

2012 Information Systems Higher

Finalised Marking Instructions

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Part One: General Marking Principles for Information Systems – Higher

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.

(a) Marks for each candidate response must <u>always</u> be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor. You can do this by posting a question on the Marking Team forum or by e-mailing/phoning the emarker Helpline.

Alternatively, you can refer the issue directly to your Team Leader by checking the 'Referral' box on the marking screen.

- (b) Marking should always be positive ie, marks should be awarded for what is correct and not deducted for errors or omissions.
- (c) Technical terms which have been spelled incorrectly should still be awarded the relevant mark.
- (d) In situations where the subsequent part of a question depends on the correct answer to the first part, candidates who answer the first part incorrectly and then go on in the subsequent part of the question to give a correct answer based on their answer to the first part will be awarded the relevant mark for the subsequent part of the question.
- (e) In situations where the candidate has achieved the maximum number of marks available without getting to the end of their answer, a marker should award the maximum marks. However, in situations where there is only one correct answer and the candidate has split their answer with a / or an or, then this should not be accepted as a separate response and the marks should not be awarded. For example, if the correct answer for a data type question is date then a response of (date/time) or (date or time) would attract 0 marks as the / and the or combines the answer making it incorrect.
- In situations where the candidate writes the correct answer followed by an alternative incorrect answer then this should not be penalised. However, if the candidate writes an incorrect answer followed by a correct alternative answer this should not be awarded the marks. For example if the correct answer to a 1 mark question is written and the candidate includes an alternative incorrect answer such as visual then the following would apply:

Written (visual) = 1 mark.

Written/visual = 0 marks (example of combining as in (e) above).

Visual (written) = 0 marks.

Part Two: Marking Instructions for each Question

Que	estic	n Expected Answer/s	Max Mark	Additional Guidance
1	а	 You cannot enter an Agency (1 mark) without an Act (1 mark) 1 mark for each bullet 	2	Do not accept – details about an Act cannot be entered without an Agency.
1	b	 There are no multi-valued attributes (1 mark) There are no partial (key) dependencies (2 marks) There are non-key dependencies (2 marks) Agency and Agency Tel No (1 mark) 	2	Agency and Agency Tel No are the non-key dependencies.
2	а	A primary key made up of more than one attribute/field/column (2 marks)	2	
2	b	A primary key (1 mark) in another/related table (1 mark)	2	
3	а	Child (1 mark)	1	
3	b	Boolean (1 mark)	1	
3	С	 Less than any number of characters (<9) or Length Check Lookup Presence check Restricted choice or Limited List or exemplification of more than 2 departments 	1	
4		Number with a decimal/fractional part (2 marks)	2	
5	а	One to Many (1 mark)	1	
5	b	Many to Many (1 mark)	1	
6	а	Continuous/hourly/daily (1 mark)	1	Any one of these for 1 mark.
6	b	Visual (1 mark)	1	

Que	estion	Expected Answer/s	Max Mark	Additional Guidance
7		Detailed, Sampled, Aggregated (2 marks for list with no extras) (1 mark for at least 1 category mentioned in any list)	2	
8	а	Functionality, performance, usability, compatibility, data migration, reliability, resource requirements, portability, support (1 mark for any valid criteria, only these terms accepted)	2	These are the only acceptable terms.
8	b	A list of common questions (1 mark) which have answers provided (1 mark)	2	Idea of common or popular questions.
9	а	 Allows the police/government/ authorities (1 mark) to intercept any electronic communications (1 mark) Allows employer to monitor (1 mark) network usage in the workplace (1 mark) (1 mark each bullet, max 2 marks) 	2	
9	b	Freedom of Information Act (1 mark)	1	
10		 Splits project into tasks States projected start and end dates/times (1 mark each bullet)	2	Reference to tasks for 1 mark and mention of start and end for second mark.
11		To put the same/similar/duplicate information (1 mark) on multiple pages (1 mark)	2	Must have same/similar/duplicate for first mark. Put a page number on every page (1 mark) Put a page number/author's name/ version no, etc on every page (2 marks) Must have more than 1 item for 2 marks If no mention of multi-page or every page – 0 marks

