Code No.: **52504**

**MR15-2015-16 Batch**

# MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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

## II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Mining Geology**

Branch: **MINING**

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

### PART – A

**Answer ALL questions of the following** **5x2Mark=10 Marks**

1. Explain engineering uses of Basalt.
2. Define Ore mineral and Gangue mineral with two examples.
3. What is geochemical anomaly? Explain
4. Describe some important Indian Tunnels
5. Define the bore hole drilling

### PART-B

**Answer any FIVE questions of the following** **5x10 Marks= 50Marks**

1. a) Explain Direct and indirect methods for determining uniaxial compressive strength of rocks?
   b) Write about Engineering uses of rocks.
2. Explain the important Physical and Mechanical properties of soils.
3. a) Describe the processes in the formation of uranium?
   b) What are four stages of coal formations?
4. Explain the
   a) Geology of Telangana.
   b) Mineral resources of Telangana
5. a) Explain the geophysical methods in estimation of mining reserves.
   b) Explain the Types of different slope stabilization methods.
6. a) Describe polygonal and triangular method of exploration.
   b) Describe the influence of geotechnical and groundwater factors on ore reserve estimation.
7. a) Describe the geology of any two tunnels in India?
   b) Write about different types of methods, machines used in excavation of earth materials.
8. Explain the importance of geology in drilling the following
   a) Deformed rocks
   b) Hard rocks

Code No.: 50B09 | MR15-2015-16 Batch

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## II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Probability & Statistics**

Branch: **Common to CE, ME & MINING**

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

### PART – A

**Answer ALL questions of the following** **5x2M=10 Marks**

1. When a fair die is thrown, determine the probability of obtaining a prime number
2. Give examples of discrete and continuous random variables
3. Distinguish between one-sided tests and two-sided test.
4. Write any two properties of Chi-Square distribution
5. Write the equations of the regression lines of Y on X and X on Y.

### PART – B

**Answer any FIVE questions of the following** **5x10M=50 Marks**

1. a) State multiplication rule of probability for two events.
   b) State addition theorem of probabilities for three events.
2. a) Write short notes on Dependent and Independent events
   b) A number is selected from the first 50 natural numbers. What is the probability that it is a multiple of 5 or 11.
3. a) Calculate expectation and variance of X ,if the probability distribution of the random variable.

   X is given by

| X | -1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|
| Y | 0.3 | 0.1 | 0.1 | 0.3 | 0.2 |

   b) X is a discrete random variable prove that E(X+Y) = E(X) + E(Y).
4. a) The incidence of an occupational disease in an industry is such that the workers have a 20% chance of suffering from it .What is the probability that out of 6 workers chosen at random, four or more will suffer from disease?
   b) Let X denotes the minimum of the two numbers that appear when a pair of fair dice is thrown once. Determine the (i) Discrete Probability distribution (ii) Expectation (iii) Variance.
5. A random sample of 1000 men from North India shows that their mean wage is Rs 5 per day with a S.D of Rs 1.50. A sample of 1500 men from South India gives a mean wage of Rs 4.5 per day with a S.D of Rs 2. Does the mean rate of wages vary between the two regions?

6. A manufacturer claims that only 4% of his products are defective a random sample of 500 were taken among which 100 were defective .Test the hypothesis at 0.05 level.
7. In a test given to two groups of students drawn from two normal population marks obtained were as follows,

   Group A : 18, 20, 36, 50, 49, 36, 34, 49, 41.

   Group B : 29, 28, 26, 35, 30, 44, 46.

   Examine the equality of vacancies at 5% level of significance.
8. Subhishi Store is a small local grocery store with only one checkout counter. Assume that shoppers arrive at the checkout lane according to a Poisson probability distribution, with an arrival rate of 15 customers per hour. The checkout service times follow an exponential probability distribution, with a service rate of 20 customers per hour. Compute:
   a) What is the probability that no customers are in the system?
   b) What is the average number of customers that will be waiting for service?
   c) What is the average time a customer will spend waiting for service?
   d) What is the average number of customers in the system?
   e) What is the average time a customer will spend in the system?

Code No.: 50305 MR13-2016-17 (Regular) / 2013-16 (Supply) Batch

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## II B.TECH II SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Mechanics of Solids**

Branch: **MINING**

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

### PART – A

**Answer ALL questions of the following** **5x2Mark=10 Marks**

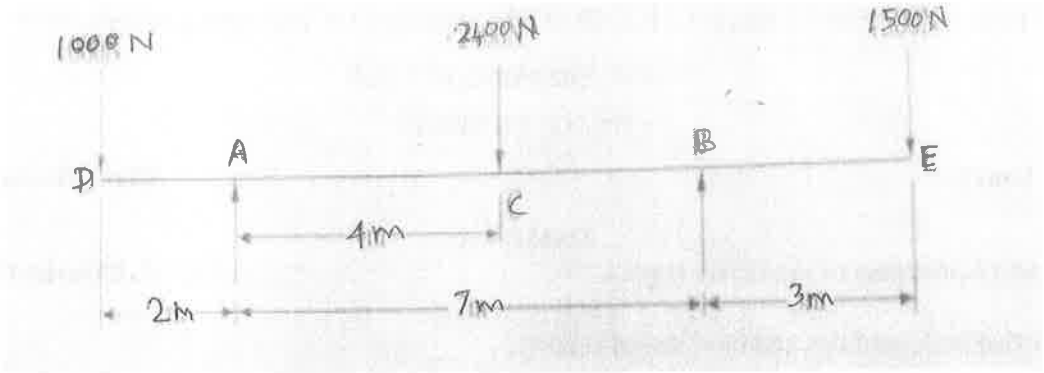
1. Define bulk modulus and modulus of rigidity.
2. Define point of contra flexure.
3. Assumptions in the theory of simple bending.
4. A solid circular shaft of diameter 100mm transmits a torque of 10kN-m. Calculate the maximum shear stress induced in the shaft.
5. Define hoop stress of a thin cylinder.

