National Qualifications

X816/75/01 Computing Science

Marking Instructions

Please note that these marking instructions have not been standardised based on candidate responses. You may therefore need to agree within your centre how to consistently mark an item if a candidate response is not covered by the marking instructions.

General marking principles for National 5 Computing Science

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 detailed marking instructions, which identify the key features required in candidate responses.

(a) Marks for each candidate response must **always** be assigned in line with these general marking principles and the detailed marking instructions for this assessment.

(b) Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted.

(c) If a candidate response is not 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.

(d) Award marks regardless of spelling, as long as the meaning is unambiguous. This applies to all responses, including code. Award marks as per the detailed marking instructions, regardless of syntax errors, if the intention of the coding is clear.

(e) For questions where candidates are asked to design or write code, a sample response is shown in the detailed marking instructions. This will not be the only valid response. You must use the detailed marking instructions and additional guidance to ensure that you consider alternative approaches and nuances of different programming languages. If in doubt you should refer to your Team Leader.

(f) A correct response can be negated if the candidate includes an extra, incorrect response. For example, if the candidate is asked for two answers for two marks and the candidate gives three, one of which is incorrect, they are awarded one mark.

(g) If a candidate scores through a response and makes a further attempt, you should only mark the further attempt. If no further attempt is made and the original is legible, you should mark the original response.

(h) Where an incorrect response is carried forward and used correctly in a following part of the question, you should give credit for subsequent responses that are correct with regard to the original error. Candidates should not be penalised more than once for the same error.

(i) Only award marks for a valid response to the question asked. Where candidates are asked to:

- **Identify**, **name**, **give** or **state,** they need only name or present in brief form.
- **describe**, they must provide a statement or structure of characteristics and/or features. This will be more than an outline or a list. It may refer to, for example, a concept, process, experiment, situation, or facts, in the context of and appropriate to the question. Candidates must make the same number of factual/appropriate points as there are marks available in the question.
- **explain**, they must relate cause and/or effect and/or make relationships between things clear, in the context of the question or a specific area within the question.
- **write code,** they must write recognisable code, not prose nor a diagram.
- **design,** they must use a design technique appropriate to the problem. Award marks as per the detailed marking instructions, regardless of errors in the exemplification of the technique, if the intention of the design is clear.

(j) In the detailed marking instructions, if a word is underlined then it is essential; if a word is bracketed() then it is not essential. Words separated by / are alternatives

Marking instructions for each question

Section 1 — Software design and development and computer systems

Question			Expected response	Max mark	Additional guidance
1.			Boolean	**1**	
2.			One mark each for • Syntax error — SD (should be SEND) • Logic — The name is displayed before the user enters it	**2**	For the logic error accept, Line 6 should come after line 4.
3.			226	**1**	
4.			9	**1**	
5.			Previous stages in development are often revisited	**1**	Suitable examples are acceptable for the mark
6.			Any one from • to try to prevent unauthorised access to content/reading or understanding of email • designed to scrambled data to prevent access from individuals who do not have permission • scrambled to make information unreadable until decrypted	**1**	Do not accept answers that state encryption prevents access to data. Data can still be intercepted, just not read or understood.
7.	(a)		One mark each for • conditional loop • loop condition • input inside loop • error message.	**4**	The loop conditional may change depending on where the candidate uses a pre or post conditional loop. For example: • until num = 1 or num = 5 • while num ≠ 1 and num ≠ 5 Where the candidate's design indicates a pre-conditional (while) loop a second input should be shown inside the loop
	(b)		Any numerical value that is neither 1 or 5.	**1**	
8.			Any one from • settings on monitors • power down settings • leaving computers on standby	**1**	
9.	(a)		ellipse	**1**	
	(b)		Any one from • x and y coordinates • x coordinate • y coordinate	**1**	Accept other appropriate answers such as: • transparency • opacity • laye

