Part One: General marking principles for National 5 Computing Science

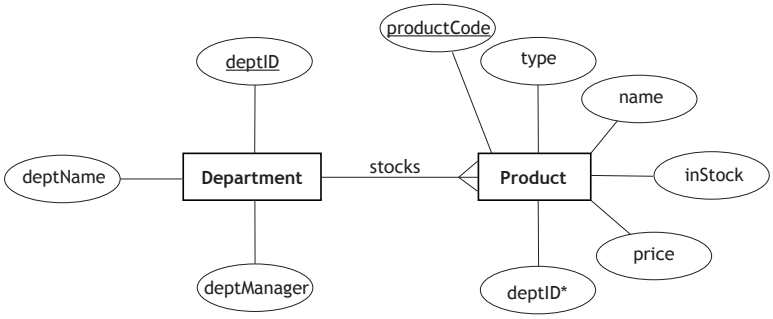
Information is provided by SQA to help you to understand the general principles you should apply when marking candidate responses to questions in this Paper. This can be found on SQA's website and should be read in conjunction with the specific marking instructions for each question provided in this document. The specific marking instructions are written by P&N to assist in determining the "minimal acceptable answer" rather than listing every possible correct and incorrect answer.

Part Two: Specific marking instructions for each question

Question			Expected response	Max mark	Additional notes
1.			01101111	**1**	[CS]
2.	(a)		• year, ascending • colour, descending	**2**	[DDD]
	(b)		presence check/length check	**1**	[DDD]
3.			• fixed • the loop will go around 20 times as there are 20 pupils in the class	**2**	[SDD]
4.	(a)		Binary is represented by 1s & 0s/computer's own language	**1**	[CS]
	(b)		Any **two** valid advantages, **one** for each e.g.: Interpreter • don't have to leave editing environment • position of errors in code • identified during test run Compiler • compiled code runs faster • code is only translated once • compiled code cannot be edited • compiled code requires less memory to execute	**2**	[SDD]
5.			encryption	**1**	[CS]
6.			(animated) png or gif	**1**	[CS]
7.			Any valid, e.g. in Python `print(round(average,2))` • `round` • `(average,2)`	**2**	[SDD]

Question			Expected response	Max mark	Additional notes
8.	(a)		Any **one** valid, e.g.: • edit at pixel level • photorealistic images can be created	**1**	[CS]
	(b)	(i)	Any **one** valid from: • rectangle • ellipse • line • polygon	**1**	[CS] Do not accept other shapes.
		(ii)	Any valid explanation and example for **1 mark** each, e.g. Explanation • an attribute is how an object is made up Example • co-ordinates (Start X Start Y) • fill colour • line colour	**2**	[CS]
9.	(a)		Javascript	**1**	[WDD]
	(b)		`onmouseout`	**1**	[WDD] Do not accept `onmouseover`.
	(c)		Copyright, Designs and Patents Act	**1**	[WDD]
10.			• white space • internal commentary	**2**	[SDD] Do not award marks for meaningful identifiers (variable names) — already present in the program Accept indentation only with additional comment e.g. more obvious/larger indentation
11.			Any valid explanation, e.g. • The firewall protects a network/computer from Internet attacks • by blocking data sent from particular IPs or server ports or • A firewall monitors and controls incoming and outgoing network traffic • based on the security rules that have been set up. This happens between a trusted network and the Internet.	**2**	[CS]
12.			Running total (in a loop)	**1**	[SDD]
				25	