Question	Expected Answer/s	s	Max		Additional Guid	dance
		Ma		rk		
12	UNF	1NF		2NF		3NF
	Employee number	Employee num	<u>ber</u>	<u>Em</u>	ployee number	Employee number
	Employee name	Employee nam	е	Em	ployee name	Employee name
	Telephone	Telephone		Tel	ephone	Telephone
	Date					
	Venue	<u>Date</u>		<u>Date</u>		<u>Date</u>
	Venue address	<u>Venue</u>		Venue*		<u>Venue*</u>
	Duties	Venue address	6	Dut	ties	Duties*
	Hours worked	Duties		Hours worked		Hours worked
	Hourly rate	Hours worked		Hourly rate		Employee number*
		Hourly rate		Employee number*		
		Employee num	ber*			<u>Venue</u>
				<u>Venue</u>		Venue address
				Venue address		
						<u>Duties</u>
						Hourly rate

There are 6 marks for the process and 11 marks for the final 3NF.

Process

1NF

1 mark for creating a second entity including Employee number

1 mark for including all 6 multi-valued attributes shown (ignore extra attributes)

2NF

1 mark for removing part of compound key (not employee number)

1 mark for leaving a copy of it only behind

3NF

1 mark for removing a non-key dependency provided a PK is not removed with it 1 mark for leaving a copy of an attribute behind.

Looking only at 3NF

(4 marks for attributes)

• 1 mark for each entity having the correct attributes (a misplaced non-key attribute would only lose 1 mark, ie would not lose the mark in both entities)

(4 marks for Primary keys)

- 2 marks for the compound Primary key
- 1 mark for Venue as PK
- 1 mark for Duties as PK

(3 marks for Foreign keys)

• 1 mark for each correct Foreign key (for the candidate's PKs)

(Do not penalise introduction of surrogate key unless replacing a compound key)

Que	estion	Expected Answer/s	Max Mark	Additional Guidance
13	а	Owner Apartment	Booking	Customer
		4 marks – award 2 marks each for two correct relationships 2 marks – a third correct relationship with no incorrect relationships shown	6	1 mark should be awarded for each relationship where the cardinality is wrong.
13	b	Owner ID from the Owner table (1 mark) No entity integrity (1 mark) Two matching rows/records/entity occurrences (1 mark) OR No suitable candidate/primary key (1 mark)	3	Must state from the owner table for the mark. If more than one surrogate key given – 0 marks
13	С	No (1 mark) There is a value/Owner ID (1 mark) 127 (1 mark) which does not exist/is missing (from other table) (1 mark)	4	No (1 mark) foreign key value missing (1 mark) for related (1 mark) primary key values (1 mark)

Question	Expected Answer/s	Max Mark	Additional Guidance
14	 Relevance or Relevant or Appropriateness good because everything in the article is about China Cats which is what the article is meant to be about good because local event in local newspaper Accuracy or Accurate poor because third song mentioned after saying two songs poor because Susie and Suzie confused Completeness or Complete poor no details of first song poor no names of other members poor as names of other acts missing others possible relating to the review but always poor or bad Reliability or Reliable or Objectivity poor as it is biased because Rikki is his son poor because 'outstanding' and 'excellent lyrics' require some evidence Timing or Timeliness poor as it was published five years ago good as it was published the day after the concert Level of detail (conciseness or concise) good as there is sufficient information for a review in a local newspaper good as there is no extra information in the review (eg all about China Cats) poor as it does give extra information eg other acts not as good mark for each main bullet mark for a comment that evaluates the characteristic and relates to the review (8 marks) 	8	Main bullet on its own would get (1 mark) Pairing a comment with the wrong term would only get (1 mark) Comments should clearly indicate an understanding of the term and relate to scenario Need to state "in the review" or give example (all about China Cats) for the mark "good as there is no extra information" is too generic therefore no marks