Question			Expected response	Max mark	Additional guidance
10.	(a)		User interface design showing the following inputs for one mark each • selection of film • the numbers 1 to 5 • food - yes/no • option to submit answers/go to next customer	**4**	None of the survey answers should be typed. Inputs could be represented as images, drop-down lists, buttons etc Award 0 marks if candidate has designed a program (flow chart, structure diagram, pseudocode) rather than a user interface.
	(b)	(i)	Any one from • total customers • score for film • film A total • film B total	**1**	
		(ii)	are there any more customers?	**1**	
		(iii)	was film B selected?	**1**	Accept appropriate description of why the second decision regarding film B is not required.
	(c)		One mark each for • A count of the customers who saw each film is required. • The totals for each film can be divided by the above	**2**	Answers could be marked on the flowchart provided in the question
11.	(a)		Any three from • select a stored word • compare stored word to users input • increment the total if user is correct. • locates matching sound file • loads matching sound file	**3**	
	(b)	(i)	One mark each for • Data structure - array • Data type - string	**2**	
		(ii)	One mark for either • RAM • Register	**1**	
		(iii)	Arithmetic Logic Unit	**1**	ALU
	(c)	(i)	NOT	**1**	
		(ii)	One mark each for • random function • correct values created (0 to 19)	**2**	

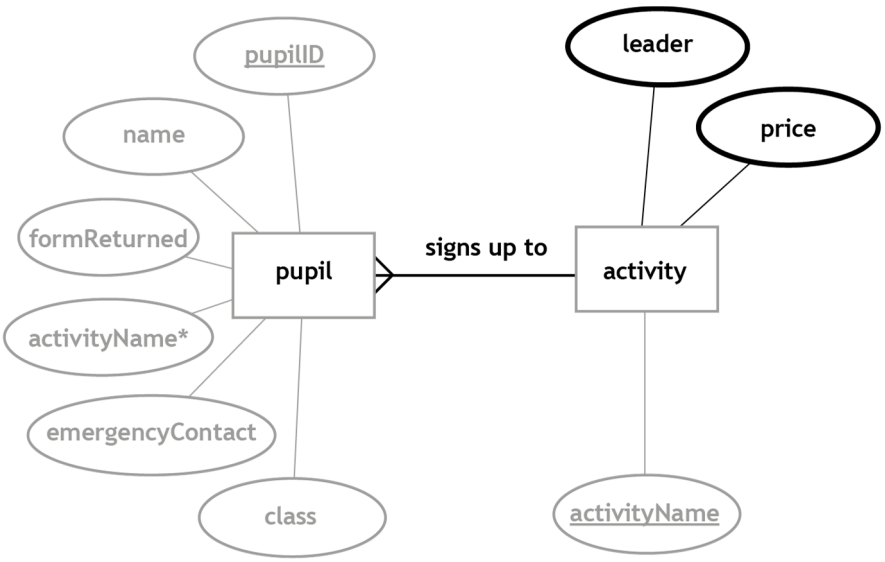
<table>
<tr><th colspan="3">Question</th><th>Expected response</th><th>Max mark</th><th>Additional guidance</th></tr>
<tr><td>11.</td><td>(c)</td><td>(iii)</td><td>The same word could be randomly selected more than once</td><td>1</td><td>It is unlikely that the 20 random numbers generated will generate each of the 20 values once.</td></tr>
<tr><td></td><td>(d)</td><td></td><td>48 (bits)</td><td>1</td><td>Accept 6*8</td></tr>
<tr><td>12.</td><td>(a)</td><td>(i)</td><td>Conditional</td><td>1</td><td></td></tr>
<tr><td></td><td></td><td>(ii)</td><td>Running total (within loop)</td><td>1</td><td></td></tr>
<tr><td></td><td></td><td>(iii)</td><td>One mark each for
• assignment
• is ticketNumber within range for today?
• add one to number of passengers</td><td>3</td><td><table><tr><th>Example from design</th><th>Matching construct</th></tr><tr><td>Set totalPassengers to 0.00</td><td>assignment</td></tr><tr><td>is ticketNumber within range for today?</td><td>Conditional statement</td></tr><tr><td>add one to number of passengers</td><td>Arithmetic operation</td></tr></table></td></tr>
<tr><td></td><td>(b)</td><td></td><td>One mark each for
• Data type - Integer
• Reason – passenger/people are whole numbers</td><td>2</td><td></td></tr>
<tr><td></td><td>(c)</td><td></td><td>One mark each for
• a suitable condition for one ticket
• use of ‘else’ for other type of ticket
• calculate Running Total</td><td>3</td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="3">Sample answer:

