A gas bubble, from an explosion under water, oscillates with a period T proportional to $p^a d^b E^c$. Where 'P' is the static pressure, 'd' is the density of water and 'E' is the total energy of the explosion. Find the values of a, b and c.

As per question, $T \propto P^a d^b E^c$ or $[T] = [P]^a [d]^b [E]^c$

or $[M^0L^0T^1] = [ML^{-1}T^{-2}]^a [ML^{-3}]^b [ML^2T^{-2}]^c$

or $M^0L^0T^1 = M^{a+b+c} L^{-a-3b+2c} T^{-2a-2c}$

$\therefore$ $a + b + c = 0$ ..... (i)

$-a - 3b + 2c = 0$ ..... (ii)

$-2a - 2c = 1$ ..... (iii)

Solving, eqns. (i), (ii) and (iii) we get

$a = -5/6, b = 1/2, c = 1/3.$