

- Q1 (a) see notes
 (b) see notes
 (c) Both anomalies have $x_{1/2} = 5m$; $g_{min} = -0.32 \text{ mgals}$
 (d) Left tunnel is wider ($x_{1/2} = 10m$; $g_{min} = -0.16 \text{ mgals}$)
 when moved down \rightarrow measured gravity; shape unchanged

Q2 (a) see notes

- (b) Assumptions : ① all electric current flows in conductive phase
 ② ignore clay conduction, or other mechanism;

$m=1 \Rightarrow$ fluid in cracks
 $m=2 \Rightarrow$ fluid in isolated pores

salt \uparrow ; $g \downarrow$ more ions to carry electric current;

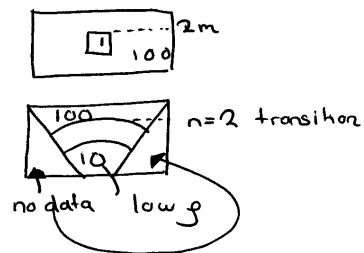
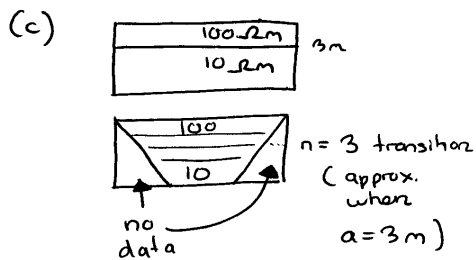
20 g/Litre $\rightarrow \rho_f = 0.35 \text{ } \rho_m$ (from graph)

$\frac{\rho_f}{\rho_{rock}} = 0.020$

$m=1 \rightarrow \phi = 0.02$

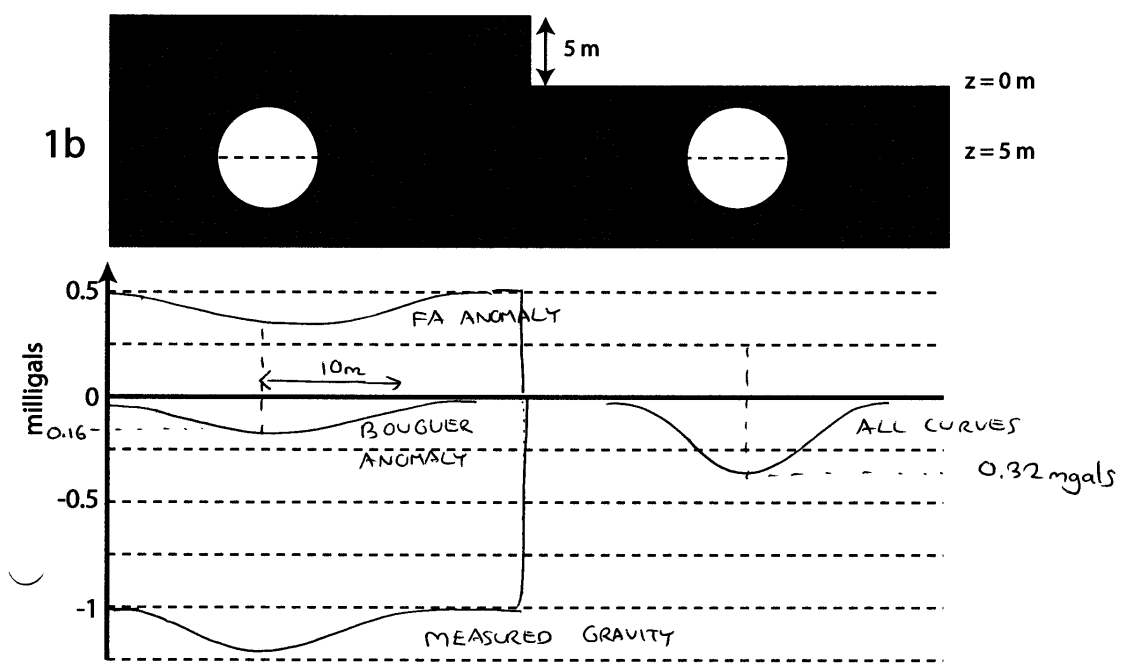
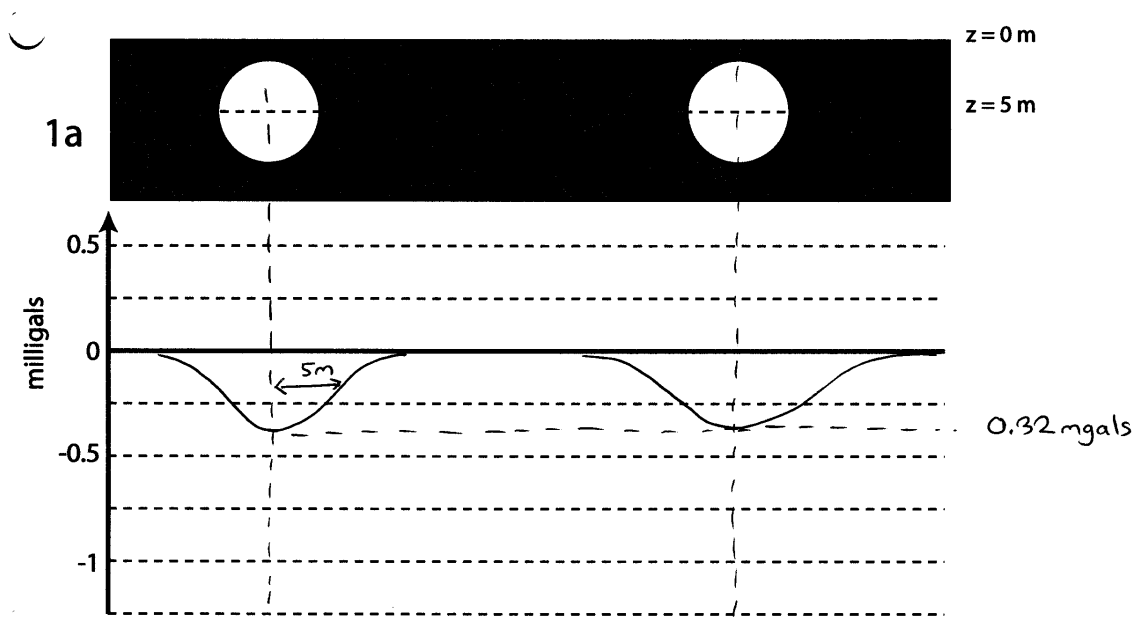
or

