National Qualifications 2015

2015 Computing Science

National 5

Finalised Marking Instructions

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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.

(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) Marking should always be positive. This means that, for each candidate response, marks are accumulated for the demonstration of relevant skills, knowledge and understanding: they are not deducted from a maximum on the basis of errors or omissions.

(c) 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.

Detailed Marking Instructions for each question

Question			Expected Answer(s)	Max Mark	Additional Guidance
1.			1 0 1 0 0 1 0 0	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
2.			Integer	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
3.			age >= 5 AND age <=18 2 conditions correct – 1 mark AND – 1 mark	**2**	As age is an integer accept: age > 4 AND age < 19 As answers may be pseudocode also accept: age >= 5 AND <= 18

Question			Expected Answer(s)	Max Mark	Additional Guidance
4.			Shortcuts/favourites/bookmarks/ refresh/stop button/home button/search box/address bar/tabbed browsing Change user settings (font size etc.) Change default homepage Customising toolbars	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
5.			Normal >=1 and <=80 (1 mark) Exceptional <1 or >80 (1 mark) Any example of text	**2**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
6.			Suitable reason why the links are inconsistent.	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
7.			The user will be required to enter a password. (1 mark) Until the correct password is entered. (1 mark)	**2**	The user will be required to enter a password (1 mark) The code will continually loop as an integer is required and the password is a string. (1 mark)

Question			Expected Answer(s)	Max Mark	Additional Guidance
8.			Any one valid • Upload/transfer faster • More files can be stored	**1**	Note, a description of compression on its own is not enough.

Question			Expected Answer(s)	Max Mark	Additional Guidance
9.			Any two of: Emphasise keywords Internal commentary Indentation White space Meaningful identifiers Modular code Use of parameter passing	**2**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
10.			String	**1**	Not 'text' as context of question is programming.

Question			Expected Answer(s)	Max Mark	Additional Guidance
11.			Easier to backup files (1) Easier to implement different levels of access (security) (1) Centralised storage (1) Users have usernames and passwords (1)	**2**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
12.			Communications (Act)	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
13.			Description of sensitive information (PIN, passwords etc) being logged.	**1**	No mark for 'stores/logs key presses' on its own.

Question			Expected Answer(s)	Max Mark	Additional Guidance
14.			Any one valid answer for wired • It's more secure/security • It's more reliable/reliability • Upload/download speed faster	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
15.			• Matches user interface (correct layout) • Spelling/Grammar • Graphic quality • Colour scheme useable • Graphics load correctly • Works on multiple browsers	**1**	

