Code No.: **50114** | **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

III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Geotechnical Engineering**

Branch: **CE**

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

PART – A

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

1. Explain different types of soil structures with neat figures?
2. What is seepage through soils? Define Effective stress?
3. List out the factors effecting compaction
4. Write short notes on types of settlement
5. Write short notes on liquefaction.

PART-B

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

1. a) The sieve analysis and consistency limit tests conducted on a soil sample gave the following results:

   Percent passing 4.75 mm sieve = 82; Percent passing 75 micron sieve = 9;
   D_{10} = 0.11 mm; D_{30} = 0.45 mm; D_{60} = 1.12 mm; Liquid limit = 22%;
   Plastic limit =12%. Classify the soil by Indian Standard Classification.

   b) Explain why there is a significant time lag in the settlement of clay soils but not of sandy soils.

2. a) A soil sample 90 mm high and 6000 mm^2 in cross-section was subjected to a falling head permeability test. The head fall from 500 mm to 300 mm in 1500 sec. The permeability of the soil was 2.4×10^{-3} mm/s. Determine the diameter of the stand pipe.

   b) What is the quantity of seepage between two successive flow lines and equipotential lines?

3. (a) How would you determine the stresses at a point due to rectangular areas

   (b) A load of 16KN/m^2 is uniformly distributed over a circular area of 6m diameter at the ground surface. Calculate the vertical stress at a point P which is at a depth of 5m directly below the center of the loaded area.

4. A normally consolidated clay layer of 10m thickness has a unit weight of 20 kN/m^3 and specific gravity 2.72. The liquid limit of the clay is 59%. A structure constructed on the clay increases the overburden pressure by 10%. Estimate the ultimate consolidation settlement. There is no secondary compression.

5. a) Explain how total shear strength parameters and effective shear strength parameters are obtained from the results of consolidated undrained test.

b) A soil specimen having a cohesion of 86 kPa and angle of internal friction of 300 is tested in a triaxial apparatus. Estimate

i. The deviator stress at which the sample will fail when the cell pressure is 60 kPa

ii. The cell pressure if the soil sample fails at a major principal stress of 900 kPa.

6. a) Explain briefly about Atterberg limits.

b) Capillary rise in a soil with effective stress of 0.002 mm was 60cm; estimate the capillary rise in other soil with effective size 0.04mm.

7. a) Explain in detail the effects of compaction on soil properties.

b) A clay soil sample of 20mm thickness was tested for consolidation with double drainage. It took 110minutes for 90% consolidation. Calculate the time required for 50% consolidation if the field clay layer of 4.5m thick is with single drainage.

8. **Answer any TWO Questions of the following** **5x2Marks= 10Marks**

a) Explain briefly about the pressure bulb.

b) Explain stress history of clay with e-σ and e-log σ curves.

c) Explain the limitations of shear box test.

Code No.: **50342**

MR15-2015-16 Batch

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

III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE-2018

Subject: **Renewable Energy Sources**

Branch: **CE**

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

PART – A

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

1. Explain spectral power distribution of solar radiation.
2. Write short notes on thermal stratification
3. Write the basic principle of wind energy conversion system.
4. Classify the geothermal sources
5. Explain the environmental effects of fuel cells.

PART-B

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

1. a) Explain the significance of energy consumption as a measure of prosperity. (6M)
   b) Estimate the angle of declination on 20th day of September. (4M)
2. a) Compare and contrast the working of compound parabolic concentrator and cylindrical parabolic concentrator.
   b) With the help of line diagram, explain the working of solar passive cooling through ventilation.
3. a) Explain in detail about the factors which affect the bio-digestion. (6M)
   b) Explain drag and Lift with sketch. (4M)
4. a) Explain the origin and distribution of geothermal energy with necessary figures of cross section of earth.
   b) With the help of profile diagram, hot dry rock resource, its energy content and energy extraction.
5. a) Explain the working of fuel cell with a neat sketch. .
   b) Describe an MHD open cycle system. List the advantages of MHD power generation.
6. a) Discuss pyranometers used in solar radiation measurement.
   b) What are the advantages of solar concentrating collectors?
7. a) Explain with equation the power extraction from wind and Betz criterion.
   b) Describe a binary cycle system for liquid dominated system.
8. **Write a short note on any TWO of the following** **2x5 Marks= 10Marks**
   a) Write short notes on the Peltier effect
   b) Write short notes on wave attenuators
   c) Explain the environmental impact of solar power.

