Code No.: **50H09**

MR15-2016-17 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 REGULAR END EXAMINATIONS, DECEMBER -2018

Subject: **Business Communication**

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

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

PART – A

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

1. What is the importance of aural skills?
2. What are the types of non-verbal communication?
3. Write briefly on the reading skills, "skimming" and "scanning" and their uses.
4. Define the term "Persuasive Essay", with a suitable example.
5. Define "E – mail etiquette"?

PART-B

Answer any FIVE Questions of the following **5x 10 Marks= 50Marks**

1. Discuss the various steps in the communication cycle.
2. What do you think about the major objectives of communication? Briefly explain any two of them.
3. Write about the different components of Non-verbal communication.
4. (a). Write short notes on any four non verbal communication skills.

   (b) Discuss in detail the barriers of communication.
5. Give any 5 methods to infer the meanings of new words with an example.
6. Discuss in detail the five types of Reading Styles.
7. Discuss, with examples, the importance of accuracy, completeness and clarity in a business letter.
8. What problems do teens face with unsupervised internet access? How can these problems be solved?

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III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS,

DECEMBER -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. Name any four sunshine recorders
2. What is the basic different between an active and passive solar heating system
3. What are the combustion characteristics of bio gas ?
4. Define and classify the geothermal sources.
5. List some applications of fuel cells.

PART-B

Answer any FIVE Questions of the following **5x 10 Marks= 50Marks**

1. a) With the help of line diagram, explain the working of Pyrheliometer.
   (b) Calculate the angle of incidence of beam radiation on plane surface, tilted by 45^0 from horizontal plane and pointing 30^0 west of south located at Mumbai at 1:30 PM (IST) on 15th November. The longitude and latitude of Mumbai are 72^0 49' E and 18^0 54' respectively. The standard longitude for IST is 81^0 44'E
2. a) Explain in detail extra-terrestrial and terrestrial Radiation. (6)
   b) Estimate the rate at which the sun emits energy. What amount of this energy is intercepted by earth? (4)
3. a) Describe a central receiver system for a central solar thermal power station. **5M**
   b) Describe in brief, the different energy storage methods used in the solar system. **5M**
4. a) Write short notes on solar photovoltaic cell energy conversion
   b) Discuss the solar photovoltaic powered pumping system used in irrigation
5. (a) Explain with equation the power extraction from wind and Betz criterion.
   (b) Explain the process of gasification of solid biofuels ? What is the general composition of the gas produced and what is its heating value? What are its main applications.
6. a) What are the main causes for wind energy formation Explain with suitable sketch **5M**

   b) What are the advantages and disadvantages of floating drum plant. **5M**
7. a) Explain the working principle of Ocean Thermal Energy Conversion system with necessary sketches. (7)

   b) Consider an OTEC system where the $\Delta T = 20°C$, estimate the flow rate required to yield 1MW from an ideal heat engine. (3)
8. a) Compare and contrast Pettier and see beck effects

   b) With the help of line diagram, explain the working of Alkaline Fuel cell.

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MR15-2016-17 Batch

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III B.TECH I SEMESTER REGULAR END EXAMINATIONS, DECEMBER -2018

Subject: **Computer Graphics**

Branch: **CE**

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

PART – A

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

1. Define Pixel?
2. Differentiate window and view port.
3. State the applications of Bezier splines.
4. What is view reference point?.
5. What are Raster images?

PART-B

Answer any FIVE Questions of the following **5x 10 Marks= 50Marks**

1. Apply the Bresenham's algorithm to turn up pixels along the line segment determined by points (5,7) and (12,11).
2. a) Explain with the help of a neat diagram, the construction and working of CRT.
   b) Discuss flood-fill algorithm?
3. a) Write the matrix representation and homogeneous coordinates.
   b) Explain about shear and composite transformation.
4. Explain the following terms with reference to 2-D displays:
   a) Viewing transformation b) Window and viewport
5. Explain Bezier curve algorithm and construct Bezier curve for the points (4, 2). (8, 8) and (16, 4).
6. Derive the matrix form for the geometric transformation in 3D graphics for the following operation.
   a) Translation b) Scaling c) Mirror reflection
7. a) Classify the projections. Explain the properties of each. 6M
   b) Derive the prespective projection transformation matrix. 4M
8. a) Explain the graphical languages followed to achieve animation
   b) What are the steps involved in depth buffer algorithm?