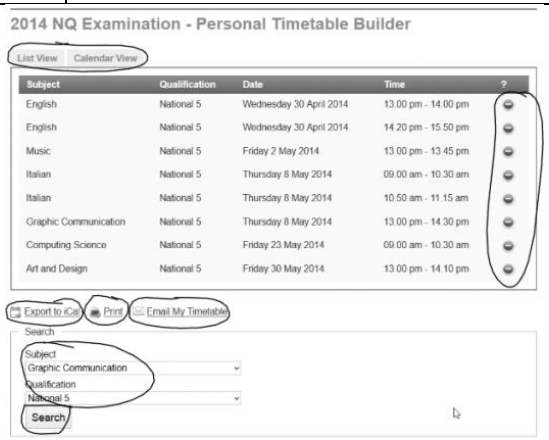
Question			Expected Answer(s)	Max Mark	Additional Guidance
16.	(a)		Any two suitable features relating to user interface. • Interactive elements such as buttons all same shape, size, colour • Appropriate navigation • Consistent/appropriate layout of elements • Consistent colour theme • Accessibility Options	**2**	Also accept a description of each bullet.
	(b)		The web page code/HTML/CSS determines the appearance of the web page not the browser.	**1**	Answer should relate to appearance of web page not content.
	(c)	(i)	Answer should name any standard file format for graphics. • gif • bmp • png	**1**	Not 'jpg' as it is given in the question. Any other valid answer.
		(ii)	Relative	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
		(iii)	4 × 6 × 600 × 600 (1 mark) × 24 bits (1 mark) (207360000 bits/8/1024/1024) = 24.72 Mb (1 mark)	**3**	Correct answer with no working = 3 marks. Wrong answer with no working = 0 marks. If candidate makes only 1 error marks should be awarded for the remaining calculation being carried out correctly. Correct answer must include 'appropriate' units including: • 25,312.5 Kb • 24.72 Mb or 24.7 Mb • 0.024 Gb Note, if the candidates first line is: 4 x 6 x 600 the answer = 42.2 Kb or 42 Kb (award 2 marks as only 1 error)
	(d)		A description that includes • matching keywords/search criteria entered by user • database of known pages/ stored metadata	**2**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
17.	(a)		Mantissa and exponent	**2**	1 mark for floating point
	(b)	(i)	Interpreter	**1**	
		(ii)	Any one for one mark • Additional RAM required • Increased processing required (could run more slowly) • Loops translated multiple times	**1**	If compiler is answered at (b) (i) then accept: • time wasted switching between editor and compiled code during testing • location of errors often not as clear
	(c)		Machine Code or Binary	**1**	
	(d)	(i)	Address Bus	**1**	
		(ii)	Data Bus	**1**	
		(iii)	Arithmetic Logic Unit (ALU)	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
	(e)		Any two for one mark each • Temporary storage of data • Handling of status signals • Data conversion - serial to parallel • Voltage conversion • Communication between two devices	**2**	Not: 'connect' two devices

Question			Expected Answer(s)	Max Mark	Additional Guidance
18.	(a)		Answer identifies one aim of School learner section of SQA site: • provide information about exams • provide resources to help study for exams	**1**	
	(b)		Domain name of URL: (www.)sqa.org.uk	**1**	
	(c)	(i)	Any one from the following: • Listen to the page option • Text resize option • Change colour scheme/Alter background colour • Read transcript of video	**1**	
		(ii)	• Screen reader reads out text of page and graphic captions to help those with sight problems or reading difficulty to access page content • Text resize option can be used by those with visual impairment to enlarge text making it easier to see and read • Changing colour scheme allows people with dsylexia or colour blindness or vision problems to access content • Altering colour combinations makes text easier to distinguish • Transcript of video makes video content accessible to those with hearing impairment	**1**	Explanation must relate to feature chosen in part (i)
	(d)		Gif	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
	(e)		• Helps user view path taken to reach this page • Useful to retrace steps and go back to previous pages • Useful in indicating section of current page to orientate user	1	
	(f)			1	Any example of Javascript from page (illustrating interactive or dynamic content). Note that where multiple items have been circled on the diagram to the left it would be acceptable only to circle one.
	(g)		Complex sort described • Date ascending • Time ascending	2	
	(h)		• containing a virus • may not have correct software • file may be too large	1	

Question			Expected Answer(s)	Max Mark	Additional Guidance
19.	(a)		• Line 2 – Integer • Line 3 – Real • Line 5 – Boolean	3	Acceptable answers as per SQA support notes do not allow 'int', 'float', 'single', 'double', 'true/false' and other similar answers.
	(b)	(i)	• Line 6 • Line 9	2	Accept: • Lines 6 to 8 (1 mark) • Lines 9 to 11 (1 mark) • Lines 6 to 11 (2 marks) as the conditional statement is the complete IF statement.
		(ii)	Arithmetic Logic Unit (ALU)	1	
	(c)	(i)	An array (1 mark) Of Reals (1 mark)	2	

Question			Expected Answer(s)	Max Mark	Additional Guidance
		(ii)	Unconditional/fixed loop (1 mark) The program loops a known (12) number of times. (1 mark)	**2**	No mark for a 'for loop' although candidate may go on to gain a mark for a correct explanation. If candidate can give an appropriate reason for a conditional loop (eg Can loop until the end of an array) award 1 mark.

