

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: Foundation Engineering (CEEG 342)

Semester: V

Programme: B Tech Civil Engineering

Time: 03 hrs.

Max. Marks: 100

Instructions: use of IS 6403 is allowed

SECTION A

S. No.	Question	Marks	CO
Q 1	Differentiate between 'general shear failure' and 'local shear failure'.	4	CO1
Q 2	Describe the concept of bottom heaving.	4	CO2
Q 3	Write a short note on under-reamed piles.	4	CO3
Q 4	What do you understand by vibration isolation?	4	CO4
Q 5	How ground conditions effect the choice of foundation type?	4	CO5

SECTION B

Q 6	A rectangular footing, with a plan area of 1.4mX2.0m is to be placed 2m below the ground surface. The footing would be subjected to a load 10 kN/m ² inclined at 10° to the vertical. The subsoil is clayey, sandy silt with saturated unit weight of 18 kN /m ³ , and c' = 10kN/m ² and φ= 30°. compute the magnitude of load carrying capacity of the footing if. the water table is at the base of the footing. Use IS: 6403-1981 recommendation .	10	CO1
Q 7	What are the components of well foundations draw a neat sketch and explain the same.	10	CO2
Q 8	Explain how swelling pressure effects foundation of single-storied building.	10	CO3
Q 9	What are the design considerations for foundations of reciprocating machines. (OR) Explain modern methods of analysis for bearing capacity.	10	CO4 , CO5

SECTION-C

Q 10	A 2.4m X 2.4 m square footing rests at a depth of 1.8 m below the ground surface. The soil properties are as follows: C = 14.5 kN/m ² ,φ=20°, γ = 15.7 kN/ m ³ , γ' = 7.8 kN/ m ³ , for φ = 20°, Nc=17.7; Nq=7.4; N γ=5.0. what would be the percentage reduction in bearing capacity if the water table rises from a depth of 6 mt. below the ground surface to a depth of 2.4 m below the ground surface? q=0	20	CO1
Q11	How depth, size and number of wells are determined for heavy pier? Explain various formulae used for the same. Describe the concept of well sinking (OR) Explain the modern construction techniques used for foundations in metro rail construction with neat sketches	20	CO2, CO5

Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

Course: Foundation Engineering (CEEG342)
Programme: B Tech Civil Engineering
Time: 03 hrs.
Instructions: use of IS 6403 is allowed

Semester: V

Max. Marks: 100

SECTION A

S. No.	Question	Marks	CO
Q 1	Draw the contact pressure distribution diagrams for rigid footing resting on sand and clay	4	CO1
Q 2	Write a note on settlement of pile foundations	4	CO2
Q 3	How expansive soils are identified?	4	CO3
Q 4	Differentiate free and forced vibrations	4	CO4
Q 5	How geology plays an important role in foundation engineering?	4	CO5

SECTION B

Q 6	Compute the bearing capacity of a square footing 1.5 m x 1.5 m, located at a depth of 1 m below the ground level in a soil of average density 20kN/m ³ $\phi=20^\circ$. ($N_c=17.7$, $N_q=7.4$, $N_\gamma=5.0$). $C=35$ kN/m ² surcharge load of 10kN/m ²	10	CO1
Q 7	Explain pile capacity and how load carrying capacity is found for a single pile	10	CO2
Q 8	Explain how swelling pressure effects foundation of multistoried building.	10	CO3
Q 9	What are the design considerations for simple machine foundations (OR) Differentiate classical and modern methods of finding bearing capacity, what are the limitations	10	CO4 , CO5

SECTION-C

Q 10	A rectangular footing of size 3m x 6m is founded at a depth of 2m below G.L. in a dense sandy medium of $\phi=35^\circ$. The water table is at foundation level. The saturated density of sand is determined as 20 kN /m ³ . Apply necessary corrections to shape and depth factors. All loads applied are symmetrical (as per IS 6403:1981). Compute the bearing capacity of the footing foundation.	20	CO1
Q11	What are the characteristics and properties of expansive soils? Explain the methods that determine their properties in laboratory. How do they effect the design of foundation? (OR) Explain the modern construction techniques used for pile foundations with neat	20	CO4, CO5

	sketches		
--	----------	--	--