Code No.: **50H13**

MR15-2015-16 Batch

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Management Science**

Branch: **CE**

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

PART – A

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

1. Why Management Considered to be an Inexact Science
2. What are the different types of organization?
3. Define method study
4. What are the stages of manpower planning?
5. Define its full form of TQM and write briefly

PART-B

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

1. What is leadership? Explain different leadership styles with examples.
2. What are 'lean' and 'flat' organization structures and write its merits and demerits?
3. Describe the various tools and techniques used in layout planning and brief upon the difference between Job, Batch and Mass Production?
4. a) Differentiate between PERT and CPM.

   b) Draw a network for the bellow jobs and Find the critical path:

	PRECEDING	DURATION
A	------	6
B	A	5
C	A	4
D	B	4
E	C,D	4
F	------	6
G	E,F	6

5. Discuss the basic concepts of corporate planning, its process and explain SWOT analysis, how it supports to generate alternative corporate strategies.
6. a) Distinguish between management and administration?

   b) Compare and contrast centralization and decentralization.
7. Explain Deming's 14 key principles for brining out business effectiveness .
8. **Write a short note on any TWO of the following** **2x5 Marks= 10Marks**
   a) Total quality management
   b) Job evaluation and merit rating.
   c) What are the social responsibilities of management?

Code No.: **50107**

MR15-2015-16 Batch

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Engineering Geology**

Branch: **CE (Readmitted Student)**

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

PART – A

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

1. What is the Importance of Structural Geology?
2. Write about the Geological classification of the rocks with an example.
3. Write the geological time scale.
4. What is an Earth Dam and its importance?
5. What are the various causes of earthquakes?

PART-B

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

1. a) Explain the process of weathering and its effects on the properties of the rocks. **(6m)**

   b) Distinguish Physical Geology, Petrology and Structural Geology. **(4m)**

2. a) Explain the importance of weathering with reference to the dams and reservoirs. **(4m)**

   b)Write about the changes that occur in GRANITE rock due to weathering. **(6m)**

3. Explain in detail about the different methods of study of Minerals.
4. a) Describe Textures of the Metamorphic Rocks? **(4m)**

   b) Explain briefly the geological description of the following rock types. **(6m)**

   i) Granite ii) Conglomerate iii) Marble

5. Write a short note on the following: **(6m +4m)**

   What is an Unconformity? Explain about different types of Unconformities with neat diagrams.

   b) Briefly explain about Magnetic methods and their applications.

6. a) Write about the Seismic Methods and their applications. **(4m)**

   b) Explain in detail radiometric method. **(6M)**

7. Describe the geological considerations in the selection of a dam.
8. What is ground water exploration? Write the importance of study of ground water

Code No.: **50116** | **MR15-2015-16 Batch**

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Structural Analysis**

Branch: **CE**

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

PART – A

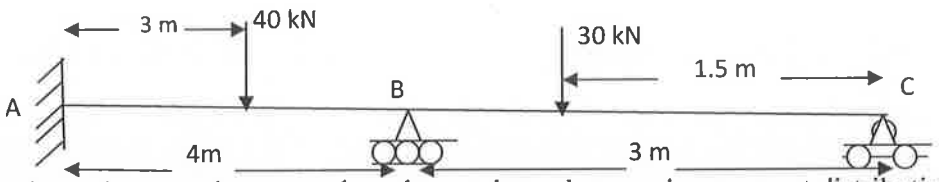
Answer ALL questions of the following **5x2Mark=10 Marks**

