Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCE in Applied ICT (6953) Unit 3: The Knowledge Worker

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.

- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.

- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.

- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Activity		ANSWER		POSSBLE MARK	MAX
Activity 1		Understanding the Situation			
		Any 13 **of**			
	A1	**No visual way of telling the strain of a female fish (must infer cannot see, not cannot tell)**		**1**	
	A2	**Any male can breed with any female**		**1**	
	A3	**Colour/strain (males) defined by combination of two genes**		**1**	
	A4	**One from the male/father, one from the female/mother**		**1**	
	A5	**Breeding cycles begin every four weeks**		**1**	
	A6	**(Breeding tank) contains 16 males and 16 females** for best results **(32 fish not enough, need to be able to infer breeding / breeding tank))**		**1**	
	A7	Male **Truckles eat their young**		1	
	A8	**Pregnant females removed from breeding tank to holding tank to give birth (must have pregnant *or* give birth *or* from breeding tank)**		**1**	
	A9	**Females removed (from holdinging tank) after 4 weeks (and put in stock tank)**		**1**	
	A10	**Baby fish stay in holding tank for 8 weeks / 4 weeks after females removed**		**1**	
	A11	**From stock tank fish go to breeding tank, selling tank (in batches) (or held until next cycle).**		**1**	
	A12	**Fish sold to retailer (Fish Place) from selling tank**		**1**	
	A13	**Two holding tanks needed**		**1**	
	A14	**Heaters and filters required**		**1**	
	A15	**Truckles sold in batches**		**1**	
	A16	**Female batches are mixed strains**		**1**	
	A17	**Model (tries) to show cash flow**		**1**	
	A18	**Some strains of male truckle are more valuable / cost more /sell for more**		**1**	
					13
	B1	**Retailer / Fish Place**	Costs – **Truckles, (Tanks, Filters, Heaters)/Equipment, Food** **Batch Size,** Selling price **per batch**	**1,1**	
	B2	**Truckle Foundatio n**	Size/capacity **of Tanks,** number **of heaters required,** number **of filters required**	**1,1**	
	B3	**Electricity Supplier**	**Price/kwh**	**1,1**	
		Source needed to award data marks			**6**

Activity		ANSWER	POSSBLE MARK	MAX
		Total Marks for Activity 1		**19**

Activity 2				
		Prices (Data Entry)		
	A1	**Costs area correct (B11:B20)**	**1**	
	A2	**Tanks area correct (F11:I14)**	**1**	
	A3	**Electricity area correct (F18:F19)**	**1**	
	A4	**Selling area correct (B29:C39)**	**1**	
				4

	A	B	C	D	E	F	G	H	I
9	Costs				Tanks				
10	Item	Cost Per Item	Item		Tanks	Capacity (l)	Price	Filters Required	Heaters Required
11	Female Truckle	£0.76 each			Breeding Tank	80	£108.99	2	1
12	Male Truckle	£1.25 each			Holding Tank	25	£59.99	1	1
13	Breeding Tank	£108.99 each			Selling Tank	250	£209.99	4	2
14	Holding Tank	£59.99 each			Stock Tank	250	£209.99	4	2
15	Selling Tank	£209.99 each							
16	Stock Tank	£209.99 each			Electricity				
17	Filter	£24.99 each			Item	Wattage (W)			
18	Heater	£19.99 each			Filter	4			
19	Food	£1.71 each			Heater	150			
20	Electricity	£0.09 kWh			Weeks	1-4	5-8	9-12	13-16
21					Heaters	1	4	5	7
22					Filters	2	7	8	12
23					Electricity Cost (Heaters)	£9.07	£36.29	£45.36	£63.50
24					Electricity Cost (Filters)	£0.48	£1.69	£1.94	£2.90
25					Total	£9.56	£37.98	£47.30	£66.41
26	Selling Price	Number In Batch	Price per Batch						
27									
28	Male Truckles								
29	Night Hawk	6	£7.02						
30	Atlantic Blue	6	£6.25						
31	Red Tiger	6	£5.25						
32	Yellow Tiger	6	£5.35						
33	Sky Blue	6	£6.75						
34	Royal Blue	6	£6.03						
35	Brazilian Light	6	£4.57						
36	Fire Bird	6	£5.95						
37	African Sunrise	6	£5.54						
38	Golden Blaze	6	£5.12						
39	Female Truckles	9	£5.90						