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III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS,

DECEMBER-2018

Subject: **Environmental Engineering**

Branch: **CE**

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

PART – A

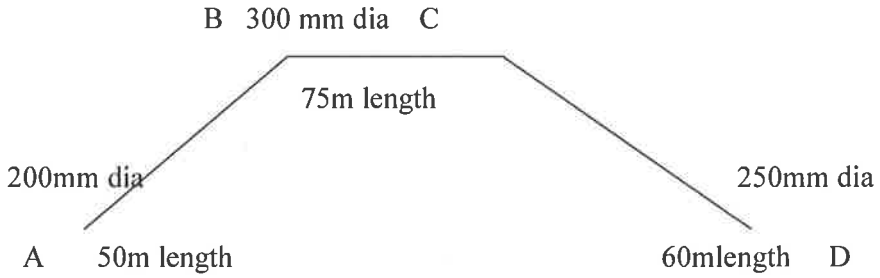
Answer ALL questions of the following **5x2Mark=10 Marks**

1. Mention the factors which are influencing the Water quality.
2. Define 'flowing through period' and 'detention period' in a sedimentation basin.
3. Define Equivalent pipe?
4. Define BOD and COD?
5. Explain the functioning of septic tank with sketch?

PART-B

Answer any FIVE Questions of the following **5x 10 Marks= 50Marks**

1. a) Write a detailed note about the confined and unconfined aquifers distribution systems with neat sketch?
   b) Discuss about the natural recharge system of the aquifers.
2. a). Explain in brief the factors affecting water demand.
   b). Write short notes on design period
   c) .Write a note on various water borne diseases
3. Discuss the usage of Coagulation and Flocculation methods in water treatment process. Explain the Design principle and Dosage.
4. a) Design a slow sand filter for town with population 20000 population assuming the water supply as 90 liters per day and Assume rate of filtration as 150 lit/hr/m^2
   b) Write about Chlorination
5. a) A system of pipes in series consists of pipes as show in the figure. Determine the length of equivalent pipe, if its diameter is 30cm. using William formula or Darcy formula



   b) Explain any two Pipe valves with neat sketch
6. a) Explain the design aspects of distribution system?
   b). Explain scour valves and check valves briefly with sketches
7. a) What are sewer appurtenances? List the various appurtenances and explain any one of them with a neat sketch.

b) 6 ml of wastewater is diluted to 300 ml distilled water in standard BOD bottle. Initial DO in the bottle is determined to be 8.5 mg/l. DO after 5 days at 20^0 C is found to be 5 mg/l. Determine BOD of wastewater and compute the ultimate BOD

8. a) Give a schematic diagram of Primary, Secondary and tertiary waste water treatment process. Mention the factors which are influencing the sludge digestion process.
   b) Discuss about the Primary and Tertiary waste water treatment methods.

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III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS, DECEMBER -2018

Subject: **Management Science**

Branch: **CE**

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

PART – A

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

1. Write importance of Management
2. What is a virtual organization?
3. What is the contribution of Deming regarding 'Quality'?
4. Write importance of Human Resource Management?
5. What is the role of CMM in modern management?

