

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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

M.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2018Subject: Theory of Plates

Branch/Specialization: CE/ Structural Engg.

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x4Mark=20 Marks

1. Give strain-displacement relation in the case of Cartesian and cylindrical co-ordinate system
2. Explain any two types of rigidities in orthotropic plate with figure
3. Find deflection and bending moments for circular plate loaded at center
4. Write a brief notes on elastic foundation
5. Explain about finite difference method with example

PART-B

Answer any 5 questions of the following

5x 8 Marks= 40 Marks

1. Derivation of cylindrical bending of uniformly loaded rectangular plate with fixed edges
2. A rectangular plate $a \times b$ simply supported at the edges is subjected to sinusoidal loading. Using the Navier solution, obtain the general expressions for deflection and bending moment
3. Derive an expression for deflection of simply supported solid circular plate subjected to an end moments
4. Find deflection of rectangular plate on an elastic foundation and bending moment at the centre
5. Explain about buckling of rectangular plates by compressive force acting in one direction in the middle plane of plate
6. a). What are the different kinds of plates, explain the boundary conditions for thin rectangular plate.
b) Expression for slope and deflection for circular plate with a circular hole at the centre
7. a). The maximum deflection at the centre of the plate with uniformly loaded circular plate.
b) Expression for slope and deflection for circular plate with a circular hole at the centre
8. a). Explain and state maximum and minimum bending stress for plates under sinusoidal load
b). What are the boundary conditions of fixed and clamped edges in finite difference method

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Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajiri (Dist), Hyderabad**M.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2018**Subject: RETAINING STRUCTURES

Branch/Specialization: CE/SE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x4Mark=20 Marks

1. List the advantages of Rankine's method when compared to other methods..
2. Draw the figures showing the failures of Retaining walls.
3. Explain about different types of sheet pile walls.
4. Describe about mechanically stabilized earth.
5. Write the various features of braced cuts with the help of sketch.

