CIVE 353 - Geotechnical Engineering I
Solution-ASSIGNMENT 4

Question 2

Maximum dry density of $1.768 \text{ Mg/m}^3 = 1768 \text{ Kg/m}^3 = 1768 *9.8 \text{ KN/m}^3 = 17.35 \text{ KN/m}^3$
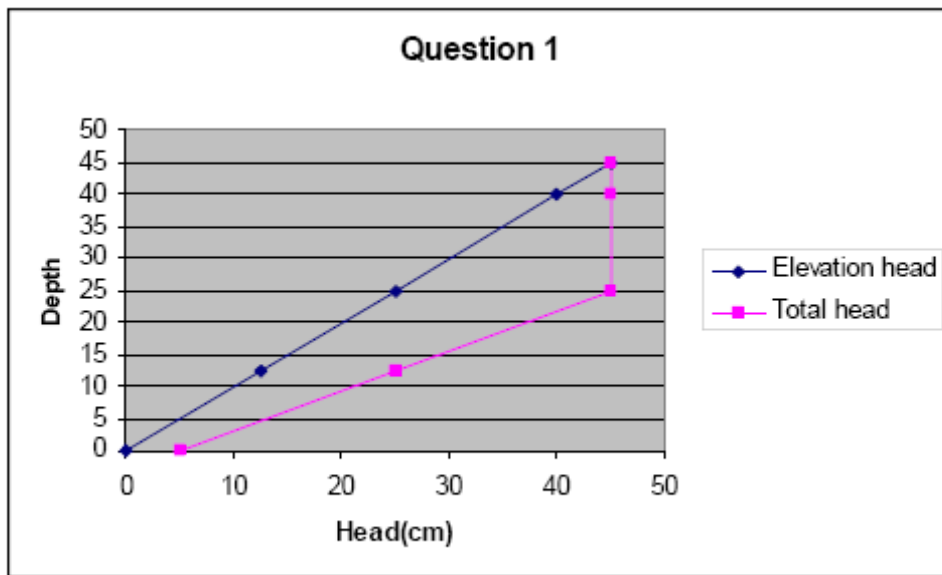
(1) For Dry unit weight $= 15.73 \text{ kN/m}^3$

$$\text{Percent Compaction} = \frac{15.73 \text{ kN/m3}}{17.35 \text{kN/m3}} *100 = 90.6\%$$

(3) For Dry unit weight $= 16.97 \text{ kN/m}^3$

$$\text{Percent Compaction} = \frac{16.97 \text{ kN/m3}}{17.35 \text{kN/m3}} *100 = 97.8\%$$

Question 4:

Point	Elevation Head	Pressure Head	Total Head	Head Lost
A	45	0	45	0
B	40	5	45	0
C	25	20	45	0
D	12.5	12.5	25	20
E	0	5	5	40

Question 1

Question 5:

In falling head permeability:

$$k = 2.303 * \frac{aL}{At} * Log\frac{h1}{h2}$$

Replacing the value into the formula,

$$k = 2.303 * \frac{7.5^2 * 225}{225^2 * 5.5} * Log\frac{2.5}{0.85} \qquad \longrightarrow \qquad k = 1.36 * 10^{-6}\frac{cm}{sec}$$

Question 6:

In constant head permeability: $\quad q = \dfrac{Ahk}{L}$

Head(mm)	q(cm^3/sec)
800	0.021
700	0.018
600	0.016
500	0.013
400	0.010