Code No.: **50114** **MR15**

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 - 2019

Subject: **Geotechnical Engineering**

Branch: **CE**

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

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Define Plasticity index and toughness index?
2. Write short notes on principle of effective stress.
3. Write short notes on mechanism of compaction.
4. Define the terms compression index &coefficient of consolidation & indicate their units & symbols.
5. Sketch the stress strain relationship for dense and loose sand.

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)Derive relation between e , S and G.
   b) A soil sample has a total unit weight of 16.97 kN/m3 and a void ratio of 0.84. The specific gravity of solids is 2.70. Determine the moisture content, dry unit weight and degree of saturation of the sample.
3. Explain about laboratory determination of coefficient of permeability of soils by constant head test with the help of neat sketch.
4. a) Explain the seepage through homogenous soils **(4+6)**
   b) In a falling head permeability test, head causing flow was initially 50 cm and it drops 2 cm in 5 minutes. How much time required for the head to fall to 25 cm.
5. a) What are the different methods of compaction adopted in the field? How would you select the type of roller to be used?
   b) Explain New Marks influence chart for irregular areas with the help of neat sketch.
6. derive the expression for Vertical stress due to point load using bossineqs equation
7. a) Distinguish between coefficient of volume compressibility, coefficient of consolidation.
   b) How do you determine the consolidated settlement of a foundation?
8. a. Explain about the shear strength of clays with neat sketches. **(7+3)**
   b. Explain in brief about the different types of drainage conditions on strength

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY - 2019

Subject: **Business Communication**

Branch: **Common to CE, ECE & CSE**

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

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. What is an effective Business Communication?
2. Define the term "Kenesics"?
3. Define "Skimming & Scanning"?
4. Define the term "Persuasive Essay", with a suitable example.
5. Write a paragraph on characteristics and types of social correspondence.

PART-B

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

1. a) Why do you think communication skills are important in today's world?

   b) What is aural communication?

2. a) Discuss the merits and limitations of oral communication.

   b) Explain the importance of audio-visual communication and computer-based communication.

3. Discuss the role of non-verbal cues in conversations.
4. List out the differences between verbal and non-verbal communication.
5. Write a short note on Skimming, Scanning, Intensive and extensive reading skills.
6. Give any 5 methods to infer the meanings of new words with an example.
7. Compare and contrast the advantages of city living and country living. Defend your preference.
8. What problems do teens face with unsupervised internet access? How can these problems be solved?

Code No.: **50342**

MR15

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY - 2019

Subject: **Renewable Energy Sources**

Branch: **CE**

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

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. What are the advantages of renewable energy resources?
2. List the various applications solar energy.
3. Explain the origin of biomass energy and its global potential
4. Write the basic principle of ocean thermal energy conversion.
5. Comment on the safety issues related to use of hydrogen.

PART-B

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

1. A) What is the difference between a pyrheliometer and a pyranometer?
   B) Explain the working principle of angstrom type pyrheliometer with neat sketch.
2. A) Explain beam solar radiation and diffuse solar radiation **(6)**
   B) Find the temperature of sun's surface if it is assumed to be black and the value of solar constant is 1367 W/m^2 **(4)**
3. A) Compare and contrast the working details of solar distillation and solar drying.
   B) Write a short note on solar ponds
4. A) Describe the layout and working of a continuous solar cooling system.
   B) Describe the solar heating system with a sketch with advantages and disadvantages.
5. A) Explain the Indian bio-gas plant with a neat sketch.
   B) Compare horizontal axis wind mill with vertical axis wind mill.
6. A) Discuss the principle of anaerobic digestion
   B) Write short notes on point absorbers
7. A) Explain the main hurdles in the development of tidal energy?
   B) Write a short note on Wave Energy
8. A) Explain Joule Thomson effect and its significance.
   B) Classify the fuel cells and explain with the diagram the working of phosphoric acid fuel cell.