Que	Question		Expected Answer/s	Max Mark	Additional Guidance
15	а		Data Processing System, Management Information System, Decision Support System or Executive Information System (any 3 for 3 marks)	3	No abbreviations allowed.
15	b	-	spreading viruses (1 mark) virus protection software (1 mark) OR hacking (1 mark) password guidelines/strong password/code of conduct/encryption (1 mark)	2	Unauthorised access by an authorised user (1 mark) set access rights of network folders/files (1 mark) Note - Unauthorised access by an authorised user eg opening files from your own account that you are not supposed to
15	р	==	 1 server many clients/ workstations/nodes (1 mark) Server manages network resource (eg file storage, printing, email, etc) (1 mark) 	2	
15	b	iii	Archive • permanent copy • from a monthly full backup/ grandparent • not intended for recovery recovery • using most recent (full) backup • and all subsequent incremental backups backup storage • tape – (magnetic or DAT) • USB/external/portable HDD • stored in fire-proof safe • stored off-site 1 mark for each bullet – maximum of 2 bullets from each section.	5	Accept any other answer you deem to be reasonable relating to these methods. Maximum of two marks from archive and backup storage.

Que	Question		Expected Answer/s	Max Mark	Additional Guidance
16	а	i	COUNT (1 mark) (B2:B10) (1 mark)	2	COUNT(B2:B10) (2 marks) COUNT (1 mark) 2 nd mark only available with COUNT Accept (A2:A10) as a range
16	а	ii	LOOKUP (1 mark) (D4, (1 mark) A2:B10 (1 mark))	3	LOOKUP(D4,A2:B10) 3 marks LOOKUP(1 mark) plus 1 mark for D4 & 1 mark for range A2:B10 or A2:A10,B2:B10 (Last 2 marks are only available with LOOKUP – not on their own) Accept VLOOKUP instead of LOOKUP
16	b		 Word processing (print media) Dealing with a customer complaint Any other use in the context of a supermarket – although it would be hard to get this class of software in context Desktop publishing (print media) Creating a poster advertising a promotion Any other use in the context of a supermarket Presentation (online media) The manager needs to talk at a meeting with interested parties about the supermarket Any other use in the context of a supermarket – although it would be hard to get this class of software in context Web authoring (online media) To develop ecommerce (for the supermarket) To advertise the store and promotions Any other use in the context of a supermarket Project management To manage the development of a new store Any other use in the context of a supermarket 	3	Accept any use that would be reasonable but it must be related to how the supermarket could make use of this class of software.

Que	estion	Expected Answer/s	Max Mark	Additional Guidance
		 Personal information management For individual staff to use calendar to store shift patterns at the supermarket Any other use in the context of a supermarket – although it would be hard to get this class of software in context 		
		 1 mark for any bullet 2 marks for any use of this class in context 1 mark for a generic use 0 marks if the class is not mentioned (3 marks) 		
16	С	 Customers will have to queue less Staff need less skills therefore low self esteem Self scan – quicker checkout Socially isolate people because they cannot operate hardware or use online shopping Any other reasonable answer relating to staff or customers 2 marks for any bullet 	2	Accept other reasonable answers but economic or ethical answers should be given 0 marks .

Que	estic	on	Expected Answer/s	Max Mark	Additional Guidance
17	а		Integrates/combines two or more delivery media	2	Accept an example eg combination of CD ROM and WWW Insist on Web or WWW – not Internet) Eg CD ROM and Internet (1 mark)
17	b		 CD with pupil notes opens up links showing experiments (or any valid example) 	2	Other acceptable answers mentioning content for both media.
18			 video, clips of various courses change as position of golf ball moves or fly through of the hole (2 marks) audio, sound clips of ball landing or being hit (2 marks) graphic, photographs of clubs to choose at beginning of round (2 marks) animation, golf ball flying through the air (2 marks) 	6	Accept any reasonable examples related to the golf simulator but must mention multimedia element followed by example from golf simulator. No marks for generic answers that do not relate to golf simulator No marks for just mentioning the multimedia elements eg video, graphics, audio, animation.
19			Sketch of a word before and after kerning VAN VAN	2	Any letters acceptable as long as the effect of kerning is clearly evident.
20	а	i	 project brief – an outline of the required project requirement spec – (binding) contract 	2	
20	a	ii	 purpose – advertise fitness business or services content – info about services offered (fitness programmes and dietary & nutritional info) delivery media – web (not web page) budget (1 mark) timescale (1 mark) 	4	Only 1 mark for budget, timescale or hardware/software requirements as there are no examples of these in the paragraph. Max 2 marks for just stating items

