Question number		Answer	Notes	Marks
8	(a)	weight of crane arm;	allow weight of arm, weight of crane	1
	(b) (i)	moment = force × (perpendicular) distance (from pivot);	allow symbols, e.g. M = F × d or rearrangements	1
	(ii)	substitution; evaluation; e.g. (moment =) 150 000 × 1.2 (moment =) 180 000 (Nm)	-1 for POT error	2
	(c) (i)	(at equilibrium) (sum of) clockwise moment(s) = (sum of) anticlockwise moment(s);	allow in correct symbols	1
	(ii)	correct expression for moment of weight of rock or weight of crane arm seen; correct use of principle of moments; evaluation; e.g. F × 6.8 OR 18(000) × 2.8 180 000 = (18 000 × 2.8) + (F × 6.8) F = 19 000 (N)	allow ecf from (b) -1 for POT error 19058.8...(N)	3

Total for question 8 = 8 marks