<pre>IF ticketNumber <= (lower + 49) THEN
      SET totalValue TO totalValue + 5
ELSE
      SET totalValue TO totalValue + 10
END IF</pre></td></tr>
<tr><td></td><td>(d)</td><td></td><td>One mark each for
• (grid of) pixels
• each pixel (colour) stored as a binary value</td><td>2</td><td></td></tr>
</table>

Question			Expected response	Max mark	Additional guidance
13.	(a)		One mark each for reference to • Add 1 to/increment count variable • if count = 20 • message displayed (to farmer)	**3**	
	(b)	(i)	2	**1**	
		(ii)	The count must be restarted for the next box of mushrooms.	**1**	The count variable is reset back to 0 to start counting the next box of mushrooms.
	(c)		One mark each for • line 6 edited to input whiteness • the condition (on line 7) should be changed to whiteness >= 9 and whiteness <=10	**2**	Note that the condition whiteness = 9 or whiteness =10 is not appropriate in this case as whiteness is a real value.

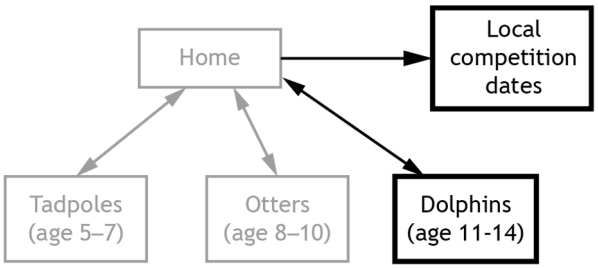
Section 2 — Database design and development

Question			Expected response	Max mark	Additional guidance
14.	(a)		One mark each for • restaurants which serve either Italian or French food will be listed • restaurants with a rating of 2,3 or 4 will be listed • the displayed restaurants will be sorted by average price from lowest to highest	**3**	
	(b)		UPDATE	**1**	
15.			Any one from • Attribute Type • Attribute Size • Validation • Keys • Sample Data	**1**	Accept formatting

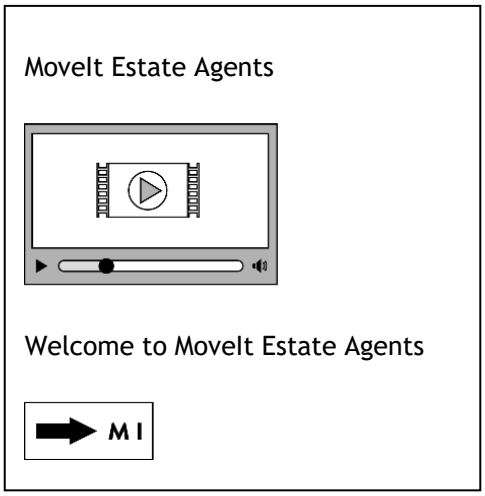
Question			Expected response	Max mark	Additional guidance
16.	(a)		Any two from • the database should store the name, class and emergency contact of each pupil in the school • the database should store the activity name, price and leader for each activity • the database should store which pupils have returned forms • the database should output lists of pupils who are signed up for each activity • the database should output the pupils who have not signed up for an activity	**2**	Answers will probably be worded differently. Answers should relate to the data being stored and the processes and output from that data as described in the scenario.
	(b)		One mark each for • both entities completed (Pupil, Activity) • activity attributes (leader, price) • relationship (M:1) • cardinality  	**4**	The relationship may be represented using any correct notation. For example M:N or ∞:1 Cardinality may be described in many different ways. Accept any appropriate answer.
	(c)		formReturned	**1**	
	(d)	(i)	One mark each for • use of restricted choice • limited to the class names	**2**	
		(ii)	price	**1**	