PART-B

Answer any FIVE Questions of the following **5x 10 Marks= 50Marks**

1. Explain systems approach of Management
2. What do you understand by management and administration explain how you implement it in your professional life.
3. What do you understand by organizing and provide a detailed note on types of organization structures with their merits and suitability.
4. Illustrate with Example the various form of Departmentation?
5. Write objectives and limitations of ABC analysis & EOQ determination ?
6. a) what is EOQ and Describe an Example on EOQ.
   b) What are the salient features of Product lifecycle?
7. Differentiate 'Training' and 'Development'. Write different types of training methods.
8. Write a short note on any two of the following
   (a) Brief on Six sigma and capability maturity model
   (b) Make a note on Balance Score Card
   (c) Discuss the benefits of ERP in a business

Code No.: **50116**

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III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS,

DECEMBER-2018

Subject: **Structural Analysis**

Branch: **CE**

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

PART – A

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

1. What is static indeterminacy? What is its value for a beam with one end fixed and the other end hinged?
2. Explain the term "Absolute maximum bending moment". What is the condition for absolute maximum bending moment when audl shorter than span traverses a simply supported beam?
3. What is the difference between 3 hinged arch and 2 hinged arch?
4. List out the causes of sway in frames
5. Explain carryover factor and give its application in moment distribution method.

PART-B

Answer any FIVE Questions of the following **5x 10 Marks= 50Marks**

1. a) A cantilever beam of span 6 m is propped at the free end. If it carries udl of 5 kN/m over its left half of the span towards the fixed support, Draw the BMD.

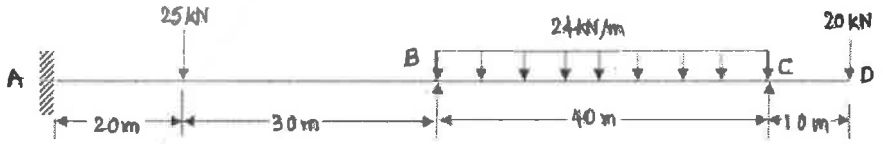
b) A udl of intensity 5 kN/m and of length 4 m it is traversing a simply supported beam of span 16 m. Calculate the maximum BM at a section 5 m from the left hand support and also calculate the absolute maximum bending moment.

2. a) A fixed beam of span 6 m is loaded by a point load of 20 kN at 1 m from the centre of the beam in addition to udl of 5 kN/m throughout the span. Draw BMD.

b)In a simply supported girder AB of span 20m, determine the maximum bending moment and maximum shear force at a section 5m form A, due to the passage of a uniformly distributed load of intensity 20kN/m longer than the span

3. a) Discuss the effect of temperature change on 3-hinged arches and 2-hinged arches (6)

   b) Determine the slopes at B and C for the beam shown in fig. 3 using slope deflection method. Assume uniform EI.



Fig

4. a) How are the effects of rib shortening and yielding of supports taken into account in the analysis of 2-hinged arches.

   b) Write a short note on Theorem of three moments

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III B.TECH I SEMESTER REGULAR AND SUPPLEMENTARY EXAMINATIONS, NOVEMBER-2018

Subject: **Geotechnical Engineering**

Branch: **CE**

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

PART – A

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

1. Write about adsorbed water.
2. Explain and distinguish between the terms coefficient of permeability and coefficient of percolation
3. Write about variation of vertical stress under point load along horizontal plane.
4. Explain the terms a) primary consolidation b) secondary consolidation
5. Define critical void ratio