### PART-B

**Answer any FIVE Questions of the following** **5x10 Marks= 50Marks**

1. a) Derive the equation for strain energy of a non prismatic bar and varying axial loads.
   b) Write short notes on Strain energy and modulus of resilience.
2. a) Define beam? What are the different types of beams?
   b) Define the terms 'Shear Force' and 'Bending Moment'.
3. a) A steel plate of width 120mm and of thickness 20mm is bent into a Circular arc of radius 10m. Determine the maximum stress induced and the bending moment which will produce the maximum stress. Take E=2 x $10^5$ N/$mm^2$
   b) A circular beam of 100mm diameter is subjected to a shear force of 5kN. Calculate:
      i) Average shear stress, ii) Maximum shear stress, and
      iii) Shear stress at a distance of 40mm from N.A.
4. a) Write short notes on i) slenderness ratio ii) polar modulus
   b) Write short notes on i) St. Venant's principle ii) polar moment of inertia for hollow rectangular shaft.
5. a) A seamless pipe of 1.2mm diameter is to carry fluid under a pressure of 1.6N/$mm^2$. Taking permissible stress in the metal as 100N/$mm^2$. Determine thickness of metal.
   b) A cylindrical vessel closed with plane ends is made of a 4mm thick steel plate. Its diameter is 250mm and length is 750mm. It is subjected to an internal fluid pressure of 300 N/$cm^2$. Calculate the longitudnal and hoop stresses in the shell plate. Also, calculate changes in diameter, length and volume of the cylinder. Take E=210GN/$m^2$ and poisson's ratio = 0.3.
6. a) Explain Shear stresses and strain energy.
   b) A 2m long alloy bar of 1500 $mm^2$ cross-sectional area hangs vertically and has a collar securely fixed at its lower end. Find the stress induced in the bar, when a weight of 2KN falls from a height of 100mm on the collar. Take E = 120GPa. Also find the strain energy stored in the bar.

7. a) Construct shear force and bending moment diagram for the beam shown in the figure.




b) Derive the expressions for shear force and bending moment at any section of a cantilever beam of length 'L' and carrying uniformly distributed load 'w' per unit run over whole length.

8. a) Enumerate assumptions in shear stress distribution.

b) A rectangular beam 200 mm deep and 300 mm wide is simply supported over a span of 8m. What uniformly distributed load per meter the beam may carry, if the bending stress is not to exceed $20N/mm^2$.

Code No.: **52506** | **MR15-2016-17 (Regular)/2015-16 (Supply) Batch**

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## II B.TECH II SEMESTER REGULAR AND SUPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Mine Surveying-I**

Branch: **MINING**

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

### PART – A

**Answer ALL questions of the following** **5x2Mark=10 Marks**

1. What is Plane table surveying?
2. What is embankment? How does its volume can be determined?
3. Define a) Transiting b) Vertical Axis.
4. What are the different methods of traversing?
5. What is chain triangulation?

### PART-B

**Answer any FIVE Questions of the following** **5x10 Marks= 50Marks**

1. a) With the help of a 25m chain the length of a line was found to be 2218m. At the end of day's work the chain was found to be 10cm too long. Find the true distance.
   b) Explain in detail about Chain surveying
2. a) Write short notes on Electronic distance measurement methods
   b) Write a note on Field book.
3. The following offsets were taken from a survey line to a boundary.

| Chainage (m) | 0 | 15 | 30 | 50 | 70 | 90 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|
| Offset(m) | 4.6 | 3.8 | 2.9 | 4.2 | 5.2 | 6.1 | 5.8 | 4.5 | 3.6 |

   Calculate the area between the survey line, boundary and the last two offsets by trapezoidal rule and Simpsons rule.
4. The following staff readings were observed successively with a level, the instrument having been moved after second, fifth and eighth readings: 0.675, 1.23, 0.75, 2.565, 2.225, 1.953, 1.835, 3.22, 3.115 and 2.875 m. The first staff readings was taken with staff held on benchmark of RL 100.00 m. Enter the readings in a level book and calculate RL's of all points. Also apply check.
5. a) Explain about cross-section method of contouring?
   b) Explain the procedure to find deflection angle using theodolite.
6. With a neat sketch explain briefly about direct method of contouring.
7. In the traverse ABCDEA, find the length and bearing of the line EA having assuming it as perfect traverse.

| Line | Length (m) | Bearing |
|---|---|---|
| AB | 204 | 87°30` |
| BC | 226 | 20°20` |
| CD | 187 | 280° |
| DE | 192 | 210°3` |
| EA | ? | ? |

8. Explain the procedure of triangulation.