UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
END SEMESTER EXAM, DECEMBER 2018

Course: Advanced Design of Structures (CE 471)   **Semester: VII**
 Program: B. Tech (Civil Engg)
Time: 03 hrs.   **Max. Marks: 100**
No of Pages:1
Instructions: Answer all the questions   **PAPER - I**

SECTION A

S. No.		Marks	CO
Q.1	Differentiate the behavior of bunker & silo.	5	CO4
Q.2	Discuss the Loading condition for the design of bridge	5	CO3
Q.3	How concrete and steel behave under reversal loading	5	CO2
Q.4	State the advantage of Redistribution concept in RC design	5	CO3

SECTION B

Q .5	A cantilever retaining wall of height 4.0 m above NGL. Base provided at 1.0 m below NGL. The size of stem 400 mm at bottom and 200 mm at top and width of base 3.2m and thick. of 400 mm. Heel is 1.9 m. Wall is retain horizontal earth fill at heel side along with the surcharge of $10kN/m^2$. Check the adequacy of the section for the stability under following data.
	    1. Angle of repose = 29^0
	    2. Coeff. Of Friction = 0.6
	    3. Safe bearing capacity = $160kN/m^2$
	    4. Unit weight of Earth = $18kN/m^3$
		10M	CO1

Q.6	A passage of 5 m required in the hilly area for the pedestrian and light vehicle. Design the suitable bridge, connecting the town 10 m apart from each other's	10M	CO4
Q.7	Design combined footing for column of Size 300 X 300mm placed 3m c/c & transfer load of 600 & 800kN under working condition. SBC= $120kN/m^2$ & grade of material fe500 & M25	10M	CO2
Q.8	Discuss the various design principles of Chimneys as per various IS codal provisions **OR** What is Intze tank? Discuss the load transfer mechanism same.	10M	CO3 CO1

	SECTION-C		
Q.10	A Multi-storeyed building(G+5) has following data Plan dimension of Building = 20 x 30m with column grid 5mx5m Typical Floor height =4.2m and ground floor height =4.8m Seismic weight at various levels of building are - Terrace = 7000kN - Typical floor = 7600kN - Ground floor = 2500kN - Assume Z=0.24, I=1.5, R=5 and Sa/g =1.4 Determine the base shear and distribute at various levels. Draw the shear load diagram & story load diagram	**20M**	**CO4**
Q.11	a. Design a circular tank for the capacity of 60kL. Tank is cover with dome and rest on firm ground of SBC 120kN/m^2. b. Discuss the Janssen's theory of pressure. **OR** a. Discuss the behavior difference in counterfort and buttress retaining wall. b. Design a RCC bunker to store 300kN of coal, for the following data Unit weight of coal = 8.26kN/m^3 Angle of repose = 30^0. The stored coal is to be surcharged at its angle of repose .	**20M**	**CO1 & CO2**