

Question# 1			10
C2-PLO1	A	Name the forces acting on dam. Explain any five of them in detail.	5
C2-PLO1	B	Define the following terms: 1. Liquification of soil 2. Butress Dam 3. Infinite slope 4. Pier foundation 5. Dynamic Load	5

Question# 2			10
C2-PLO1	A	Define Shallow Foundation. Explain types of shallow foundation in detail with appropriate sketch.	5
C2-PLO1	B	Why ground improvement techniques are important. Explain five methods of ground improvement in detail along with appropriate sketch	5

Question# 3			15
C4-PLO2	A	An infinitely long slope having an inclination of 26° in an area is underlain by firm cohesive soil ($G=2.72$, $e=0.50$). There is a thin weak layer of soil 6 m below and parallel to the slope surface is $C=25 \text{ KN/m}^2$, $\phi=16^\circ$. Compute the factor of safety when the slope is dry. If ground water flow could occur parallel to the slope on the ground surface, what factor of safety would result.	15

Question# 4			15
C4-PLO2	A	It is proposed to construct a 10m highway embankment with the following soil properties: $C=18.8 \text{ kN/m}^2$ $\gamma=17 \text{ kN/m}^3$ $\phi=20^\circ$ What is the inclination required for the embankment if the design FOS=1.5 and $F_\phi=1.0$ (Note: Stability taylor chart has been attached back to question paper)	10
C4-PLO2	B	Considering the following data find, silt pressure: <ul style="list-style-type: none"> • Height of water on upstream side = 15m • Bottom width of the dam = 12m • Top width = 6m • Unit weight of water = 1000 kg/m^3 • Unit weight of concrete = 1450 kg/m^3 • Unit weight of silt = 1330 kg/m^3 • Angle of friction for the silt = $\phi_s=35^\circ$ • Free Board = 3.5 m • Silt Deposite height = 2.5m 	5

