

6(a)(i)

One mark for each correct loop (**Max 3**)

		AB			
CD		00	01	11	10
	00	0	0	0	0
	01	1	1	1	0
	11	0	1	1	1
	10	0	0	1	1

6(a)(ii)

One mark per mark point (**Max 2**)

MP1 One correct Boolean term with an OR sign

MP2 All three correct Boolean terms connected by OR signs and no other terms present.

$$\bar{A}.\bar{C}.D + B.D + A.C$$

6(b)

One mark for correct use of De Morgan's laws**One** mark for correct use of any other Boolean algebra law

$$X = \overline{A+B+C} + \overline{B+C}$$

$$(X=) \bar{A}.\bar{B}.\bar{C} + \bar{B}.\bar{C} \dots\dots\dots(\text{De Morgan's})$$

$$(X=) \bar{A}.\bar{B}.\bar{C} + B.\bar{C} \dots\dots\dots(\text{Double negation})$$

$$(X=) \bar{C}.(\bar{A}.\bar{B} + B) \dots\dots\dots(\text{Distributive})$$

One mark for correct answer

$$(X=) \bar{C}.(\bar{A} + B) \dots\dots\dots(\text{Redundancy})$$