<table>
<tr><th colspan="3">Question</th><th>Expected response</th><th>Max mark</th><th>Additional notes</th></tr>
<tr><td>13.</td><td>(a)</td><td></td><td>• A: length = 11 or len([TelNo])=11
• B: restricted choice (Adult, OAP, Student, Under16)
• C: Boolean
• D: FK or Foreign Key (accept either)</td><td>4</td><td>[DDD]
A: do NOT accept 11 on its own</td></tr>
<tr><td></td><td>(b)</td><td></td><td><table><tr><td>Fields</td><td>firstName, surname, email, telNo
[1 mark]</td></tr><tr><td>Table(s)</td><td>Visitor [1 mark]</td></tr><tr><td>Search Criteria</td><td>country = “Scotland” [1 mark]
ticketType= “Adult” [1 mark]</td></tr></table></td><td>4</td><td>[DDD]</td></tr>
<tr><td></td><td>(c)</td><td>(i)</td><td>• there are two matches for the SQL query
• the ticketType is being set to OAP instead of Adult</td><td>2</td><td>[DDD]</td></tr>
<tr><td></td><td></td><td>(ii)</td><td><pre>UPDATE Visitor
SET ticketType = “Adult”
WHERE visitorNo = 3;</pre>• <code>SET TicketType = “Adult”</code>
• <code>WHERE visitorNo = 3</code></td><td>2</td><td>[DDD]</td></tr>
<tr><td></td><td>(d)</td><td></td><td><pre>DELETE FROM Guide
WHERE guideNo = 3;</pre>• <code>DELETE FROM Guide</code>
• <code>WHERE guideNo = 3</code></td><td>2</td><td>[DDD]</td></tr>
<tr><td></td><td>(e)</td><td></td><td>1 mark each for: data line 1; line 2; in the correct order
firstName surname country
Carlos Puyot Spain
Gerd Muller Germany</td><td>3</td><td>[DDD]</td></tr>
</table>

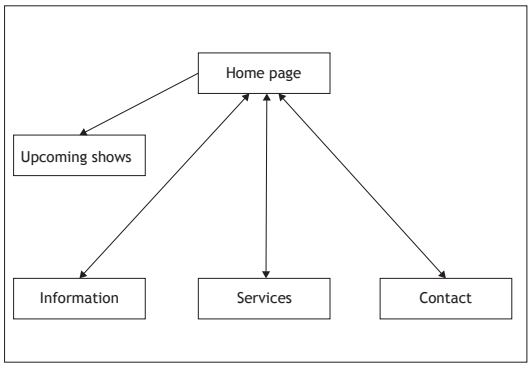
Question			Expected response	Max mark	Additional notes
14.	(a)		 • relationship one (Department) -to- many (Product) • name of relationship: stocks (or similar) • identify PK (deptID) in Department and FK (deptID*) in Product Table • missing attribute (inStock) added to Product entity	**4**	[DDD]
	(b)		to uniquely identify each row in a table	**1**	[DDD]
	(c)		Currency **or** Number	**1**	[DDD]
	(d)		Presence Check **or** Range check	**1**	[DDD]
	(e)		the SQL statement could be run and the output compared to what was expected	**1**	[DDD]
	(f)		Any valid explanation, e.g.: • a database has referential integrity if the table relationships are consistent • a FK field must agree with the PK that is referenced by the FK. or • an FK field must agree with the referenced PK • if this does not happen then the data in the database would be inconsistent/compromised/erroneous	**2**	[DDD]
	(g)		Any **one** valid for **1 mark** each, e.g.: • settings on monitors e.g. reduce brightness • power down settings/switch off when not in use • leaving computers on standby sleep mode • turn off wifi when not required	**1**	[CS]

<table>
<tr><th colspan="3">Question</th><th>Expected response</th><th>Max mark</th><th>Additional notes</th></tr>
<tr><td>15.</td><td>(a)</td><td></td><td>Any valid design technique used – flowchart, structure diagram or pseudocode. E.g. for pseudocode:
<pre>SET total TO (adult * 20) + (child * 10)
IF adult > 3 AND child > 3:
  SET total TO total – 10</pre>
1 mark each for:
• basic calculation (adults * 20 + children * 10)
• basic calculation stored
• adults > 3
• AND
• children > 3
• subtract £10 from total</td><td>6</td><td>[SDD]</td></tr>
<tr><td></td><td>(b)</td><td>(i)</td><td>• line 30
• line 33</td><td>2</td><td>[SDD]</td></tr>
<tr><td></td><td></td><td>(ii)</td><td>• 1: “You are eligible for a 10% discount.”
• 2: “You are eligible for a 20% discount.”</td><td>2</td><td>[SDD]</td></tr>
<tr><td></td><td></td><td>(iii)</td><td>• 1: logic error
• 2: line 30
• 3: <code>IF totalcost < 70 THEN</code>
[<code>total</code> should be <code>totalcost</code>]</td><td>3</td><td>[SDD]</td></tr>
<tr><td></td><td></td><td>(iv)</td><td>• float
• dealing with money you should use float
• when applying the discount might result in not whole pounds</td><td>3</td><td>[SDD]</td></tr>
<tr><td></td><td>(c)</td><td></td><td><table><tr><th>Type of Test</th><th>Input</th><th>Expected Output</th></tr><tr><td>Exceptional</td><td>-1</td><td>Program asks user to enter valid input</td></tr><tr><td>Extreme</td><td>0 or 1</td><td>Program continues</td></tr></table></td><td>3</td><td>[SDD]</td></tr>
<tr><td></td><td>(d)</td><td></td><td>integer</td><td>1</td><td>[SDD]</td></tr>
</table>