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY - 2019

Subject: **Structural Analysis**
Branch: **CE**

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

PART – A

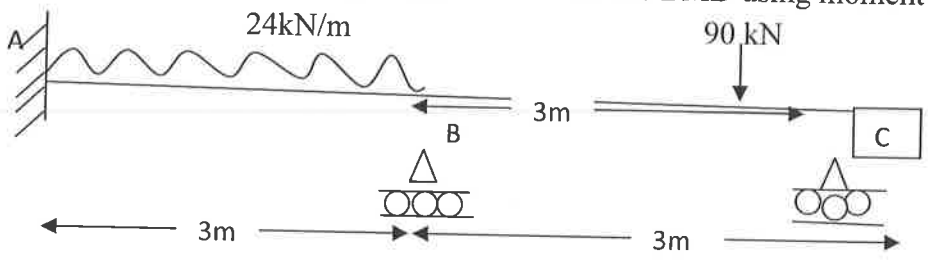
Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Write the equation for the theorem of three moments applied between two consecutive spans with different MOI and sinking of supports
2. What is the condition for absolute maximum bending movement if a UDL longer than the span crosses a simply supported beam?
3. Explain the effect of temperature in three hinged arches.
4. What is a sway? When do sway occur? Give example
5. Define Distribution factor and carry over moment

PART-B

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

1. A propped cantilever of span 3m is acted upon by a concentrated load of 16 kN at midspan. Using consistent deformation approach, find the reactions and draw the SFD and BMD
2. Write a short note on the following
   a) Static and Kinematic Indeterminacies
   b) Derive the equation for clapeyrons theorem of three moments.
3. A system of 5 concentrated loads 100kN, 100kN, 200kN, 200kN and 160kN separated by distances 3m, 4m, 4.5m and 3m respectively are traversing a simply supported girder from right to left with 100 kN load as leading load. Determine the maximum SF and BM at the quarter span.
4. Draw the ILD for shear force and bending moment at a section 5m from the left hand support of a simply supported beam 20m long. Calculate the maximum bending moment and shear force at the section due to the udl of length 8m and intensity 10kN/m run.
5. a) What is the relative stiffness when the far end is i) simply supported and ii) fixed **(2)**
   b) A two hinged parabolic arch has a span of 60m and a rise of 12m.A concentrated load of 8kN acts at 15m from the left hinge calculate the horizontal thrust and reaction at the hinge **(8)**
6. A symmetrical three hinged arch has a span of 20 meters and rise to the central hinge of 5 m. It carries a vertical load of 10 kN at 4 m from the left support. Calculate the reactions at the supports and bending moment at the load point.
7. Analyse the continuous beam loaded as shown in the following figure by slope deflection method. Sketch the bending moment and shear force diagrams.
8. Analyze the continuous beam ABC and hence draw the BMD using moment distribution method



Code No.: **50H13** **MR15**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY - 2019

Subject: **Management Science**

Branch: **CE**

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

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Mention the importance and functions of management.
2. List out the types of organization structures.
3. What is meant by mass production?
4. Define its full form of PERT and write briefly
5. Summaries the purpose Environmental Scanning

PART-B

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

1. Explain theory X and theory Y as theories of motivation.
2. Explain MASLOW'S theory of human needs
3. a) What are the factors which influence in designing organizational structure?
   b) Compare and contrast centralization and decentralization.
4. a) Describe the terms decentralization, departmentation and type of departmentation
   b) Brief on organizing process and elements to be considered for effective organizing
5. Explain Deming's 14 key principles for brining out business effectiveness.
6. a) Briefly discuss the different types of production
   b) What is the importance of location in business?
7. a) Discuss in detail the steps involved in the HRM Process.
   b) Explain in detail performance appraisal? And its objective
8. a)Write a short note on the TQM
   b) Write a short note on the Balanced Score Card

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Design of Reinforced Concrete Structures**

Branch: **CE**

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

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Determine the maximum depth of Neutral axis for mild steel and Fe415 steel when the effective depth of section is 400mm.
2. Write a short notes on the shear reinforcement?
3. Distinguish between uni axial and bi axial bending of columns.
4. Explain the types of footings commonly used in general practice?
5. Distinguish between one way slab and two way slab.