Prices (Formulae)

	E	F	S
21	Heaters	='Revenue Costs'!B18	=R21+'Revenue Costs'!O18
22	Filters	='Revenue Costs'!B17	=R22+'Revenue Costs'!O17
23	Electricity Cost (Heaters)	=F$21*$F$19*24*4*7*$B$20/1000	=S$21*$F$19*24*4*7*$B$20/1000
24	Electricity Cost (Filters)	=F$22*$F$18*24*4*7*$B$20/1000	=S$22*$F$18*24*4*7*$B$20/1000
25	Total	=SUM(F23:F24)	=SUM(S23:S24)

		F23 =F$21*$F$19*$B$20*24*7*4/1000 F24 =F$22*$F$18*$B$20*24*7*4/1000		
	B1	F23 contains =F21*F19……….	1	
	B2	F24 contains =F22*F18………..	1	
		F23 and F24 contain:		
	B3	multiplied by B20	1	
	B4	multiplied by 24 and 7 (or 168) Award B4 and B5 marks for 24x28	1	
	B5	multiplied by 4 (possibly 672 with B4)	1	
	B6	divided by 1000 (possibly *0.672 with B5)	1	
	B7	Absolute Addressing on both F19 and F18 (Column or both)	1	
	B8	Absolute Addressing on both B20 (Column or both)	1	
	B9	Correct formula in F25 (=F23+F24)	1	
	B10	Correct Formulae in S23,S24,S25 (=S21*$F$19*0.672*$B$20, =S22*$F$18*0.672*$B$20, =S23+S24) Note: for this mark to be awarded the absolute addressing has to be included)	1	
	B11	SUM either not used or only used in Row 25 and of either =Sum(F23:F24) or =Sum(F23;F24) or =Sum(F23,F24) Also for this mark to be awarded all formulae shown must work as expected.	1	
				11

Breeding Tank 1

	A	B	C	D	N	O
9	Weeks	1-4	5-8	9-12	49-52	53-56
10	Contents					
11	Male Truckles	=SUM(B12:B21)	=SUM(C12:C21)	=SUM(D12:D21)	=SUM(N12:N21)	=SUM(O12:O21)
12	Night Hawk	='Input Page'!B12	='Input Page'!C12	='Input Page'!D12	='Input Page'!N12	='Input Page'!O12
13	Atlantic Blue	='Input Page'!B13	='Input Page'!C13	='Input Page'!D13	='Input Page'!N13	='Input Page'!O13
14	Red Tiger	='Input Page'!B14	='Input Page'!C14	='Input Page'!D14	='Input Page'!N14	='Input Page'!O14
15	Yellow Tiger	='Input Page'!B15	='Input Page'!C15	='Input Page'!D15	='Input Page'!N15	='Input Page'!O15
16	Sky Blue	='Input Page'!B16	='Input Page'!C16	='Input Page'!D16	='Input Page'!N16	='Input Page'!O16
17	Royal Blue	='Input Page'!B17	='Input Page'!C17	='Input Page'!D17	='Input Page'!N17	='Input Page'!O17
18	Brazilian Light	='Input Page'!B18	='Input Page'!C18	='Input Page'!D18	='Input Page'!N18	='Input Page'!O18
19	Fire Bird	='Input Page'!B19	='Input Page'!C19	='Input Page'!D19	='Input Page'!N19	='Input Page'!O19
20	African Sunrise	='Input Page'!B20	='Input Page'!C20	='Input Page'!D20	='Input Page'!N20	='Input Page'!O20
21	Golden Blaze	='Input Page'!B21	='Input Page'!C21	='Input Page'!D21	='Input Page'!N21	='Input Page'!O21