$m=2 \rightarrow \phi = 0.143$

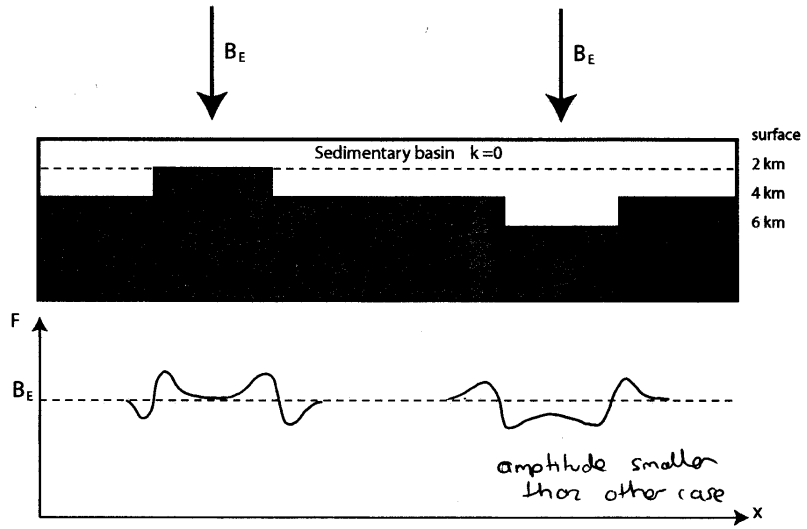
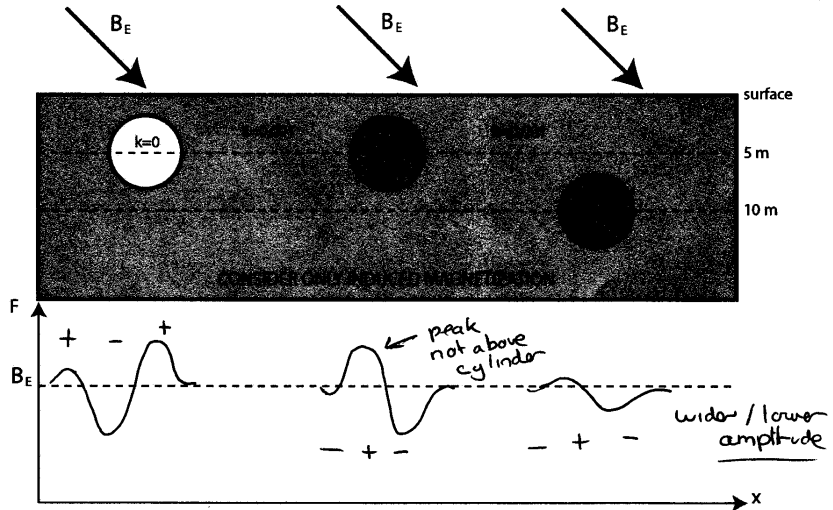


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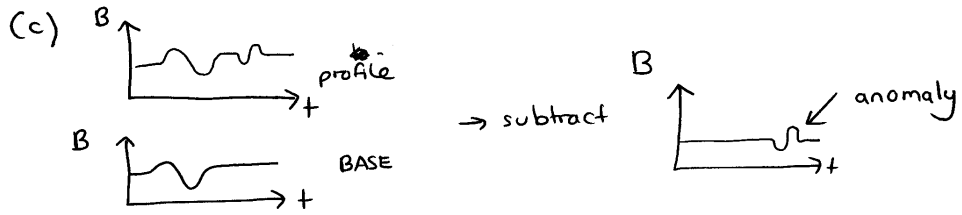
Question 1: Name = UNSWORTH



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Question 3 : Name UNSWORTH



3(b) see previous years



(d) Applications - see notes

VOID DETECTION

Air has $k=0$;

MINERAL EXPLORATION

many ore bodies have high k
or remnant magnetization

ENVIRONMENTAL
GEOPHYSICS

Oil drums have large k

etc