1. Write down the Step by step procedure determining the bending moment for fixed beam?
2. Explain the condition for absolute maximum bending moment when several concentrated loads traverse a simply supported girder.
3. What are the various types of arches?
4. What are the basic unknowns in the Slope deflection method and write the equation to solve for the same.
5. Distribute 100 kN-m applied at joint where 3 members meet with far ends fixed, lengths equal and stiffness in the ratio 1:2:2

PART-B

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

1. A beam AB of uniform section and 6 m span is built at the ends. A u.d.l of 30 kN/m runs over left half of the span and there is an additional concentrated load of 40 kN at right quarter. Determine the fixed end moments at the ends and the reaction. Draw BMD and SFD.
2. Two loads of 200 kN and 250 kN spaced at 5 meters apart crosses a girder of 25 meters span from left to right with 200 KN leading. Construct the maximum shearing force and bending moment diagrams stating the absolute maximum values.
3. A three hinged parabolic arch of 20m span and 4m central rise carries a point load of 4kN at 4m from the left hand hinge. Calculate the normal thrust and radial shear force at the section under the load. Also calculate the maximum positive and negative bending moment.
4. Determine the moments and reactions at the supports by slope deflection method



5. Write down the procedure to analyse the continuos beam using moment distribution method with an example
6. a) Write down the difference between Determinate and Indeterminate structures.
   b) Discuss the effect of temperature change on 3-hinged arches and 2-hinged arches
7. a) A two hinged parabolic arch of span l and rise r carries a udl of w/metre run over the left hand half of the span. The moment of inertia of the arch rib varies as the secant of the slope of the rib axis. Obtain the expression for the horizontal thrust H. and calculate the horizontal thrust and bending moment at quarter span point on the right half of the span if l=20m and w=20KN/m.
   b) Explain the frames which are subjected to sway with diagrams and equations for slope deflection method
8. **Answer any TWO Questions of the following** **2x5 Marks= 10Marks**
   a) Write Clapeyron's theorem of three moments and explain the terms.
   b) Discuss the advantages and disadvantages of Moment Distribution Method.
   c) List out the causes of sway in frames and explain how is it taken into account in slope

Code No.: **50113**

MR15-2015-16 Batch

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Design of Reinforced Concrete structures**

Branch: **CE**

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

PART – A

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

1. Define the term characteristic value?
2. What is primary torsion and secondary torsion with examples?
3. Find the slenderness ratio if the effective length of a $32cm$ diameter RCC column is $4.40m$.
4. Explain the Classification of Footing with a neat sketch?
5. Distinguish between short-term deflection and long–term deflection.

