King Saud University
College of Engineering
Civil Engineering Department

CE 481 - Soil Mechanics II
Second Semester 1421-14122H
Time: 2 hours

Final Exam

اسم الطالب:	الرقم الجامعى:

رقم السؤال	الدرجة
١	
٢	
٣	
٤	
المجموع	

الأعمال الفصلية	
الامتحان النهائي	
المجموع	
التقدير	

Question #1

1. Primary consolidation settlement is caused by the elastic deformation of saturated soils. T (F)

2. The overconsolidation pressure ratio (OCR) is defined as the ratio between the present effective vertical pressure and the preconsolidation pressure of a specimen. T (F)

3. The OCR for normally consolidated clay is greater than one. T (F)

4. The swell index (C_s) is larger than the compression index (C_c). T (F)

5. The rate of consolidation increases as the clay permeability decreases. T (F)

6. The peak shear strength for dense sand is greater than that for loose sand. (T) F

7. The Mohr-Coulomb failure envelope for normally consolidated clay passes through the origin. (T) F

8. The pore water pressure during the CD test is equal to zero. (T) F

9. The total stress Mohr's failure envelope obtained from CU triaxial tests is horizontal line ($\phi = 0$). (T) F

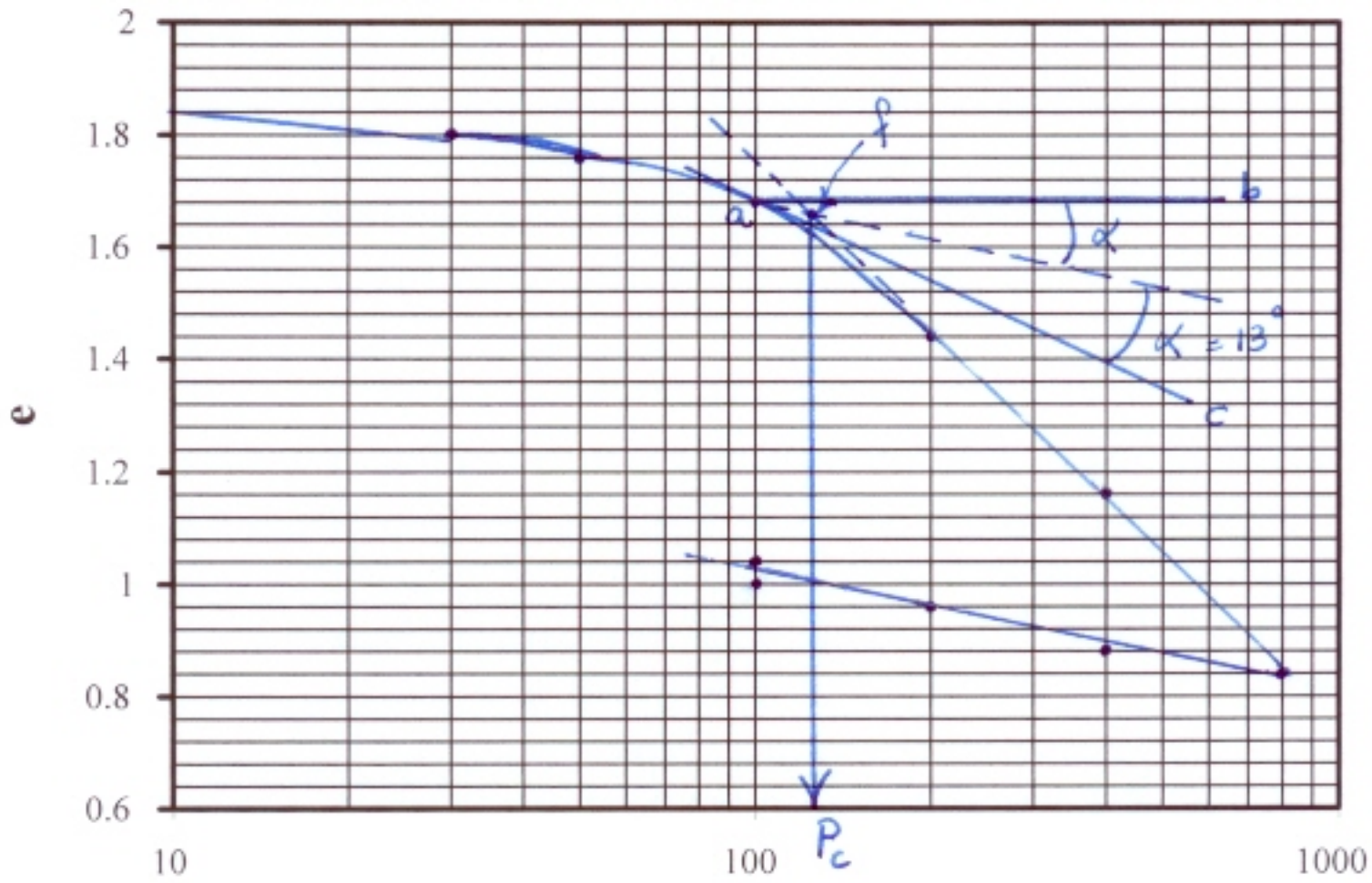
10. The value of lateral earth pressure coefficient for active case is smaller than that for passive case. (T) F

Question # 2

The results of a consolidation test on a sample of normally consolidated clay are:

P (kN/m^2)	e
30	1.8
50	1.76
100	1.68
200	1.48
400	1.16
800	0.84
400	0.88
200	0.96
100	1.04

a) 1. Plot the e-log P curve
2. Determine the preconsolidation pressure
3. Calculate the compression index, C_c, from the field consolidation line, where $e_o = 1.84$.
4. Determine the value of C_s .



P_c= 120

$C_c = \frac{\Delta e}{\Delta \log \sigma} = \frac{1.48 - 1.16}{\log 400 - \log 200} = 1.06$

C_s= 0.

$C_s = \frac{\Delta e}{\Delta \log \sigma} = \frac{0.96 - 0.88}{\log 500 - \log 200} = 0.201$ (from the rebound curve)