shall be the conductivity of this component?
4. List out different permits required as per MMDR act
5. Who are the persons to be trained as per MVT rules?
6. What is the permitted explosive quantity during solid blasting in degree I,II and III gassy mines?
7. List out occupational health diseases as per act.
8. Define reportable and minor accident.
9. What is the application and purpose of Code of practice on safety and health in underground coalmines?
10. What is meant by safety consciousness?

PART-B

Answer all the questions **5 x 10=50M**

1. What are the duties and responsibilities of manager as per Coal Mines Regulations, 1957?

(OR)

2. Briefly explain the words illegal mining, competent persons, owner and reportable injury.
3. Write the general provisions of Workmen compensation act 1923.

(OR)

4. What are the provisions for "Mine development" as per The Mines and Minerals (Development and Regulation) Act, 1957?
5. What are the provisions for "general vocational training" and "refresher training" as per Mines vocational training rules, 1966?

(OR)

6. Explain the salient features of initial and refresher training as per MVT rules.
7. Briefly describe the duties and responsibilities of workmen's inspector.

(OR)

8. What are the occupational diseases in mining? Briefly explain them.
9. What are the different audio-visual aids that are used for safety compaign? Explain.

(OR)

10. What are the three main approaches to industrial relations and explain them?

Code No.: 40721/30721

MR14 –Regular & MR13- Supply

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IV B.TECH I SEMESTER REGULAR & SUPPLEMENTARY EXAMINATIONS, OCTOBER- 2017

SUBJECT: **ROCK MECHANICS**

(BRANCH: **Mining**)

Time: **3 Hours** Max Marks: 75

PART-A

I. Answer all the questions **5 x 1 = 5 Marks**

1. Define rock mechanics.
2. What is stress?
3. What are the different types of subsidence?
4. What is trough?
5. What is finite difference method?

II. Answer all the questions **10 x 2 = 20 Marks**

1. What is meant by hardness of rock?
2. What is meant by creep?
3. What are the different types of supports used in underground?
4. How the value of cohesion is obtained from Mohr's envelope?
5. What is vertical subsidence theory?
6. What is angle of draw?
7. What is Overall slope angle?
8. What is circular failure?
9. Write any FOUR application of FEM in mining?
10. What are the different continuum methods?

PART-B

Answer all the questions **5 x 10 = 50 Marks**

1. What are the physico mechanical properties of rock?

(OR)

2. Explain about time dependent properties of rock.

3. Explain factors to be considered for design of supports in Long wall mining?

(OR)

4. What are the factors to be considered for design of supports in B & P workings? Explain each, with suitable examples.

5. What is meant by angle of draw? How can you control the mine subsidence? Explain with neat diagram.

(OR)

6. What are the causes of subsidence? Explain them with suitable examples?

7. What are the different slope stability methods? Explain.

(OR)

8. Explain different types of slope failures with the help of suitable diagrams?

9. Write the following i. FEM ii. Pascal triangle.

(OR)

10. Explain the difference between FEM and FDM?

Code No: 40330/30328

MR14 – Regular & MR13-Supply

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IV B.TECH I SEMESTER REGULAR & SUPPLEMENTARY EXAMINATIONS, OCTOBER- 2017

SUBJECT: **OPERATIONS RESEARCH**

(BRANCH: **Common to ME & MINING**)

Time: **3 Hours** Max Marks: **75 Marks**

PART-A

I. Answer all the questions **5 x1=5M**

1. Define linear programming problem.
2. Distinguish between Individual replacement and group replacement policies.
3. Write the formula for determining waiting time in the queue in single server model
4. What is the value of shortage cost /unit if the shortages are not allowed in inventory models?
5. What is simulation?

II Answer all the questions **10 x 2=20M**

1. Differentiate between Degeneracy and non Degeneracy of transportation problem.
2. What do you mean by the two- phase method for solving a given L.P.P? Why is it used?
3. How replacement problems are classified?
4. Find the range of values p and q, of Table1which will render (2, 2) is a saddle point.

Table 1

		Player B		
		I	2	3
Player A	1	2	4	5
	2	10	7	q
	3	4	p	6

5. Write the elements of queuing systems.
6. Explain the single channel and multi-channel queueing models.
7. Describe the limitations of EOQ Formula.
8. What are the costs involved in Inventory control.
9. Explain the steps in Monte –Carlo simulation.
10. What is dynamic programming?

PART-B

Answer all the questions **5 x 10=50M**

1. A firm manufactures two types of products A and B and sells them at a profit of Rs. 2 on type A and Rs.3 on type B. Each product is processed on two machines G and H. Type A requires one minute of processing time on G and two minutes on H. Type B requires one minute on G and one minute on H. The machine G is available for not more than 6 Hours 40 minutes while machine H is available for 10 Hours during any working day. Solve the problem.

(OR)

2. Solve the following AP and find the optimal assignment Schedule.

	A	*B*	*C*	*D*	*E*
M_1	9	11	15	10	11
M_2	12	9	-	10	9
M_3	-	11	14	11	7
M_4	14	8	12	7	8

3. Use Johnson rule to determine the best sequence for six jobs given in Table4. Each job is processed in the order ACB

Table 4

Job	1	2	3	4	5	6
Machine A	12	8	7	11	10	5
Machine B	7	10	9	6	10	4
Machine C	3	4	2	5	1.5	4

(OR)

4. Find the optimal strategies for the games for which the payoff matrix for the player A is given in Table 4. Also find the value of game.

Table 4:

		Player B	
		I	II
Player A	1	1	3
	II	4	2

5. A branch of Punjab National Bank has only one typist. Since the typing work varies in length (number of pages to be typed). The typing rate is randomly distributed approximately a Poisson distribution with mean service rate of 8 letter per hours. The letters arrive at a rate of 5 per hour during the entire 8 hour workday. If the typewrite is value at Rs. 1.50 per hour, determine (a) equipment utilization (b) the % time as arriving letter has to wait (c) average system time (d) average idle time cost of the typewriter per day.

(OR)

6. People arrive at a theater ticket both in a poisson distribution annual rate of 50 per hour service time is constant at 90 seconds. Calculate
   a. The mean number in waiting time.
   b. The mean waiting time.

7. Find the optimum order quantity for a product for which the price breaks are as follows :

Quantity	**Unit cost (Rs.)**
$0 \leq Q_1 < 500$	10.00
$500 \leq Q_2$	9.25

The monthly demand for the product is 200 units, the cost of storage is 2% of the unit cost and the cost of ordering is Rs. 350.00.

(OR)

8. A particular item has a demand of 9000 unit per year. The unit cost of the item is Rs 100 and holding cost per unit is Rs 2.40 per year. The replacement is instantaneous and shortage cost is Rs 5 per unit per year. Determine
   (i) Total cost per year
   (ii) Economic Lot Size
   (iii) Number of order per year
   (iv) Time between two order
   If the cost of one unit is Rs1.

9. What are the advantages and limitations of using simulation?

(OR)

10. Use DPP method to

Minimize $Z = 3x_1+5x_2$.
Subject to
$x_1 \leq 4$,
$x_2 \leq 6$,
$3x_1 + 2x_2 \leq 18$
$x_1, x_2, \geq 0$.