	C1	Cell B12 correct (='Input Page'!B12)	1

	C2	**Cell O21 correct (='Input Page'!O21)**	**1**	
				2
		Selling Tank		

		=INT('Stock Tank (Post1)'!C12/Prices!B29)*Prices!B29 **=INT('Stock Tank (Post1)'!C12/6)*6** **Accept any form of restriction to whole number multiple e.g. Round, Rounddown, Quotient, Roundup** Accept any other approaches that work.		
	D1	**Working formula in C12**	**1**	
	D2	**Acceptable rounding down used (Rounddown, Quotient, Int, Floor, Mod)**	**1**	
	D3	**Prices B29 used in formula twice**	**1**	
	D4	**Absolute addressing on Prices B29**	**1**	
	D5	**Absolute addressing on Prices B29 only on column**	**1**	
	D6	**Working formula in O12** **=INT('Stock Tank (Post1)'!O12/Prices!B29)*Prices!B29** **=INT('Stock Tank (Post1)'!O12/6)*6**	**1**	
	D7	**Bonus for working fully replicatable formula from C12:O21**	**1**	
	D8	**Working formula in C22** **=INT('Stock Tank (Post1)'!C22/Prices!B39)*Prices!B39** **=INT('Stock Tank (Post1)'!C12/9)*9** **Accept any form of restriction to whole number multiple e.g. Round, Rounddown, Quotient, Roundup**	**1**	
	D9	**Acceptable rounding down used (Rounddown, Quotient, Int, Floor, Mod)**	**1**	
	D10	**Prices B39 used in formula twice**	**1**	
	D11	**Absolute addressing on Prices B39 (All or Column only)**	**1**	

			11
		Stock Tank (Post2)	

	A	C	O
8			
9	Weeks	5-8	53-56
10	Contents		
11	Male Truckles	=SUM(C12:C21)	=SUM(O12:O21)
12	Night Hawk	='Stock Tank (Post1)'!C12-'Selling Tank'!C12	='Stock Tank (Post1)'!O12-'Selling Tank'!O12
13	Atlantic Blue	='Stock Tank (Post1)'!C13-'Selling Tank'!C13	='Stock Tank (Post1)'!O13-'Selling Tank'!O13
19	Fire Bird	='Stock Tank (Post1)'!C19-'Selling Tank'!C19	='Stock Tank (Post1)'!O19-'Selling Tank'!O19
20	African Sunrise	='Stock Tank (Post1)'!C20-'Selling Tank'!C20	='Stock Tank (Post1)'!O20-'Selling Tank'!O20
21	Golden Blaze	='Stock Tank (Post1)'!C21-'Selling Tank'!C21	='Stock Tank (Post1)'!O21-'Selling Tank'!O21
22	Female Truckles	=SUM(C23:C32)	=SUM(O23:O32)
23	Night Hawk	='Stock Tank (Post1)'!C23-'Selling Tank'!C23	='Stock Tank (Post1)'!O23-'Selling Tank'!O23
24	Atlantic Blue	='Stock Tank (Post1)'!C24-'Selling Tank'!C24	='Stock Tank (Post1)'!O24-'Selling Tank'!O24
30	Fire Bird	='Stock Tank (Post1)'!C30-'Selling Tank'!C30	='Stock Tank (Post1)'!O30-'Selling Tank'!O30
31	African Sunrise	='Stock Tank (Post1)'!C31-'Selling Tank'!C31	='Stock Tank (Post1)'!O31-'Selling Tank'!O31
32	Golden Blaze	='Stock Tank (Post1)'!C32-'Selling Tank'!C32	='Stock Tank (Post1)'!O32-'Selling Tank'!O32
33	Total	=C11+C22	=O11+O22

	E1	**Correct formula in C12** **='Stock Tank (Post1)'!C12-'Selling Tank'!C12**	**1**	
	E2	**Correct formula in O12** **='Stock Tank (Post1)'!O12-'Selling Tank'!O12**	**1**	
	E3	**Correct formula in C32** **='Stock Tank (Post1)'!C32-'Selling Tank'!C32**	**1**	
	E4	**Correct formula in O32** **='Stock Tank (Post1)'!O32-'Selling Tank'!O32**	**1**	
	E5	**Correct rows printed on one page**	**1**	
	E6	**Correct columns printed on one page**	**1**	
				6
		Printouts		
		All printouts and no more in right order are required to be eligible for the following marks		
	F1	**Row and Column headings and Gridlines on (All 5 worksheets)**	**1**	
	F2	**Correct header & footer(All 5 worksheets)**	**1**	
	F3	**Correct rows and columns printed(4 worksheets – not Stock Tank (Post 2))**	**1**	
				3
		Total Marks for Activity 3		**37**

