CBCS SCHEME

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BCV613C

Sixth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Applied Geotechnical Engineering

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

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		Module – 1	M	L	C
Q.1	a.	What is subsurface exploration? Explain and stages of subsurface exploration.	10	L2	CO1
	b.	List and explain various objectives of soil exploration.	10	L2	CO1
		OR			
Q.2	a.	Explain stabilization of borehole and sampling techniques.	10	L2	CO1
	b.	Define disturbed and undisturbed simples also list their features.	10	L1	CO1
		Module – 2			
Q.3	a.	With neat sketch, explain the properties of flow nets and its applications.	10	L2	CO2
	b.	A seepage occurring through an earthen dam is represented by a flownet comprising of 10 equipotential drops and 20 flow channels. The coefficient of permeability of soil is 3 mm/min and head loss is 5m. The rate of seepage through the earthen dam interms of cm^2/sec per m length dam.	10	L2	CO2
		OR			
Q.4	a.	List different methods of dewatering. Explain any two methods.	10	L2	CO2
	b.	Estimate the position of ground water table with following data by Hvorslev's Method. Depth upto which water is boiled out 10.5m, water rise is 1^{st} day = 0.63m : 2^{nd} day = 0.57 : 3^{rd} day = 0.51m.	10	L2	CO2
		Module – 3			
Q.5	a.	Explain with neat sketch At - rest, Active and Passive earth pressure.	10	L2	CO3
	b.	Explain Rankine's Theory and derive the expression for active earth pressure for c-ϕ soil.	10	L3	CO3
		OR			
Q.6	a.	Explain factors influencing to lateral earth pressure.	10	L2	CO3
	b.	Compute the active earth pressure of a retaining wall whose height 4.5m with an angle of friction 37° and dry density of 1.56 g/cc. Compute the active earth pressure if the water table is located at a depth of 1.5 m below the ground surface. Assume submerged density of soil as 0.985 g/cc.	10	L3	CO3

		Module – 4			
Q.7	**a.**	Explain three basic modes of failure in finite slope.	**10**	**L2**	**CO4**
	b.	Explain Swedish slip circle method for cohesive soil.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Explain causes for slope instability and also list the methods of stabilization of slopes.	**10**	**L2**	**CO4**
	b.	Explain Fellineous method for critical slip circle.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Derive an expression for Boussinesq's stress distribution equation in ground subjected to point load.	**10**	**L3**	**CO5**
	b.	Explain Newmark chart, contact pressure and pressure bulbs.	**10**	**L2**	**CO5**
		OR			
Q.10	**a.**	Explain types of settlements with equations and its importance.	**10**	**L2**	**CO5**
	b.	What is the settlement of a raft (15×20)m resting on sand and carrying a net loading of 120 kN/m^2 at @ a depth of 13m, due to consolidation of an underlaying clay layer 2.0m thick and 15m below the surface? The clay has unit weight of 10 kN/m^3, water content (w) = 35% and liquid limit (w_2) = 50.	**10**	**L3**	**CO5**

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