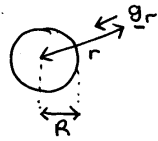


1(a)



$$\int g \cdot dS = 4\pi GM_E$$

$$g_r 4\pi r^2 = 4\pi GM_E$$

$$g_r = \frac{GM_E}{r^2}$$

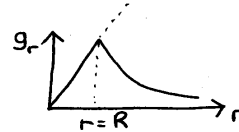
$$g_r \propto \frac{1}{r^2}$$

1(b)



$$4\pi r^2 g_r = \frac{4}{3}\pi r^3 \rho G 4\pi$$

$$g_r = \frac{4}{3}\pi r \rho G$$



1(c)

Drift: spring stretches

Free Air: g gets weaker moving away from Earth's centre

Bouguer: correction for mass of material between point and reference level

1(d)

Sea-level, equipotential : mapped with satellite + geodetic surveys

2(a) see sheet

(b) max 9800 Ω

min 4.99 Ω



brine in cracks at right angles to current flow



cracks // to current

(c) Void detection: air has high resistivity

Hydrogeology: salt water has lower ρ than fresh etc.

Figure 1 : All resistivity values are in ohm.m

2001
Final exam

Name _____

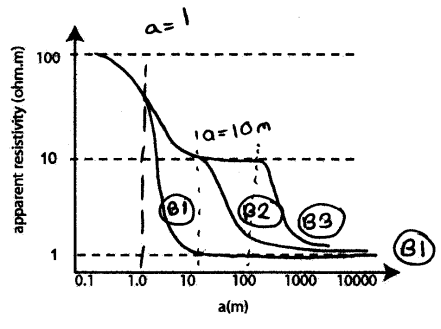
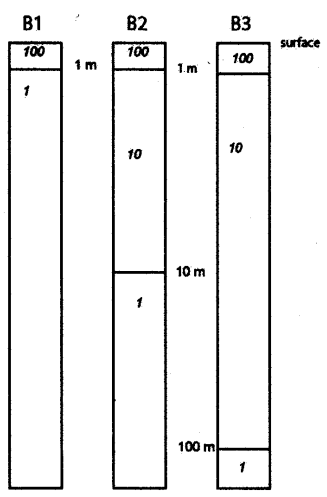
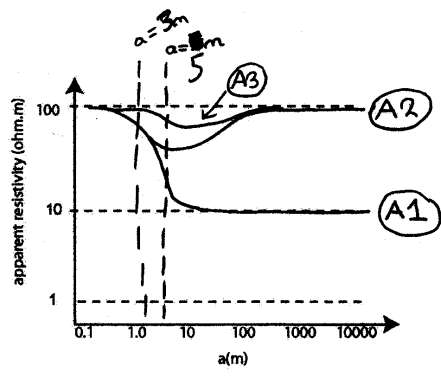
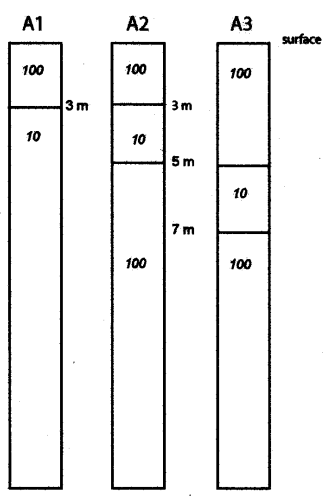
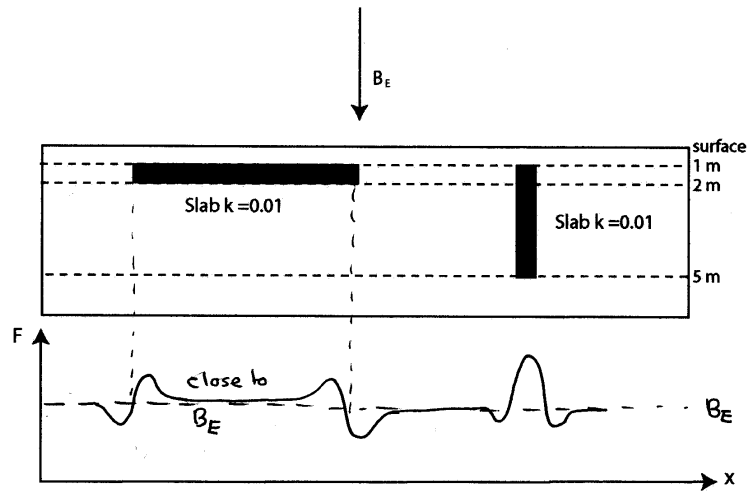
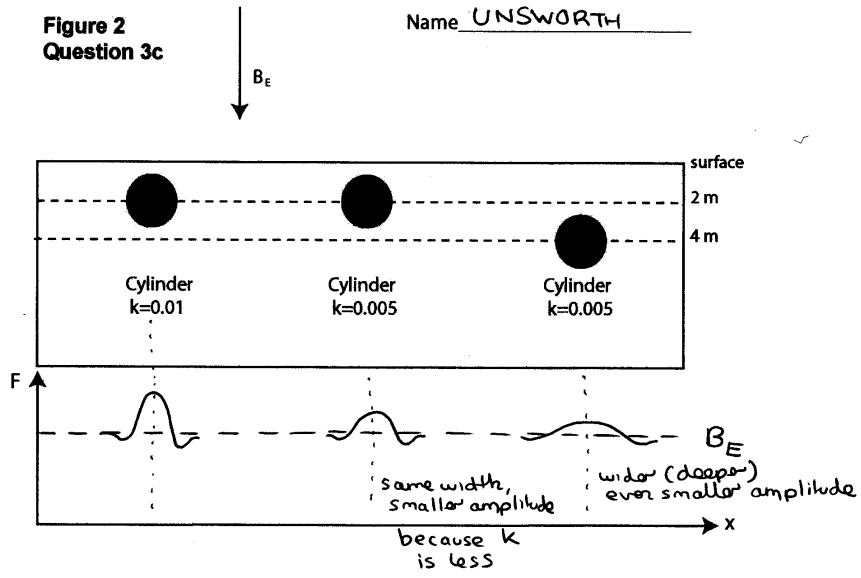


