

2012-2013

1(c)

Given, $W_a = 3540 \text{ gm}$
 $W_w = 1962 \text{ gm}$

$$G_{mb} = \frac{W_a}{W_a - W_w}$$
$$= \frac{3540}{3540 - 1962}$$

$$= 2.243 \text{ (field compacted)}$$

$$G_{mb} = 2.384 \text{ (compacted in the lab)}$$

In the lab,

$$V_a = 100 \times \frac{G_{mm} - G_{mb}}{G_{mm}}$$

$$\Rightarrow 5.5 = 100 \times \frac{G_{mm} - 2.384}{G_{mm}}$$

$$\therefore G_{mm} = 2.523$$

In the field,

$$V_a = 100 \times \frac{G_{mm} - G_{mb}}{G_{mm}}$$

$$= 100 \times \frac{2.523 - 2.243}{2.523}$$

$$= 11.098\%$$