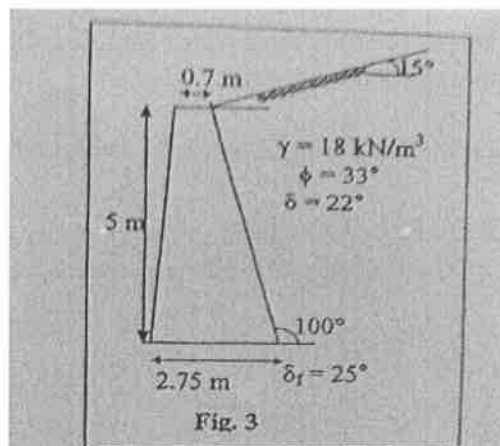
PART-B

Answer any FIVE Questions of the following

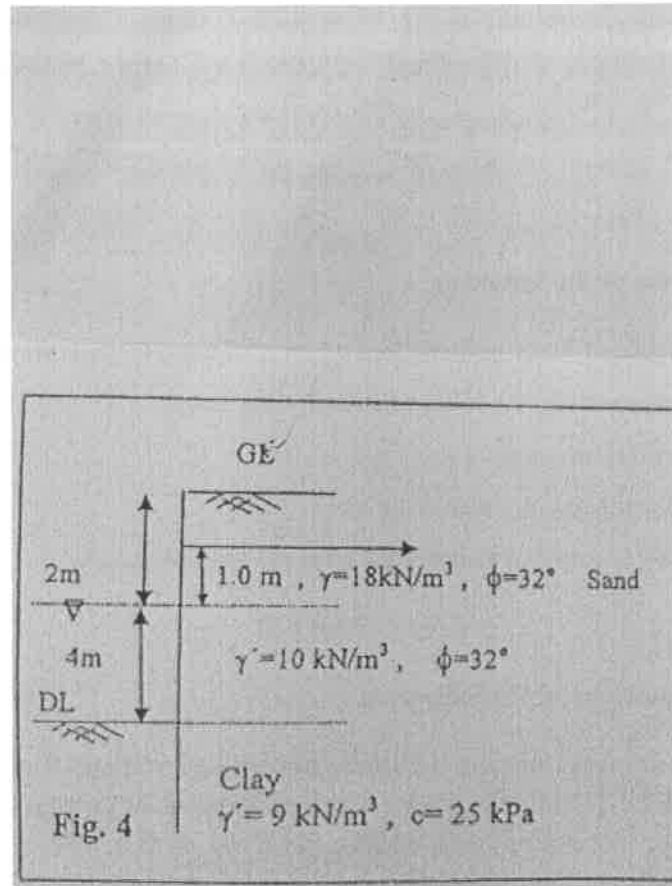
5x8Marks= 40 Marks

1. A retaining wall is 7m high with its back face smooth and vertical. It retains sand with its surface horizontal. Using Rankine's theory determine active earth pressure at the base when the back fill is (a) dry (b) saturated and (c) submerged with water table at the surface. Take $\gamma=18\text{kN/m}^3$, $\phi=30^\circ$ and $\gamma_{\text{sat}}=21\text{kN/m}^3$.

2. The gravity retaining wall shown in figure supports a granular backfill. The allowable soil pressure is 350kN/m^2 . Ignore the passive resistance at the toe of the wall. Check whether the toe is safe against a bearing capacity.



3. For an Anchored bulkhead system shown in figure determine the Anchor pull using free earth support method.



4. Explain about failure mechanism, bond and rupture failures of reinforced soil walls.
5. Explain the methods for the design of various components of braced cuts. List the factors that affect the pressure distribution.
6. a. Discuss about Coulomb's earth pressure theory for cohesive soils.
b. Explain about proportioning of Retaining walls.
7. Explain the equivalent beam method for the analysis of Anchored sheet piles.
8. Write short notes on any TWO of the following
a) Stability of braced cuts. b. Cantilever wall. c. Diaphragm wall

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M.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2018Subject: **ADVANCED STEEL DESIGN**

Branch/Specialization: CE/SE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x4Mark=20 Marks

1. Two plates 12mm thick are joined by a single V-butt weld. Determine the strength of the welded joint. Effective length of the weld is 220mm
2. Sketch different types of beam column connections.
3. Factors effecting the wind force on a roof truss
4. Explain economic proportion of trusses.
5. Distinguish between a silo and a bunker.

PART-B

Answer any FIVE Questions of the following

5x8Marks= 40 Marks

1. A tension member consists of an ISMC200@221N/m. it is to be connected to a gusset plate. Design riveted connections to develop the full tensile strength of the member. Assume yield stress of steel 230MPa.
2. Design a suitable fillet weld to connect web plate to flange plate and flange plate to flange cover plate of built-up girder for the following data.
Web plate: 1000mm×12mm, flange plate: 400mm×20mm
Flange cover plate: 375mm×16mm, factored moment: 750KN mm
Maximum factored shear force: 1500KN, fillet weld: shop
3. In an industrial building the truss of 18meters span 3.2meters rise are at 8meters apart. The building is in medium wind zone in an industrial area of plain land in Kanpur city. Design the truss purlin.
4. A through type highway steel bridge 48 m span, is support on two N-girders each consisting of 10 bays of 4.8 m each, the height of the N-girder is being 4.8m. The dead load of the bridge including self weight of the two N-girders is equivalent to 90 KN/m and the rolling load on the bridge, to be carried by the fifth panel equivalent to 100 KN/m. Design the top and bottom chords at the fifth panel of the bridge and the diagonal member in the third bay from left.
5. Discuss Janseen's theory for the design of bins.
6. a. Explain the load transfer mechanism of a double cover butt joint.
b. Derive an expression for bracket connection type-I.
7. a. Write down design steps for I-section purlin.
b. Sketch component parts of a truss bridge.
8. Write short notes on any **two** of the following
(a) Characteristic loads and design loads.
(b) Sketch various types of truss bridges.
(c) Factors effecting design of bins.