Figure 2
Question 3c

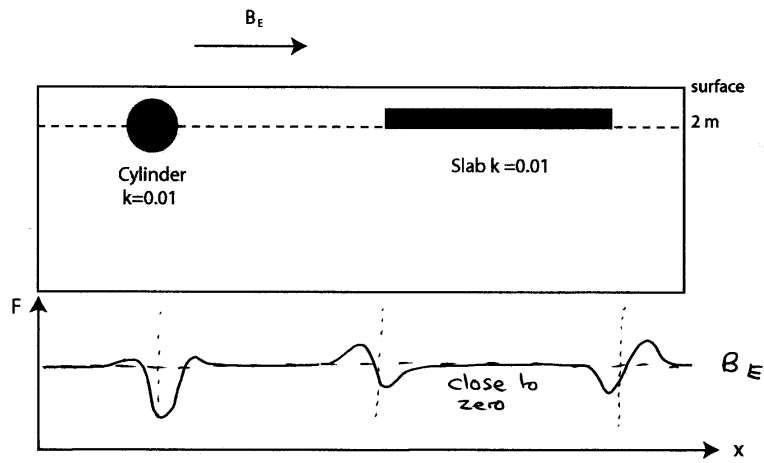
Name UNSWORTH



CONSIDER ONLY INDUCED MAGNETIZATION

Figure 2 (continued)
Question 3c

Name UNSWORTH



CONSIDER ONLY INDUCED MAGNETIZATION

Q3 (a) from notes

(b) From notes $\alpha_{1/2} = 0.766 \approx$

(c) see attached

(d) Thermo remnant magnetization
detrital remnant magnetization
chemical magnetization

(e) hours \rightarrow magnetic storm, changes in solar wind
1 day \rightarrow diurnal variation, rotation of Earth in magnetosphere
10⁵ years \rightarrow secular variation, core motion, geodynamo
100,000 yrs \rightarrow reversals, geodynamo