Que	Question		Expected Answer/s	Max Mark	Additional Guidance
20	b		 multimedia designer (1 mark) specialises in overall design of website (1 mark) creates storyboard (layout, navigation) (1 mark) subject expert (1 mark) help Viktor with wording of the fitness services offered (1 mark) provide content (1 mark) media specialists (1 mark) may take photographs for website (1 mark) may take video for website (1 mark) creates the overall design (1 mark) creates the overall design (1 mark) integrates media elements into website (1 mark) administers Viktor's site/deals with support (1 mark) maintains website/makes any updates requested (1 mark) 1 mark for naming the personnel and 2 marks for their involvement in the creation of the website 	6	Need two different personnel and a description of their role for 6 marks.
20	С	-	Screen testing (1 mark) check matches design (1 mark) OR buttons and navigation work (1 mark) OR Integration testing (1 mark) check screens work together with elements (1 mark)	2	
20	С	ii	acceptance testing (1 mark) checks final product to see if it does what contract says (1 mark)	2	(Usability testing carried out by selected users, not normally the client)

Que	Question		Expected Answer/s	Max Mark	Additional Guidance
20	d	i	Qualitative – "steady" (1 mark) or "quite tired" (1 mark) Quantitative – "10 mins" (1 mark) "5 more" (1 mark) "5 mins" (1 mark)	2	
20	d	=	Cost = monetary cost. To access this fitness programme you may have to pay – this is the cost. (1 mark – accept it may be free) value = importance to user/ organisation. The information would be important to help you improve your fitness – this is the value. (1 mark)	2	Must make the point that cost is related to money while value is related to importance and must be related to scenario
21	а		 Navigation bar same on all pages Layout same (page divided consistently into three main parts/frames) Page heading right aligned Graphic for each page in left corner Same font type used Body text font different size on each page Heading not consistent (centred & right aligned) Images/graphics right aligned and left aligned avoid information overload (1 mark) adequate number (5) of tabs/ links to pages sufficient amount of text on each page good use of space between blocks of text sufficient amount of graphics very readable, lots of white space around text last page has too much text 	6	1 mark for naming the criteria and 2 marks for 2 bullets related to that criteria. Accept other reasonable evaluations related to the criteria as long as it refers to the web page.
21	b	i	 Form fill-in (1 mark) Simple data entry for subject (drop down list) Customer gives precisely the information that is required Auto complete Cookies – already filled in (remembers you) Any 1 bullet for 2 marks	3	Accept form fill

Que	Question		Expected Answer/s	Max Mark	Additional Guidance
21	b	ii	Direct manipulation (GUI)	1	Accept direct manipulation or GUI.
21	С		JPEG 1. default file format for digital still cameras 6. most suitable file type for web photos TIFF 4. most suitable file type for print media GIF 2. very restricted colour depth 3. may require some dithering 5. most suitable file type for web graphics	6	
21	d		They protect copyright (1 mark) as they are undetectable/invisible (1 mark)	2	

Que	estic	on	Expected Answer/s	Max Mark	Additional Guidance
22	а	i	 skin = pits (or small brown sunken pits) taste = bitter (or bitter under pit) 1 mark for each pair 	2	Variations on terms skin and taste are acceptable as are notation variations like (skin, pits, colour).
22	а	ii	Bitter pit Taste Rotten Brown rot Fine Scab Skin Brown scabs Brown scabs Brown rot Scab 1 mark for a diagram which distinguishes between 'branches' with options and 'leaves' with conclusions – dots or boxes above although other notations are acceptable. 1 mark for each correct branch and conclusion.	4	Left to right and top to bottom are both correct. The diagram may begin with 'root'. Do not penalise a tree showing further correct branches, for example: Root Skin has brown pits browning brown scabs Taste Taste Taste Bitter Rotten Fine Bitter pit Brown rot Scab