PART-B

Answer any FIVE Questions of the following **5x 10 Marks= 50Marks**

1. a) A partially saturated soil has a bulk density of 15.6 kN/m^3 and a water content of 20 %. If the specific gravity of solids is 2.6 and unit weight of water is 10kN/m^3, Calculate the degree of saturation, void ratio and water content at full saturation.
   b) Derive an expression to calculate dry density of soil knowing wet density and moisture content
2. a) Derive the expression for the critical hydraulic gradient.
   b) What are the properties and applications of a flownet?
3. a) A ring foundation of 10m external diameter and 9m internal diameter carries a uniformly distributed load of 150kPa. Determine the vertical stress due to the load at a depth of 6m below the centre of the foundation.
   b) Explain briefly about the pressure bulb.
4. Explain the procedure to determine coefficient of consolidation by using Casagrande's logarithm of time fitting method with the help of neat sketch.
5. A cylinder of soil fails under an axial vertical stress of 160 kPa when it is laterally unconfined. Calculate the cohesion and angle of internal friction of the soil if the failure plane makes an angle of(i) 45^0 with the vertical (ii) 40^0 with the vertical. Draw the Mohr's circle and strength envelope (not to scale) for both the cases
6. a) A 50 cm^3 sample of moist clay was obtained by pushing a sharpened hollow cylinder into the wall of a test pit. The extruded sample had a mass of 85 g, and after oven drying a mass of 60 g. Compute *w, e, S,* and *pd. Gs* = 2.7
   b) Write a short note on double diffuse layer.
7. a) What is permeability? Explain the flow of water through soils?
   b) The water table in a deposit of sand 8m thick is at a depth of 3m below the surface. Above the water table, the sand is saturated with capillary water. The bulk density of sand is 19.62kN/m^3. Calculate the effective pressure at 1m, 3m and 8m below the surface. Hence plot the variation of total pressure, neutral pressure and effective pressure over the depth of 8m.
8. a) Explain the procedure to determine the OMC and MDD by Compaction test (5+5)
   b) Explain about the compaction quality control.

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III B.TECH I SEMESTER REGULAR END EXAMINATIONS, NOVEMBER-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. Working Stress Method of Design.
2. What is the anchorage value of hook if diameter of a reinforcement bar is d ?
3. Explain the classification of columns?
4. Distinguish between one way shear and two way shear in footings.
5. What is the maximum circumferential moment at the centre of the slab if W is the load acting on a circular slab of radius R ?

PART-B

Answer any 5 questions of the following **5x 10 Marks= 50Marks**

1. Find the moment of resistance of a T-beam section having bw =300 mm, bf = 1650 mm, Df =150 mm and d =550 mm. The reinforcement consists of 6 bars of 20 mm dia. Use M 20 concrete and Fe 415 Steel.
2. (a) The concept of locating the neutral axis as a centroidal axis (in a reinforced concrete beam section under flexure) is applied in working stress method, but not in limit state method. Why? [3M]

   (b) Design a doubly reinforced section for a rectangular beam at mid span having a simply supported effective span of $4.5m$. The superimposed load is $35\frac{kN}{m}$ and size of beam is limited to $25cm \times 40cm$. Assume suitable section. [7M]
3. A rectangular beam of 300mm wide and, 450mm effective depth has 3 bars of 20mm dia. HYSD of 415 grade in tension zone at a section near a continuous support. The grade of concrete is M25. The shear force at critical section is 250kN at limiting condition. Check the safety of reinforcement in bond.
4. (a) A simply supported RCC beam $250mm$ wide and $450mm$ deep (effective) is reinforced with 4 numbers of $18mm$ diameter bars. Design the shear reinforcement if $M20$ grade of concrete and Fe 415 steel is used and beam is subjected to a shear force of $150kN$ at service state. [6M]

   (b) Write short notes on bond, development length and the relevant IS code provisions. [4M]
5. Explain the Design Procedure of Uni -Axial and Bi-Axial Column
6. A circular column, 5.0 m high is effectively held in position at both the ends and restrained against rotation at one end. Design the column to carry an axial load of 1250 kN, if its diameter is restricted to 450 mm. Use M20 mix and Fe 415 steel.
7. Design an isolated square footing for a column of size 300mmx300mm carrying a factored axial load of 700kN. Safe bearing capacity of the soil is 100kN/m^2. Use M20 Concrete and Fe415 grade steel.
8. Design a two way slab for a room of size 4m X 5m with discontinuous and simply supported edges on all the sides with corners prevented from lifting to support a live load of 4 KN /M^2 Adopt M_{20} concrete and Fe_{415} steel ?