Code No: J8710/R16

M. Tech. II Semester Supplementary Examinations, October-2021

EARTH RETAINING STRUCTURES

Common to Structural Engineering (87), Structural Design (85),Soil Mechanics & Foundation Engineering (19) and Geotechnical Engineering (20)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions
All Questions Carry Equal Marks

1.	a	Compute the intensities of active and passive earth pressure at depth of 8 meters in drycohesionless sand with an angle of internal friction of 30º and unit weight of 18kN/m^3. Whatwill be the intensities of active and passive earth pressure if the water level rises to the groundlevel? Take γ_{sat}= 22kN/m^3.	**6M**
	b	Distinguish between Coulomb's theory and Rankine's theory.	**6M**
2.	a	A retaining wall, 4m high supports a backfill (c= 20kN/m^2; Φ=30º; γ=20kN/m^3) withhorizontal top, flush with the top of the wall. The backfill carries a surcharge of 20kN/m^2. Ifthe wall is pushed towards the backfill, compute the total passive pressure on the wall, and itspoint of application.	**6M**
	b	Explain the necessity of Drainage behind Retaining walls.	**6M**
3.	a	A cantilever sheet pile retains soil to a height of 6 m. Find the depth to which the pile should be driven assuming two-thirds of the theoretical passive resistance is developed on the embedded length. =19kN/$m^3$and =30º. Use approximate method.	**6M**
	b	Distinguish between free-earth support method and fixed-earth support method.	**6M**
4.	a	Explain design principles of reinforced soil walls.	**6M**
	b	Draw and explain the components of reinforced soil.	**6M**
5.	a	Name different types of coffer dams and discuss their relative advantages and disadvantages.	**6M**
	b	Draw different types of apparent pressure diagrams used in the design of braced cuts. What are the factors that affect the pressure distribution?	**6M**
6.	a	Explain the types of failures in retaining walls.	**6M**
	b	Write a short note on: (i) active (ii) passive and (iii) at rest conditions in earth pressure against a retainingwall.	**6M**
7.	a	Enumerate various applications of reinforcedearth.	**6M**
	b	Explain the concept of Bottom Heave in cuts.	**6M**
8.	a	Compare diaphragm cellular coffer dams and circular coffer dams.	**6M**
	b	Explain different forces in anchors.	**6M**

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