

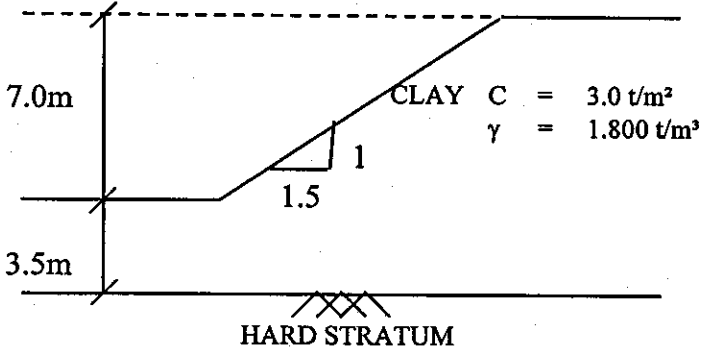
B. E. Construction Engineering Third Year Second Semester Exam 2018 (Old)

SUBJECT Soil Mechanics II

PAPER I

Time : Two hours / Three hours / Four hours / Six hours

Full Marks 30/100
(15/ 50 Marks for each part)

No of Questions	Part I / Part II	Marks
<p>Q1.</p>	<p>Answer any two questions.</p> <p>Fig. A gives the details of an embankment made of cohesive soils. Determine the factor of safety against base failure by midpoint circle method with radius $R = 13.00$ m.</p>  <p style="text-align: center;">Fig.A</p>	<p>25</p>
<p>Q2a.</p>	<p>Describe auger boring method. Also state its advantages and disadvantages.</p>	<p>10</p>
<p>Q2b.</p>	<p>Write a short note on thin walled tube sampling.</p>	<p>10</p>
<p>Q2c.</p>	<p>Define N value in case of Standard Penetration Test</p>	<p>05</p>
<p>Q3a.</p>	<p>What are the different information to be furnished in a sub soil investigation report?</p>	<p>10</p>
<p>Q3b.</p>	<p>Describe the different types of slope failures with suitable sketches.</p>	<p>05</p>
<p>Q3c.</p>	<p>Define</p>	<p>05</p>
<p></p>	<p>i) Core Recovery</p>	
<p></p>	<p>ii) RQD</p>	
<p>Q3d.</p>	<p>What do you understand by "Soil Exploration"? Why do we carry out Soil Investigation ?</p>	<p>05</p>

PARB-II

Answer any two questions.

Q-1.

(a) Determine critical hydraulic gradient in relation to seepage flow in soil and explain quick sand condition . (10)

(b) Prove that flow through isotropic soil complies the continuity equation and Laplace equation. (15)

Q-2. A retaining wall with a smooth vertical back retains sand as backfill for a depth of 8.0 m. The backfill is horizontal with following properties. $C' = 0$, $\phi' = 30^\circ$, $\gamma_{sat} = 20 \text{ kN/m}^3$. The ground water table was found to lie at a depth of 3.0 m below the top surface of the wall. Find the total thrust on the wall during active, passive and at rest condition. Draw the earth pressure diagram for each state. (25)

Q-3. (a) Prove that $K_a * K_p = 1$, where K_a = Active Earth pressure coefficient and K_p = Passive Earth pressure coefficient. (10)

(b) Prove that $K_e = \sqrt{K_x * K_z}$ in an anisotropic soil , where K_e = equivalent permeability

K_x = Horizontal permeability, K_z = Vertical permeability (8)

© Define phreatic line and explain its significance in design of earth dam. (7)