Question			Expected response	Max mark	Additional guidance
17.	(a)		Correct fields (1 mark) o Model, seats, manager Both tables (1 mark) o Showroom, Car Criteria identified (2 marks) o Make = Jaguar o City = Glasgow	**4**	Second criteria could also be written as: showroomID = "Gla1" AND showroomID = "Gla1"
	(b)		One mark each for • `SELECT make, model, salePrice` • `FROM Car` • `WHERE seats = 2` • `ORDER BY make ASC, model ASC;`	**4**	As SQL defaults to sorting by ascending order, both ASCs could be omitted.
	(c)		One mark each for • Extra column displayed • Output does not include the Dundee showroom	**2**	

Section 3 - Web design and development

Question			Expected response	Max mark	Additional guidance
18.	(a)		Any one from The bakery can: • see how the site will look before it is created • request alterations to the appearance before pages are created • provide feedback to developers	**1**	Answers must focus on benefits to the client (bakery) and not the developer.
	(b)		Any one from • easy to learn how to use/navigate pages • user knows they are still on the same site across different pages • different sections of the pages can be identified by their appearance	**1**	
19.			One mark each for • new Dolphins page • double headed arrow from Home to Dolphins page • external page with single headed arrow from home page **Sample answer**  	**3**	

Question			Expected response	Max mark	Additional guidance
20.	(a)	(i)	One mark each for • suitable graphic file format for web photographs For example: – jpg – png • matching explanation For example: – high colour depth – small file size – compressed file	**2**	Do not accept GIF as not suitable for photographs
		(ii)	Any one from • staff/centre own the photo • staff/centre own copyright.	**1**	Do not accept 'staff took the photo' as this is in the question.
	(b)		One mark each for • correct text (Back to the home page) • 'click here' underlined.	**2**	Correct answer: Back to home page <u>click here</u>
	(c)	(i)	Any one from • web page does not exist • the url/address in the hyperlink code could be incorrect	**1**	Do not accept 'page is not found'
		(ii)	Any two from • test consistency across pages • test pages match user-interface design • test media (text, graphics, video, sound) plays/displays correctly	**2**	Do not accept 'test (hyper)links or navigation' as it is stated in the question. Accept answers that show knowledge beyond National 5 level: • test interactive features for example (JavaScript) • test form input • test communication with database/server

Question			Expected response	Max mark	Additional guidance
21.	(a)		One mark each for • heading and paragraph on left of page above and below video • heading and paragraph text roughly the same size • logo image below paragraph drawn about half the width of the video.	**3**	Be lenient regarding: • the matching text size of the heading and paragraph • the size of the logo in comparison to the video.
			Sample answer:  		
	(b)	(i)	One mark for each bullet included in single CSS rule. • use of class name in paragraph element (.contactInfo) of supplied code • text centre aligned • font size 12	**3**	Example answer `.contactInfo { text-align: center; font-size:12pt }`
		(ii)	Relative	**1**	
	(c)	(i)	JavaScript	**1**	
		(ii)	onMouseOver	**1**	Mouse over
	(d)	(i)	faster page load	**1**	Do not allow 'less storage required' as this would be an advantage for the developer/client not the end-user.
		(ii)	One mark each for • Advantage - better sound quality • Disadvantage - larger file size	**2**	

[END OF MARKING INSTRUCTIONS]