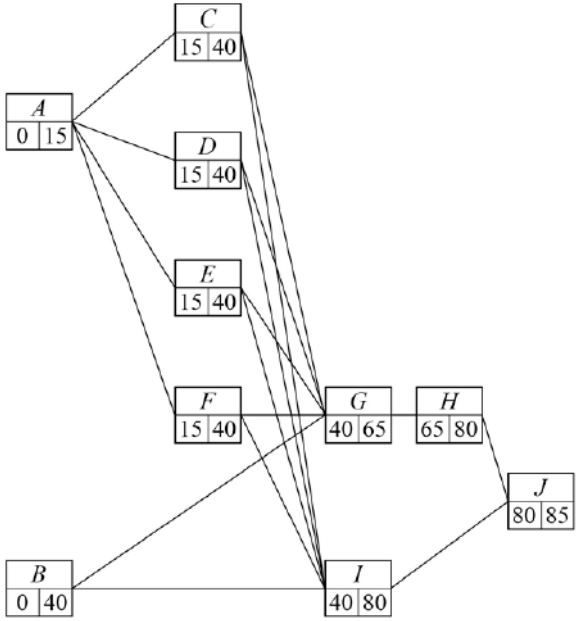
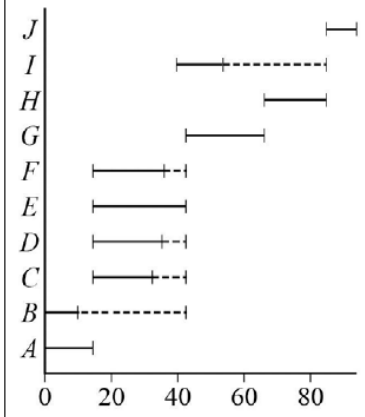
Homework 8B – Solutions

1(a)		M1		Network diagram (see appendix for activity on arc)



		A2	3	-1 for each independent error (max -2)
(b)		M1 A1	2	Forward pass, correct at G All correct
(c)		M1 A1F	2	Backward pass, correct at G ft All correct
(d)	A E G H J	B1	1	

(e)		M1 A1 A1	3	SCA, 8+ activities Use of float(s) All correct
	Total		**11**	

2)

	Less time consuming	B1	Accept also • cheaper • simpler to conduct/ easier • less data to handle

Additional Guidance

(a)	A census would give too much data (to process)	B1
	Uses less resources	B1
	Unbiased	B0
	More accurate/ reliable	B0
	A census only happens every 10 years	B0
	A sample can be done any time	B0
	You can get more specific data	B0
	If they used a census, some staff may have joined or left	B0
	A census includes everyone/ With a survey you ask a few people [these are just definitions]	B0

core:maths
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TOTAL: 44

Godalming College

2)

	A list of (all) staff at the company	B1	oe e.g. telephone directory of staff at the company, database/spreadsheet of staff, register of staff
(b)	**Additional Guidance**		
	Any reference to types of sampling method (random, stratified, systematic)	B0	
	Any reference to the number of people to be sampled	B0	
	All staff [this is the population – the answer should refer to a list]	B0	

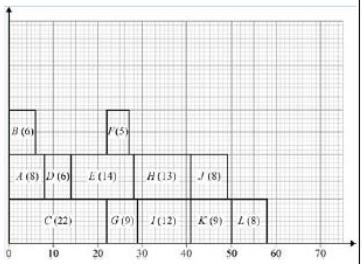
	236 + 249 + 383 + 492 +75 + 65 or 1500	M1	Allow one error or omission
	$\frac{383}{\text{their } 1500} \times 160$ or 40(.85…)	M1 dep	Dependent on previous M mark
(c)	41	A1	SC2 for 40 seen on answer line with no wrong working

5

3)

a					

Activity	Early	Late
A	0	9
B	0	9
C	0	22
D	8	15
E	14	29
F	22	29
G	22	29
H	28	42
I	29	41
J	41	50
K	41	50
L	50	58

	M1			Early times correct at *E, F, H* and *I*
	A1			All correct
	M1			Late times correct at *I, H, F* and *E* ft their answer to part (a)
	A1			All correct
			4	
b(i)	*CGIKL*	B1	1	
(ii)	2	B1	1	
(c)		M1		SCA, resource histogram, at least 10 labelled activities shown, condone floats.
		A1		Two 'complete' horizontal rows, but no 'vertical gaps', showing correct progression, correct start times, (condone floats).
		A1		All correct. (no floats) oe
			3	

9

4)

(a)	=SUM(B2:B9)	B1	1	

1

5)

2(a)	Discrete	B1	1	
(b)(i)	The mean is affected by the one very large value, 18	B1	1	oe
(b)(ii)	The mode is the smallest value	B1	1	oe
2(c)	$\frac{3}{15}$ (× 100)	M1	2	oe
	20 (%)	A1		
2(d)	$\frac{10}{15}$	M1	2	
	$\frac{2}{3}$	A1		
	Total		**7**	

7

6)

(a)	£2000×1.035^3	M1		
	= £2217.44	A1		allow £2217.43
(b)	$0.06 = \left(1+\frac{i}{12}\right)^{12} - 1$	M1		
	$1.06 = \left(1+\frac{i}{12}\right)^{12}$			
	$1.06^{\frac{1}{12}} = 1+\frac{i}{12}$	B1		B1 for any sight of $1.06^{\frac{1}{12}}$
	$\frac{i}{12} = 0.0048676 \times 12$	M1		for attempt to isolate i
	$i = 0.05841$			B1, M1 may be gained for algebraic rearrangement
	$i = 5.84\%$	A1		
	TOTAL	**6**		

6

7)

(a)(i)	$4.4 \times \frac{35}{100}$	M1		
	1.54 million	A1	2	oe. Ignore change of form if 1.54m o.e is seen. 1.54 on its own = SC1 2.86m o.e. = SC1 (MR)
(b)(i)	443(000) + 273(000) + 167(000)	M1		
	$\frac{\text{their } 883(000)}{10297(000)} \times 100$	M1		
	8.57	A1	3	accept 8.58 or 8.6 or 9

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