Code No.: 72509 **MR17**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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

III B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2019

Subject: **MINE VENTILATION**

Branch: **MINING**

Time: 3 hours **Max. Marks: 60**

Answer ALL questions of the following **5x12Marks= 60Marks**

1. Explain methane layering and methods of its clearing in mines.

OR

2. Samples of air collected in the intake and return gates of an advancing longwall face show 0.2 and 0.8% CH_4 respectively. Calculate methane emission per tone of coal mined. If the face produces 1000te per day and an air quantity of 15 m^3s^{-1} circulates along the face.
3. a) Explain the different sources of heat in Mines
   b) Calculate the equivalent orifice of a mine circulating 6000m^3 of air per minute at a water gauge of 64mm.

OR

4. A fan passes 9000 m^3 of air per minute at 500 Pa when running at full speed and 6000 m^3/min at 200Pa when running at slow speed. Calculate the NVP, assuming it to be constant.
5. a) What is meant by fan characteristic cure and fan operating point?
   b) Three equal air splits are put first in series and then in parallel. Calculate the saving in energy when split are in parallel compared to when they are in series if pressure across the splits remains unchanged.

OR

6. a) Write short notes on series and parallel operation of mine fans.
   b) Compare the forcing and exhaust systems of ventilation system.
7. Compare the ascensional and descensional ventilation.

OR

8. Explain the different flow control devices used in Mines.
9. Find out how a total quantity of 40 m^3s^{-1} of air flowing will distribute itself into two splits A and B, A being twice as long as B; section are identical.

OR

10. Explain the selection of mine fans, arrangement for reversal and design of fan drift

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III B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2019

Subject: **MINE SURVEYING-II**

Branch: **MINING**

Time: 3 hours **Max. Marks: 60**

Answer ALL questions of the following **5x12Marks= 60Marks**

1. a) Explain the advantages and disadvantages of the method of determining the distances and elevations by means of a staff and theodolite.

   b) A Staff is held at a distance of 30m and 60m from axis of a theodolite fitted with stadia hairs and the staff intercept by level sights are 0.30m and 0.60m respectively. Determine the constants of the instrument and calculate the horizontal distance of the staff when the staff intercept is 1.35m on vertical staff and the angle of inclination is $12^0\ 16'$. What is the vertical difference between the instrument station and staff station if the height of the instrument is 1.5m and the reading of the middle cross hair is 1.53m.

   OR

2. a) List out the following
   - i. Deviation curve
   - ii. Left hand and right hand curves
   - iii. Vertical curves
   - iv. Degree of curvature
   - v. Super-elevation.

   b) Simplify the elements of simple circular curves.
3. a) Identify the advantages and disadvantages of photogrammetric mapping.
   b) Identify the different types of Surveying based on different headings for the purpose of resulting maps.

   OR

4. a) Explain the following:
   - i. Stripping ratio
   - ii. Cut-off ratio
   - iii. GPS
   - iv. ISRO
   - v. GIS

   b) Apply the uses of surveying in mining industry.
5. a) Compare the role of mine surveying in underground and opencast mines.
   b) Compare the role of GPS in mining industry.

   OR

6. a) Explain Weisbach triangle method of correlation.
   b) In a weisbach triangle, the azimuth of a plumb-plane marked by two wires A and B is 115°23'49'', and C is a theodolite station on the south side of the eastern prolongation of AB. Given the following data, calculate the azimuth of the line CD. Illustrate your answer by a sketch.

   AB=2.561m BC=3.644m CA=6.735m
   Angle ACD=179°14'33'' Angle BCD=179°10'17''
7. a) Explain total station and its working.
   b) Compare the total station survey with other conventional surveys.

   OR

8. a) Classify the types of total station surveying.
   b) Apply the uses of total station in mining industry.
9. a) Classify and explain EDM instruments.
   b) Identify statutory requirements for mine plans.

OR

10. a) Compare terrestrial and aerial photogrammetric surveying.
    b) Identify the advantages and disadvantages of photogrammetric mapping.

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III B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2019

Subject: MINERAL EXPLORATION

Branch: **MINING**

Time: 3 hours **Max. Marks: 60**

Answer ALL questions **5x12 = 60M**
All Questions carries equal marks

1. **a)** Explain the classification of mineral resources.
   b) Describe the terms mineral, ore, ore body, gangue, Inferred reserve, Indicated reserve and Proved reserve.

(OR)

2. Explain the application of geo physical method and geo chemical method in mineral exploration.

3. Illustrate the need for preserving drill cores and also explain the purpose of drill cores in mineral exploration & mining of a reserve.

(OR)

4. Identify the methodology and pattern for detailed exploration by drilling.

5. Discuss the risks and advantages of investing for the purpose of exploration in a mining project. Identify when to venture into exploration

(OR)

6. Interpret the criteria for accepting or rejecting the target areas in exploration.

7. Illustrate the nature, structure and strategies in exploration activities of Major and Minor exploration companies.

(OR)

8. Discuss the major aspects of exploration and the importance of exploration in a mining industry.

9. Specify the areas of application of structured contour plan, Isopatch map, Isograd plan, Assay plan, Longitudinal vertical projections, and Cross section.

(OR)

10. Discuss the problems faced in mineral exploration and also India's recent public & private sector success in the field of exploration.

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III B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2019

Subject: Electrical Safety and Energy Management

Branch: **Mining**

Time: 3 hours **Max. Marks: 60**

Answer ALL questions **5x12 = 60M**
All Questions carries equal marks

1. Write the objectives and scope of Indian Electricity Act and Indian Electricity Rule.

(OR)

2. Explain the general requirements of electrical safety as per Indian Electrical rules.

3. Explain the classification of electrical installation and write about safety documentation.

(OR)

4. Discuss in detail about the significance of equipment earthing.

5. Explain the basic principles of first aid and action taken after electric shock.

(OR)

6. Explain in detail about the management's safety policy.

7. Explain the steps to be taken on the occurrence of fire.

(OR)

8. Tabulate the application of different types of fire-extinguisher medium.

9. Explain in detail the basic principles of Energy Audit, objectives and how energy audit helps.

(OR)

10. Explain the objectives of energy management and explain about energy efficient electrical systems.

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III B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-2019

Subject: AIR Polution and Control

Branch: **Mining**

Time: 3 hours **Max. Marks: 60**

Answer ALL questions **5x12 = 60M**
All Questions carries equal marks

1. List out the major air pollutants. Explain their sources and effects on human health and vegetation.

(OR)

2. a) Demonstrate the Phenomenon of Ozone layer depletion indicating its causes, effects & remedial measures.
   b) Describe Green House Effect with a neat sketch. Explain its relation to global warming.

3. Explain the mechanisms of kinetics of air pollution. Describe any one method for the removal of HCs.

(OR)

4. Explain the control of products of combustion. What are the different ways to reduce exhaust emissions from automobiles?

5. a) Explain the importance of Metrology in air pollution control.
   b) Define wind rose. Explain its importance in air pollution studies.

(OR)

6. Explain the Gaussian model for plume dispersion.

7. With a neat sketch, demonstrate any two devices used for the control of particulate pollutants.

(OR)

8. Explain any two methods of removal of air pollutants using wet methods.

9. Explain the criteria you will follow while siting a cement industry in view of air pollution and its impacts on nearby habitations.

(OR)

10. What is air quality monitoring? Explain the monitoring of SPM, NOx and SOx.