SET NO-1

G PULLAIAH COLLEGE OF ENGINEERING AND TECHNOLOGY

IV B.Tech I Semester | **II-Mid Descriptive** | **Timings: 02:00 pm– 03:50 pm**

Date: 08 /11/2017 | **Dept: Civil Engg** | **Sub: Geotechnical Engineering-II**

PART – A (Compulsory question) **5x2=10 Marks**

1	QUESTIONS	MARKS	UNIT	CO	COGNITIVE LEVEL
a)	State the limitations of Rankine's earth pressure theory.	2	3	C403.3	Remember
b)	Distinguish between Cantilever and Counterfort Retaining wall?	2	3	C303.4	Understand
c)	Distinguish between Safe bearing capacity & Allowable bearing capacity?	2	4	C303.4	Remember
d)	What is a routine test conducted on pile foundation?	2	5	C303.5	Remember
e)	What is meant by "Tilt"& "Shift" of foundation?.	2	5	C303.6	Understand

PART – B (Answer any TWO of the following questions, 2X10= 20 Marks)

2. a)Derive an expression for Rankine's active earth pressure theory?
   b) Calculate the total active earth pressure acting on a 6.4m high retaining wall with a vertical and smooth surface, using Rankine's theory. The backfill soil has $\Upsilon=16kn/m^3$ and $\Phi=25^0$ for the bottom 2.4m,above which is another soil with $\Upsilon=17KN/m^3$,$c=10KN/m^2$ and $\Phi=6^0$

Marks :10	Unit : 3	Course outcome: C403.3	Cognitive level: Analysis

(OR)

3. a) List the various types of a retaining walls.
   b) Check the stability of a gravity retaining wall 9m height with water up to 6m in front and compacted soil on the backup to a height of 8m.The backfill has $\Upsilon=18kn/m^3$ and $\Phi=35^0$ and C=0.The retaining wall has a base width of 4m and top width of 0.5m.The back of the wall is vertical and smooth.

Marks :10	Unit : 3	Course outcome: C403.4	Cognitive level: Analysis

4. a)Explain Terzaghi's bearing capacity theory with neat sketches
   b) Find the net ultimate bearing capacity of wall footing with the data given below Width of footing=1m; depth of footing=1m; depth of water table below ground surface= 1.5m. For the foundation soil, unconfined compressive strength is $48kN/m^2$, unit weight of soil is $20kN/m^2$.(N_C=14, N_q=6.7 and N_v=2.8).

Marks :10	Unit : 4	Course outcome: C403.5	Cognitive level: Analysis

(OR)

5. a) Explain in detail about the dynamic pile formulae?
   b) Elaborate the sinking operations of Wells? Explain it with neat sketch?

Marks :10	Unit : 5	Course outcome: C403.6	Cognitive level: Analysis

SET NO-2

G PULLAIAH COLLEGE OF ENGINEERING AND TECHNOLOGY

IV B.Tech I Semester | **II-Mid Descriptive** | **Timings: 02:00 pm– 03:50 pm**

Date: 08 /11/2017 | **Dept: Civil Engg** | **Sub: Geotechnical Engineering-II**

PART – A (Compulsory question) **5x2=10 Marks**

1	QUESTIONS	MARKS	UNIT	CO	COGNITIVE LEVEL
a)	Explain the earth pressure in active condition.	2	3	C403.3	Remember
b)	What are the various types of settlements in foundations?	2	3	C403.3	Understand
c)	What are the types of settlements caused due to loads?	2	4	C403.4	Remember
d)	Discuss the various types of shapes of well foundations.	2	5	C403.5	Remember
e)	Discuss the effect of impact and longitudinal loads on well foundations?	2	5	C403.6	Understand

PART – B (Answer any TWO of the following questions, 2X10= 20 Marks)

2. Distinguish the Rankine's and Coulomb's theories for computation of earth pressure and suggest the suitability of these methods.

   b) What are the assumptions made in Coulomb's theory?

Marks :10	Unit : 3	Course outcome: C403.3	Cognitive level: Analysis

(OR)

3. a) Explain & Draw the various Drainage provisions in Retaining wall

   b) A gravity retaining wall of height 3 m with uniform thickness(i.e rectangular in cross section)of 1.20m is constructed in RRM with a unit weight of 24kN/m3.The average properties of soil from top to bottom of wall includes c = 0 kN/m2; ϕ = 30°. Subsequently, 1m high fill is placed on top of the existing backfill after constructing a 0.60m thick wall above the existing wall matching with the backfill side face of wall(i.e the offset is provided on the otherside of backfill). Analyze the stability of wall against overturning before and after raising the height of backfill.

Marks :10	Unit : 3	Course outcome: C403.4	Cognitive level: Analysis

4. a)What are the types of shallow foundations? Explain them with neat sketch?

   b) Design a strip footing for load bearing wall transmitting a force of 200 kN/m proposed to be laid at a depth of 1.50 m below the G.L on a c-ϕ soil with c =40 kPa and ϕ=20° , γ=17 kN/m 3 . Given NC=11.80, Nq=3.90, Nγ=1.70.