Que	estion	Expected Answer/s	Max Mark	Additional Guidance
22	b	IF problem IS bitter pit THEN solution IS none IF problem IS brown rot THEN solution IS remove and burn IF problem IS scab THEN solution IS spray with chemicals • 1 mark for use of IF, THEN and IS (or =) (don't penalise lower case) • 1 mark for use of solution variable • 1 mark for use of problem variable • 1 mark for each correct rule	6	accept variations like solution IS remove and burn IF problem IS brown rot accept variations on 'none' or 'remove and burn' or 'spray with chemicals' Note: A correct set of three rules like IF skin IS browning AND taste IS rotten THEN solution IS remove would get 5 marks – no mark for using problem
22	С	 Dissemination of expert knowledge on apple tree problems (gives non-expert the expertise) Preservation of expertise dealing with apple tree problems Combine the expertise of several apple tree experts 1 mark each for any bullet – generic point acceptable 	2	Apple Tree info does not require frequent/regular updates
22	d	 High development costs Lack of common sense 1 mark for any bullet – generic point acceptable	1	
22	е	 Obtaining the knowledge from the human expert (or texts) Representing the knowledge in a suitable form Such as a KRL (Knowledge representation language) 1 mark each for any bullet – generic point acceptable (Max 3 marks) 	3	

Que	estion	Expected Answer/s	Max Mark	Additional Guidance
23	а	P - customer asks for a sausage roll Q - sausage roll is not hot enough/sausage roll is hot enough R - reheat the sausage roll/do NOT reheat the sausage roll 1 mark for any letters, numbers or symbols - allow double letters or a word P^Q → ¬R (depending on choices made above: P^¬Q → ¬R or P^¬Q → R can gain full credit) 1 mark for correct use of ^ for 'and' 1 mark for correct use of ¬ for 'not' (statements that do not allow the use of ¬ do not get this mark) 1 mark for correct use of →	4	
23	b	fresh_cream(chocolate_eclair) 1 mark fresh_cream(finger_doughnut) 1 mark Using the same predicate - fresh_cream or ? for both ∀ P:fresh_cream(P) → refrigerated_cabinet(P) (3 marks) 1 mark for using a variable with a capital letter 1 mark for use of 'for all' notation and same predicate 1 mark for correct statement – accept variations like display(refrigerated_cabinet,P)	5	Accept contains(fresh_cream, chocolate_eclair) or cream(éclair) or any sensible variation. Do not penalise omission of underscore Check carefully for use of capitals – do not accept capitals other than in variables

Que	estic	n	Expected Answer/s	Max Mark	Additional Guidance
24	а		1, 2 and 5	3	
			1 mark for 1 1 mark for 2 and not 3 1 mark for 5 and not 4		
24	b	i	The rule with the most conditions is fired. 'Most conditions' gets 1 mark	2	
			'Most conditions' gets 1 mark		
24	b	ii	 5 W is added to working memory 1 mark for each bullet	3	(If 5 is not included in (a) then there is no answer – accept 5 or unknown or equivalent NOT a blank. If (a) has only one rule – do not accept it as the answer here unless it is 5.)
24	С		 To form the conflict set To find the rules which match the conditions in working memory To find all the rules which can be fired 2 marks for any bullet	2	Award 1 mark for the idea of finding rules (plural) but <u>not</u> for the idea of deciding which rule is next.
25	а		 Qualitative – '(move) around much' or 'close to eyes' Quantitative – (CF) 50% or 80% or 75% 1 mark for each bullet 	2	accept slightly longer quotes but they cannot include any percentages
25	b		 Clear conclusion shown (or conclusion shown missing certainty factor) Justification shown 1 mark for each bullet 	2	no extra credit should be given for comments about the appearance
25	C		 CF = CF(conc) x min (CF(cond)) CF = 0.9 x 0.5 CF = 0.45 (or 45%) 1 mark for 0.9 x 0.5 or 90% x 50% 2 marks for 0.45 or 45% 	2	

Que	estion	Expected Answer/s	Max Mark	Additional Guidance
25	d	To use this expert system you may have to pay – this is the cost. (1 mark – accept it may be free) The advice would be important to help you cure the tortoise – this is the value. (1 mark)	2	Must make the point that cost is related to money while value is related to importance and must be related to scenario
26	а	A DSS allows managers to make their own decisions from the information given whereas an expert system provides its decision/conclusion 2 marks 1 mark for mentioning knowledge base or inference engine as a feature of an expert system but not a DSS	2	
26	b	Domain – minerals or geology (1 mark) used fuzzy logic/fuzzy sets Bayes theorem subjective probability theory (2 marks) or dealt with incomplete evidence using probability production rules semantic networks backward chaining (1 mark for each bullet)	3	