Activity 3		Using the model		
a)	A1	**No more than 16 male truckles assigned each cycle**	**1**	
	A2	**16 male Truckles each cycle**	**1**	
		Do not award A3 or A4 if A1 not awarded or results are not consistent with a working model. e.g. profit greater than £3000		
	A3	**Profit made from week 16 onwards**	**1**	
	A4	**Overall profit made.**	**1**	
	A5	**Annotation present**	**1**	
	A6	**Explanation of strategy**	**1**	
				6
b)	B1	**'Prices' worksheet cells B32 and C32 changed to 50 and £350**	**1**	
	B2	**No other changes made to 'Prices' worksheet**	**1**	
	B3	**Explanation says that they will now be sold when there are 50 available**	**1**	
	B4	**Explanation says that they will now charge £350.**	**1**	
	B5	**No more than 16 male truckles assigned each cycle**	**1**	
	B6	**16 male truckles each cycle**	**1**	
		Do not award B7-B11 if B5 not awarded or results are not consistent with a working model. e.g. profit greater than £4000		
	B7	**At least 1 batch of 50 male Yellow Tiger Truckles sold**	**1**	
	B8	**6 or more batches of 50 male Yellow Tiger Truckles sold**	**1**	
	B9	**Overall profit made.**	**1**	
	B10	**Over £1000 profit made**	**1**	
	B11	**Over £1400 profit made**	**1**	
				11
		Total Marks for Activity 3		**17**

Activity 4	Report		

Indicative content

In report format, not a memo or a letter.(Limited to Level 2 if not a report.)

Suitable title e.g. Report on the Truckle Breeding project.

Introduction stating that the model has been used to predict 2 scenarios and the report is a recommendation of which to choose.

Explanation of first scenario with description of profits and losses.

Explanation of second scenario with description of profits and losses.

A recommendation

A justification

- Profits, long term

Diagrams/tables/charts (if included) :

- Relevant
- Used in explanations
- fit for purpose (embedded in report)

Suggestions of improvements and enhancements

Improvements simply concentrating on colour schemes or aesthetic improvements should not be taken into account unless justified for accessibility reasons. Generally improvements should enhance the spreadsheet by showing further information, calculating predictions more accurately or making it easier to use.

Example : Displaying number of that type of truckle in the storage tank when you hover over an entry cell.

Conclusion.

Level	Marks	
Level 0	0 marks	No rewardable content
Level 1	1-5	The candidate will have described the first option although they may not have got a satisfactory recommendation out of it. They will have made clear that this is their recommended way to proceed but will probably have failed to justify it. There will be little evaluative comment about the model although there may be the usual objections to the colour scheme. There are none/few sensible suggestions for improvement or enhancements. The candidate may include diagrams but these will not be explained. The candidate uses everyday language and the response lacks clarity and organisation. Spelling, punctuation and the rules of grammar are used with limited accuracy.
Level 2	6-10	The candidate will have described both options and will have recommended one as the way to proceed. They will have looked at profit and loss but will probably have no other justification. There will be some evaluative comment about the model probably along the lines of the data validation on the 'Input Page' helping to ensure they only selected Truckles they had. Some sensible suggestions for improvements and/or enhancements. They may bring in aspects of building the model but these can be ignored at this level. The candidate may include diagrams/tables which will be explained in the text. The candidate uses some specialist terms and shows some focus and organisation. Spelling, punctuation and the rules of grammar are used with some accuracy.

Level 3	11-15	The candidate will have described both scenarios and will have recommended one as the way to proceed. They will have looked at profit and loss and may have other justification such as making up for the drop in numbers of Yellow Tiger Truckles. There will be evaluative comment about the model probably along the lines of the data validation on the 'Input Page' helping to ensure they only selected Truckles they had. They will probably have some comment on ease of use of the model and will have suggested some improvements other than colour. If they bring in aspects of building the model these should be seen, at this level, as a mis-understanding of the objective but should not necessarily prevent a candidate from gaining this mark band. The candidate will include diagrams which will be explained in the text. The candidate uses a range of appropriate specialist terms and shows good focus and organisation. Spelling, punctuation and the rules of grammar used with considerable accuracy.		
		Total Marks for Activity 4		**15**
SWW				
	S1	**Authenticating Work (All WP pages have task number, Name, centre number).**	**1**	
	S2	**Appropriate Structure (Pages in correct order & Folder assembled correctly)**	**1**	
		Total for SWW		**2**
		Total for Paper		**90**