Question			Expected Answer(s)	Max Mark	Additional Guidance
20.	(a)		Presence check Length check/field length	**2**	Accept 'restricted choice' as the database could be set up to only allow entry of one of the 20000 product codes in the database. Not 'field size' or 'required' as both are given in question.
	(b)		Potential for increased errors due to: • update anomalies • lots of changes being made	**1**	Answer must be a 'description'. 'Update Anomalies' contains enough information to require no further description.
	(c)	(i)	Unique identifier for a row/record in a table.	**1**	
		(ii)	Dept ID Product Code	**2**	Must be in this order
	(d)		Boolean Graphic/Object/Container	**2**	Must be in this order
	(e)		One mark for each bullet (max 2) • Removing data from hard drive • Using collection company • Recycle individual components appropriately • Dispose of dangerous elements	**2**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
21.	(a)		1 mark each for: • conditional loop • input of brick length from user • correct complex conditions attached to loop (>15 AND <50)	**3**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
	(b)		1 mark each for: • Assignment any relevant example • Calculating wall area lengthOfWall * heightOfWall • Calculating brick area lengthOfBrick * heightOfBrick • Dividing wall area by brick area	**4**	1 cm has already been added to the length and height of the brick by line 6 so this should not be included in the calculation. If candidate added 1 to brick length take off 1 mark. Alternative answer: • assignment • bricksInHeight = heightOfWall/heightOfBrick • bricksInLength = lengthOfWall/lengthOfBrick • numberOfBricks = bricksInHeight * bricksInLength
	(c)		A function could be used to remove the decimal places from the number (1 mark) and then 1 could be added on (1 mark). or int(numberOFBricks) + 1 Marks allocated as: int(numberOFBricks) (1 mark) +1 (1 mark)	**2**	Alternative answers: • round(numberOfBricks+0.5),0) (1 mark for round to 0 decimal places, 1 mark for +0.5) • floor(numberOfBricks) + 1 (mark as per int example) Some programming languages have a ceiling function that always rounds up. Award 2 marks for ceiling(numberOfBricks) If other alternative answers are found use professional judgement. Award 1 mark only for 'round up' as it's a weak answer that demonstrates limited understanding.
	(d)		4	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
22.	(a)		Any two from: • Solid state has no moving parts • Camera is portable, size/ weight of storage should be considered • Robust storage more suitable • Solid state can be removed • Transfer/storage of data faster to/from solid state	**2**	
	(b)		Total storage (1 mark) 64Gb = 64x1024 = 65,536 (Mb) Number of photos(1 mark) 65,536/25=2,621.44 rounded down to 2621 photos	**2**	2621 on its own = 2 marks Error in 1st mark of calculation could lead to different correct answer in 2nd part. Award only 1 mark if the final answer is not an integer. Alternative answer: Step 1 - Calculate the number of photos in 1Gb 1024/25 = 40.96 (1 mark) Step 2 – Calculate the number of photos in 64Gb 40.96*64 = 2,621.44 = 2621 photos (1 mark)
	(c)		Any two advantages of tablet PC over laptop relevant to scenario: • Simple interface for range of users/guests • Touch screen easy to use for guests • More portability to pass round at event/lightweight • More robust when being passed around	**2**	Not: • 'easy to use' • 'portable' (without comparison)
	(d)	(i)	Use of cloud • Remote access from any location with internet connection • centrally accessible storage location • provide login to guests who can access the files on their own device	**1**	
		(ii)	cross platform OS compatibility – runs on variety of operating systems	**1**	

Question			Expected Answer(s)	Max Mark	Additional Guidance
	(e)		Concerns about Wifi • slow data transfer speed compared to wired connection • security issues • limited range/lack of coverage/ loss of connection in parts of venue • signal interference from other devices	**2**	

[END OF MARKING INSTRUCTIONS]