Question			Expected response	Max mark	Additional notes
16.	(a)		Any suitable button or text-based interface with options to: add new races; search previous races; search for a runner; search for a venue. • 4 buttons/options correct — 3 marks • 3 buttons/options — 2 marks • 2 buttons/options — 1 mark	**3**	[SDD]
	(b)	(i)	• stores multiple values • each value will not be a whole number	**2**	[SDD]

		(ii)	Any suitable solution, e.g.:
			`For counter in range(0,8):`
			`  totalTime = totalTime + currentRaceTime[counter]`
			`  averageTime = totalTime/8`
			`  print (round(averageTime,2))`
			• loop 8 times
			• add current time to total time
			• calculate average
			• display average time to 2 decimal places
				4	[SDD]

	(c)		Arithmetic Logic Unit (ALU)	**1**	[CS]
	(d)	(i)	Line 55: `UNTIL runnerTime > 0·0` • `UNTIL` • `runnerTime > 0·0`	**2**	[SDD] Do not accept >= 0·0
		(ii)	conditional loop	**1**	[SDD]
	(e)		• Mantissa: 1511 • Exponent: 2	**2**	[CS]

Question			Expected response	Max mark	Additional notes
17.	(a)		 Appropriate with structure with: • home page and three sub-pages • double arrow links to three subpages • single arrow link pointing to an external page from home page	**3**	[WDD]
	(b)		• supports transparency • supports animation	**2**	[WDD]
	(c)		 <a> bullet point links <p> Please select... <h1> Simon's Dog Groomers <h3> Links • 4 correct arrows – 3 marks • 3 correct arrows – 2 marks • 2 correct arrows – 1 mark	**3**	[WDD]
	(d)	(i)	internal	**1**	[WDD]
		(ii)	absolute	**1**	[WDD]

Question			Expected response	Max mark	Additional notes

17.	(e)		`<ul>`
			`  <li> Information about our company</li>`
			`  <li> Services we provide</li>`
			`  <li> Contact Us and Opening Times</li>`
			`  <li> Information about up coming dog shows (www.scottishdogshows.co.uk)<li>`
			`</ul>`
			• `<ul></ul>`
			• `<li>`, all correct
			• `</li>`, all correct
				3	[WDD]

	(f)	(i)	Any **two** valid for **1 mark** each, e.g.: • faster to load • can be used across multiple pages/allows for consistency • any changes made effect the whole web site	**2**	[WDD]
		(ii)	• an `id` has been used • to style one section of the page light blue.	**2**	[WDD]

		(iii)	`h2{`
			` color: black;`
			` font-size: 16pt;`
			` font-family: Times;`
			`}`
			• `h2{}`
			• `color: black;`
			• `font-size: 16pt; font-family: Times;`
				3	[WDD]

	(g)		Any **two** valid for **1 mark** each, e.g. from: • matches design (wireframe) • links/navigation works • text/images display correctly • video/audio plays correctly • animations display correctly • scripts execute correctly • search facility works	**2**	[WDD]
				85	

Suggested "cut-off" scores for estimates of exam performance

(Total mark: 110 [S1: 25; S2: 85])

A	Band 2 (>= *70%*) >= 77	Band 1 (>= *85%*) >= 94
B	Band 4 (>= *60%*) >= 66	Band 3 (>= *65%*) >= 72
C	Band 6 (>= *50%*) >= 55	Band 5 (>= *55%*) >= 61

D	Band 7 (>= *40%*) >= 44	
No award	*Band 8 (<40%)*	*Band 9 (<30%)*

Please note:

The suggested cut-off scores above are for guidance only and departments are obviously free to apply their own criteria as appropriate to their specific candidature. For example, where the prelim is not presented at one sitting centres may wish to consider raising cut-off scores by an additional 2-5% for the aggregate mark.

[END OF P&N NATIONAL 5 COMPUTING SCIENCE 2020/2021 MARKING KEY]