PART-B

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

1. Write short notes on Working Stress method and Limit state method.
2. Design a simply supported T-beam for the given data. Span: 6m, Spacing of beams: 2.5m, slab thickness: 120mm & Live load: 4kN/m^2. Use M25 concrete and Fe415 steel.
3. A singly reinforced rectangular beam 300 mm X 600 mm effective depth carries a udl of 50 kN/m. including its self-weight over a span of 6 m and is reinforced with 5-25 mm diameter of which 2bars are cracked up near the support use M20 concrete and Fe 415 steel. Design the beam for shear reinforcement at the support.
4. A R.C Beam 300mm x 450mm is reinforced with 3bars of 20 mm diameter with an effective cover of 50mm in tension zone. The ultimate shear at the section is 210kN. Design the shear reinforcement. Use M20 concrete and Fe415 steel. Sketch the reinforcement details.
5. A corner column (400 mm x 400 mm), located in the lowermost storey of a system of braced frames, is subjected to factored loads: P u = 1300 kN, Mux = 29 kN.m and Muy =21 kN.m. The unsupported length of the columns is 3.5 m. Design the reinforcement in column, assuming M25 concrete and Fe415 steel.
6. Design a circular column of diameter 300mm to carry a factored axial load of 1500kN by using (i) helical reinforcement, (ii) hoop reinforcement. Use M20 concrete and Fe415 steel.
7. Design a footing for a 500mmX 350 mm column using 20mm bars to transmit characteristic load of 600KN as dead load and 400KN as Live load to foundation with SBC of soil 120 $\frac{kN}{m^2}$. Assume M20 concrete and Fe415 steel.
8. Design a stair case for an office building to be located in a room measuring 3.5mx5.5m. The vertical distance between floors is 3.8m. The Live load can be assumed as 4kN/m^2. Use M20 concrete and Fe415 steel. Take Rise as 150mm and Tread as 300mm.

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III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY - 2019

Subject: **Environmental Engineering**

Branch: **CE**

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

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. What are water born diseases?
2. Explain the importance of Jar test.
3. Write the applications and uses of air valves
4. How does a siphon work?
5. With neat diagram enumerate the functioning of oxidation ponds.

PART-B

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

1. a) The population of a locality as obtain from census report as follows **(6M)**

Census Year	1940	1950	1960	1970
Population	8000	13,000	19,000	24,500

Estimate the population in the years 1980, 1990, 2000, by Arithmetical Increase methods and Geometrical Increase method.

b) Discuss sources and pollution of ground and surface water **(4M)**

2. a) Draw the River Intake and explain

b) Explain the various physico-chemical water quality parameters & its importance

3. a) Draw and explain the construction and working of slow sand filter5M

b) Draw a neat diagram of rapid sand filter and explain how the backwashing operation is carried out.

4. a) Explain about Jar test and its significance in water treatment

b) Draw and explain the flow chart of public water supply scheme.

5. a) Explain the methods of distribution system

b) Define and Explain the Hardy-Cross method and derive the equation for corrected discharge using the method of balancing head by correction assumed flows.

6. a) Explain stepwise procedure for the analysis of complex water distribution net works by using Hardy-cross method. Derive expression for correction term. **(6M)**

b) What are the requirements of a good water meter? Explain any one type of water meter with a neat sketch. **(4M)**

7. a)What are the important parameters to measure the organic content in sewage and explain the significance. **(4M)**

b)Determine the BOD_5 of sewage at 30° C given one day BOD @ 30° C as 130mg/l assume K_{20}=0.1 day^{-1}. **(6M)**

8. a) Discuss in detail various sources and characteristics of sludge.

b) Explain various design aspects of a sewage treatment facility.