Marks :10	Unit : 4	Course outcome: C403.5	Cognitive level: Analysis

(OR)

5. a)Explain Explain the Static method for Estimating the load carrying capacity of a single pile driven in cohesive soil (Clay)

   b) Describe various types of caisson foundations and comment on their

Marks :10	Unit : 5	Course outcome: C403.6	Cognitive level: Analysis

SET NO-3

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Date: 08 /11/2017 | **Dept: Civil Engg** | **Sub: Geotechnical Engineering-II**

PART – A (Compulsory question) **5x2=10 Marks**

1	QUESTIONS	MARKS	UNIT	CO	COGNITIVE LEVEL
a)	Write assumptions of Coulomb's earth pressure theory.	2	3	C403.3	Remember
b)	Describe gravity and semi-gravity retaining walls.	2	3	C403.3	Understand
c)	What are the types of settlements caused due to loads?	2	4	C403.4	Remember
d)	Make a note on initial settlement..	2	5	C403.5	Remember
e)	What are the forces acting on well foundation?	2	5	C403.6	Understand

PART – B (Answer any TWO of the following questions, 2X10= 20 Marks)

2. a)What are the various types of Earth pressures? Give field examples of each type?
   b) What is Coulombs Wedge theory? Derive the expression for active earth pressure in cohessionless soils?

Marks :10	Unit : 3	Course outcome: C403.3	Cognitive level: Analysis

(OR)

3. a) Explain the significance of drainage filter in performance of retaining walls

   b) A gravity retaining wall of height 3 m with uniform thickness(i.e rectangular in cross section)of 1.20m is constructed in RRM with a unit weight of 24kN/m3.The average properties of soil from top to bottom of wall includes c = 0 kN/m2; ϕ = 30°. Subsequently, 1m high fill is placed on top of the existing backfill after constructing a 0.60m thick wall above the existing wall matching with the backfill side face of wall (i.e the offset is provided on the otherside of backfill). Analyze the stability of wall against overturning before and after raising the height of backfill.

Marks :10	Unit : 3	Course outcome: C403.4	Cognitive level: Analysis

4. a) Explain how Skempton's method of bearing capacity of cohesive soils?
   b) What are the criteria for deciding the depth of foundation? Write short notes on factors affecting bearing capacity of soils?

Marks :10	Unit : 4	Course outcome: C403.5	Cognitive level: Remember

(OR)

5. How will you classify the piles according to
   (i)Material (ii) mode of transfer of loads (iii) Method of installation

   b) What are the components of well foundation? Briefly explain them with a neat sketch?

Marks :10	Unit : 5	Course outcome: C403.6	Cognitive level: Understand

SET NO-4

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PART – A (Compulsory question) **5x2=10 Marks**

1	QUESTIONS	MARKS	UNIT	CO	COGNITIVE LEVEL
a)	Explain the earth pressure in active condition.	2	3	C403.3	Remember
b)	What are the various types of settlements in foundations?	2	3	C303.3	Understand
c)	What are the types of settlements caused due to loads?	2	4	C303.4	Remember
d)	Discuss the various types of shapes of well foundations.	2	5	C303.5	Remember
e)	Discuss the effect of impact and longitudinal loads on well foundations?	2	5	C303.6	Understand

PART – B (Answer any TWO of the following questions, 2X10= 20 Marks)

2. a)What are the various types of Earth pressures? Give field examples of each type?
   b) What is Coulombs Wedge theory? Derive the expression for active earth pressure in cohessionless soils?

Marks :10	Unit : 3	Course outcome: C403.3	Cognitive level: Analysis

(OR)

3. a) Explain the significance of drainage filter in performance of retaining walls
   b) A gravity retaining wall of height 3 m with uniform thickness(i.e rectangular in cross section)of 1.20m is constructed in RRM with a unit weight of 24kN/m3.The average properties of soil from top to bottom of wall includes c = 0 kN/m2; $\phi = 30°$. Subsequently, 1m high fill is placed on top of the existing backfill after constructing a 0.60m thick wall above the existing wall matching with the backfill side face of wall (i.e the offset is provided on the otherside of backfill). Analyze the stability of wall against overturning before and after raising the height of backfill.

Marks :10	Unit : 3	Course outcome: C403.4	Cognitive level: Analysis

4. a) Explain how Skempton's method of bearing capacity of cohesive soils?

   b) Explain in detail about the factors that govern the minimum depth for the shallow foundation?

Marks :10	Unit : 4	Course outcome: C403.5	Cognitive level: Remember

(OR)

5. a) Discuss various methods of estimating the pile capacity?
   b) What are the components of well foundation? Briefly explain them with a neat sketch?

Marks :10	Unit : 5	Course outcome: C403.6	Cognitive level: Understand