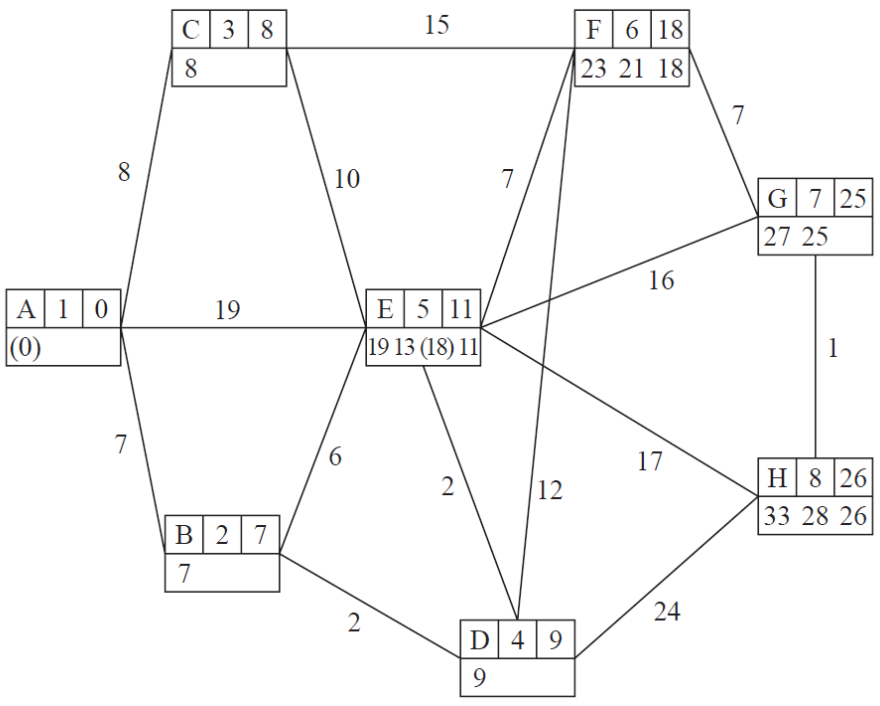
Question Number	Scheme	Marks
5. (a)	Pair the odd nodes: C, D **or** repeated arcs are CF, FG, DG	B1
	Time = 82 + 7 = 89	B1
	e.g. route GDGJHEADCABEFBCFCGFG	B1 **(3)**
(b)	BC + DG = B(F)C + DG = 6 + 3 = 9*	M1 A1
	BD + CG = B(FG)D + C(F)G = 11 + 4 = 15	A1
	BG + CD = B(F)G + C(FG)D = 8 + 7 = 15	A1
	Repeat arcs: BF, CF, DG	A1 **(5)**
(c)	Route starting from G is quicker	B1
	e.g. difference = (82 + 9) – 89 = 2 or 9 – 7 = 2	B1 **(2)**
		10 marks

Notes for Question 5

a1B1: cao (correctly stating the two odd nodes **or** correct repeated arcs stated) – so must either state that C and D are odd **or** state the arcs CF, FG, DG only, but B0 if only stating C and D or CD (without mention of 'odd')
a2B1: cao (89)
a3B1: Correct route: checks – starts and finishes at G, 20 nodes, CF, FG and DG repeated, A(2), B(2), C(3), D(2), E(2), F(3), G(4), H(1), J(1)

b1M1: Correct three distinct pairings of the correct four odd nodes B, C, D and G
b1A1: Any one row correct including pairing **and** total
b2A1: Any two rows correct including pairings **and** totals
b3A1: All three rows correct including pairings **and** totals
b4A1: cao - correct arcs clearly stated and not just in their working as BF, CF and DG – must be these arcs. Do not accept BC, BFC or BC via F

c1B1: cao (oe e.g. B to G is slower) – dependent on the correct repeats arcs (possibly implied) in (a) and (b) **or** clearly implied in (c) (e.g. correct values compared in this part) – must be clear that it is the route starting at G which is quicker
c2B1: cao (difference of 2 **or** comparing 89 and 91 **or** comparing 7 with 9)

6.(a)		M1 A1 (ABCD) A1 (EF) A1ft (GH) dM1 A1 **(6)**