Que	estic	on	Expected Answer/s	Max Mark	Additional Guidance
27	а	İ	 W = br does not leave a blank line between Lifeguard and Leisure Assistant X = p causes a blank line to be inserted after Personal Trainer 1 mark for each bullet (max 4 marks) 	4	Do not double penalise e.g. W= does not leave a blank line OR W= causes a blank line to be inserted Each answer merits 1 mark
27	а	ii	 Y = div affects a block of code eg 2 lines (between Pool Attendant and Personal Trainer Z = span affects only part of a line ie ANY 1 mark for each bullet (max 4 marks) 	4	Do not double penalise as above
27	b	(i) (ii) (iii)	<title>Northbank Supply Agency</title> (1 mark) (1 mark) <body> (1 mark)</body>	3	All 3 tags in any order (1 mark) Any 2 in correct order (1 mark)
27	С		table border (1 mark) 3 rows (1 mark) 2 columns (1 mark) DUTY centred + no other cells centred (1 mark)	4	Table must consist of more than one cell Must draw row borders

Que	estic	n	Expected Answer/s	Max Mark	Additional Guidance
28	а		I: Class A 126-128 networks (1 mark) II: Class B range of first octet 128 – 191 (1 mark) III: Class C range of first octet 192 – 233 (1 mark) IV: Class C 254-256 hosts (1 mark)	4	
28	b	-	 TCP Responsible for host to host communication Reassembles packets into the correct order Users routers Uses routing tables Responsible for communication between networks 	5	
28	b	ii	 DNS (1 mark) – resolves URL to IP address (1 mark) TELNET (1 mark) – allows remote access (over network) (1 mark) POP (1 mark) deals with receiving messages (1 mark) SMTP (1 mark) deals with sending messages (1 mark) FTP (1 mark) allows documents/files to be uploaded downloaded to/from a server (any 2 bullets for 1 mark) HTTP (1 mark) download web pages (1 mark) 	4	
29	а		cost=monetary cost – information is free – Hayley "found" this site OR not free as had to pay for Internet connection (1 mark) value = importance to user/ organisation – biggest selection/ fastest download/cheapest prices may be of value to Hayley (1 mark)	2	Must make the point that cost is related to money while value is related to importance and must be related to scenario
29	b		 http(://) - protocol (www.)toptrax4u.co.uk - domain name intro.html - file name (any 2 for 2 marks per pair)	4	Accept www.toptrax4u.co.uk as the domain name.

Que	estic	on	Expected Answer/s	Max Mark	Additional Guidance
29	С		 Indicate little/no credibility – (1 mark) No author's name therefore not legitimate/genuine website No company details therefore not legitimate/genuine website Fastest/cheapest/biggest – unsubstantiated claims Millions of tracks – is this possible?? Enter credit card details before any indication of what tracks are available (any 1 bullet for 2 marks) 	3	Accept any reasonable point as long as it relates to the lack of credibility on this website but has to have an example with a reason for the 2 marks.
29	d		Qualitative – biggest/fastest/ cheapest/latest (1 mark) Quantitative – 1000000s of tracks/ 1000s of artists (1 mark)	2	For qualitative – accept millions of tracks and thousands of artists
29	е		Page structure (1 mark) • well laid out, • three areas to log in (confusing) Uniformity (1 mark) • two different fonts, Download efficiency (1 mark) • small amount of text • page should download quickly (any bullet for each characteristic 1 mark)	4	Accept any other relevant comment relating to the characteristics as long as it refers to the web page.
30	а	i	responsible for standards (1 mark) on the WWW (1 mark)	2	
30	а	ii	registry of domain names (1 mark) in the UK (1 mark)	2	

Que	Question		Expected Answer/s	Max Mark	Additional Guidance
30	b	-	 student lecture notes publishing academic papers tutorials further exercises course notes school revision notes (1 mark for any bullet)	1	Accept any other correct use
30	b	ii	advertisinge-commerce(1 mark for any bullet)	1	Accept any other correct use
30	b	≡	social networkingphoto gallery(1 mark for any bullet)	1	Accept any other correct use

[END OF MARKING INSTRUCTIONS]