PART-B

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

1. Explain the Design Procedure of Doubly Reinforced Beam.
2. A reinforced concrete beam 250 mm wide and 400 mm effective depth is subjected to ultimate design shear force of 180kN at the critical section near supports. The tensile reinforcement at the section near supports is 0.5 percent. Design the shear stirrups near the supports. Also, design the minimum shear reinforcement at the mid span. Assume concrete of grade M20 and Fe 415 grade Steel.
3. A R C rectangular column of size 250mm x 300mm is reinforced with 4 bars of 20mm ϕ provided one at each corner with an effective cover of 60mm. Check the safety of the column. If it is subjected to P_u=350kN. M_{ux}=32kNm, M_{uy}=20kNm. Assume M20 concrete and Fe415 grade steel.
4. Design a combined footing for two columns C1 (400mm x 400mm with4-25 Ø bars) and C2 (500mm x500mm with 4-28 Ø bars) supporting axial loads P1 = 900 kN and P2 = 1600 kN respectively (under service dead and live loads). The column C1 is an exterior face is flush with the property line. The centre-to-centre distance between C1 and C2 is 4.5m. The allowable soil pressure at the base of the footing, 1.5 m belowground level, is 240 kN/m^2. Assume steel of grade Fe415 in columns as well as footing, and concrete ofM30 grade in columns and M20 grade in footing.
5. A flight of stairs to be provided in an office building is to be supported by a stinger beam on one edge and a brick wall on the other. The effective horizontal span of stairs may be taken as 1.5m. The risers are 150mm and the treads are 270mm. Design the steps allowing a L.L of 3kN/m^2. Use M_{20} concrete and Fe_{415} steel.
6. a. Distinguish between over reinforced cross section and under reinforced cross section.
   b. Explain about concept of bond, anchorage and development length
7. a. Why does code require all columns to be able to resist a minimum eccentricity of loading?
   b. Design an isolated rectangular footing of uniform depth for the column of size $230m \times 530m$. The column is carrying a load of $1000kN$. The bearing capacity of soil is $300\frac{kN}{m^2}$. Use $M20$ concrete and $Fe415$ steel. Sketch the reinforcement details.
8. **Answer any TWO Questions of the following** **5x2 Marks= 10Marks**
   (a) Limit state of serviceability.
   (b) Stress block parameters.
   (c) Explain about different shear failures.

Code No.: **50115**

MR15-2015-16 Batch

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2018

Subject: **Environmental Engineering**

Branch: **CE**

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

PART – A

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

1. Draw neat diagram of River Intake.
2. What are infiltration galleries?
3. Write a note on Equivalent pipe method.
4. What is self cleaning in sewer?
5. Describe the components of a septic tank with the aid of sketch.

PART-B

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

1. a). Draw a neat diagram of a reservoir intake structure. Explain the salient features
   b)Sketch and explain the working of septic tank with soak pit.
2. a). Name various disinfection methods and explain any two of them in detail.
   b) Describe in brief various types of sedimentation tanks generally used.
3. a) Write about pipe line materials
   b) Explain various types of pumps and pump house?
4. a) Draw any two pipe joints and explain
   b) Draw and Explain about Manholes and lamp holes
5. a) Design a septic tank for a school having 300 students. 5M
   b) Explain the advantages and disadvantages of activated sludge process. 5M
6. a) Name different methods for distribution network analysis. Discuss Hardy –Cross method in detail.
   b) Differentiate between slow sand filter and rapid sand filter. (5M)
7. a) Explain the methods of distribution system
   b) What are the important parameters to measure the organic content in sewage and explain the significance.
8. **Answer any TWO Questions of the following** **2x5 Marks= 10Marks**

   a) Explain the design aspects of distribution system?
   b) Storm water sewers
   c) Write the disposal methods of sludge

Code No.: **50H09**

MR15-2015-16 Batch

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE-2018

Subject: **Business Communication**

Branch: **Common to CE & CSE**

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

PART – A

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

1. How can listening improve the employer-employee relationship?
2. Give two examples each for formal and informal requests.
3. Define "Skimming & Scanning"?
4. What is a "Narrative Essay"?
5. Write a paragraph on characteristics and types of social correspondence.

PART-B

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

1. Write short notes on Feedback, Effective communication, Body language and Motivation as an object of communication.
2. What are the barriers of communication? Discuss language as a barrier to communication.
3. Specify the purpose of various kinds of Reading and explain
4. Write a job application for the post of an accountant in a reputed company in Mumbai.Give your Bio-Data.
5. Discuss the guidelines for writing Email communication and Email etiquette. Do provide a sample Email.
6. (a) Discuss the merits and limitations of oral communication.
   (b). Write short notes on any four non verbal communication skills.
7. (a). Write any five differences between e mail and fax.
   (b) Discuss the usefulness of "FAX" in transmitting the data/images.
8. **Write a short note on any TWO of the following** **2x5 Marks= 10Marks**
   (a). What are the characteristics of social correspondence?
   (b) Describe in brief the formats of Business letters.
   (c). Write short notes on technical vocabulary.