GCST

1.3.4

WEB TECHNOLOGIES

TOPIC WISE EXAM QUESTIONS

ANSWERS

A-LEVEL OCR

GCST

2023

4	(d)	(i)	• and • href • Login • text/password • submit	
4	(d)	(ii)	• h1 and other code contained in { } • color :white; • background-color : red; //background: red;	
5			<html> <head> <title>Robot User Interface</title> </head> <body> Robot directives - Serve the company trust - Protect data - Uphold standards Updates Login <form action="dologin.php"> Password <input type = "text" name="pw"> <input type = "submit"> </form> </body> </html> HTML tags are not case sensitive Correct answer only	

3			Ignore presence or lack of <style> tags. Ignore lack of semicolons
			
			Penalise misspelling of "color" once and then FT
			
			h1 {
			color:white;
			background-color: red;
			}
			
			White can be #FFFFFF or #FFF
			Red can be #FF0000 or #F00	

3	(a)		• HTML defines the structure of a web page • HTML defines the content of a web page • Using tags (enclosed in <>) • CSS defines the style / appearance • Using selectors such as classes / IDs / etc • Can be placed within HTML or externally in a file • Multiple pieces of CSS can be combined (the more local instances overriding)	4 AO1.1	Do not accept layout/format for HTML as this is too vague and can be used to describe CSS
	(b)		• Correct <a> with close • href property to correct page • correct <img> tag with src property to correct file	3 AO3.2	<img src="ticket.png">
	(c)		• 2.99 • nonUKprice • numtickets • return	4 AO3.2	Correct answer only. Penalise spelling if incorrect. Do not accept £ sign in first bullet point.
	(d)	i	• processing done away from the user's control/Client side processing could be altered • Browser may not support client-side language/ scripting could be turned off • Booking fee calculation needs to be correct for all locations	3 AO2.1	
		ii	To the customer any 2x1: • No need to submit to server and wait for response	2 AO1.2	
			• Website will work more quickly for user To the company any 2x1: • Reduces load on the server • Will need to spend less on processing power/bandwidth		
	(e)	i	• Web crawler /spider visits site • Either be selecting it from an existing list or following a link. • Records information • …such as text / metatags / etc • Records the position of each word within the page • Storing them in an index • Follows links to other sites • Robots.txt file can be used to instruct web crawlers	4 AO1.1	
		ii	• A value between 0 and 1 • Probability that a user will not follow a link	1 AO1.1	
		iii	• Number of links to target site • PageRank score of those sites (linking inwards)	2 AO1.1	

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2020

AS - Level

4	c		1 mark per bullet up to a maximum of 6 marks:
			• Correct syntax for css class for "model"(including opening and closing curly brackets)
			• Correct syntax for css id for "beeb" (including opening and closing curly brackets)
			• Correct syntax for setting the font family to arial for class "model"
			• Correct syntax for setting the font colour to red on class "model"
			• Correct syntax for setting colour to green for id "beeb"
			• Correct syntax for setting font family to times for id "beeb"
				6
				AO3.1
				(6)
					Example:
					`li.model {`
					`color: red;`
					`font-family: arial;`
					`}`
					`#Beeb {`
					`color: green;`
					`font-family: times;`
					`}`
					
					Ignore if `li` is not put in front of `.model`
					Reject if any other tag is put in front of `.model`
					
					Responses written in HTML mark as NAQ

2019

11	a		**Mark Band 3–High Level (7-9 marks)** The candidate demonstrates a thorough knowledge and understanding of the technologies required for web development. The material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate provides a thorough discussion which is well balanced. Evaluative comments are consistently relevant and well-considered. There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Mark Band 2-Mid Level (4-6 marks)** The candidate demonstrates reasonable knowledge and understanding of the technologies required for web development; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate provides a sound discussion, the majority of which is focused. Evaluative comments are for the most part appropriate, although	9 AO1.1 (2) AO1.2 (2) AO2.1 (2) AO3.3 (3)	HTML… ..they understand how to write (i.e. define the structure of) web pages. CSS.. … they understand how to define the formatting of websites. JavaScript... ..they understand how to write client side code …allowing them to add interactivity to the website Understanding of HTML/CSS and JavaScript is essential for the role. Without knowing HTML it is impossible to handcode webpages. Whilst WYSIWYG tools exist these often produce inefficient code and at any rate it will be necessary at some point to hand tweak the code. *(As the role is 'programmer' it is reasonable to expect that the site will be coded.)* CSS is nearly as essential. Whilst HTML can be used for a lot of the formatting, this is considered bad practice. CSS will allow them to make consistent looking sites. JavaScript is also essential as most websites have an interactive element (e.g. validation of forms) Knowledge of Server-side processing/PHP/ASP etc… …allowing them to write dynamic websites. This is important if the company wants to produce websites with content that changes Databases… …allowing them to allow websites to store and retrieve data. Some knowledge of databases will be useful if writing dynamic sites. This will largely be focussed around SQL. Photo editing… …allowing them to prepare images for the website. This is less essential as in many cases the assets will be pre-prepared. A basic knowledge (e.g. resizing would be expected). Knowledge of software engineering practices… …allowing them to work as part of a team when building the website. The importance of this will depend on the size of the team working on the site. May mention more advanced technologies e.g. AJAX, SOAP, JSON etc.
	b		– The head contains information about the page and needed to set the page up – Orville's Oranges is displayed in the title bar/tab of the page. – The page is linked to the style sheet mainStyle.css (1 per -, max 2)	2 AO3.3	

	c		.offer{
			border-style: solid;
			border-color: orange;
			}
				2
				AO3.2
					Accept div. offer
					Accept hex/RGB codes that would provide a shade of orange.
					Closing ; is optional

8	a		- for ordered list
			- for each item
			- and around Book tickets
			
			For points 1 and 2 also allow numbers typed in providing line breaks have been added.
			
			e.g.
			1. Macbeth
			
			2. Blood Brothers
			
			3. An Inspector Calls
			
				3
				(AO3.2)
					`Upcoming productions:`
					`<ol>`
					`<li>Macbeth</li>`
					`<li> Blood Brothers</li>`
					`<li>An Inspector Calls</li>`
					`</ol>`
					`<a href="bookings.html">Book tickets</a>`

	b		- To define the formatting of a website… - To change the formatting depending on device - To give a consistent look to every page - To set the formatting {sensible example of part of site} (1 per -, max 1)	1 (AO1.1)	

	c		- `priceText` set to midweek special message on Tuesday
			- and Wednesday
			- `priceText` set to normal message on all other days
			- The HTML of prices changed.
			
			Award full marks if circumvented priceText and changed the HTML straight away.
			
			(1 per - , max 4)
				4
				
				(AO3.2)
					`var date = new Date();`
					`var dayCode = date.getDay(); //0 is Sunday, 1 Monday, 2 Tuesday etc`
					`var priceText="";`
					
					`if(dayCode==2 || dayCode==3)`
					`{`
					`priceText="Midweek Special - tickets £15 tonight";`
					`}`
					`else`
					`{`
					`priceText="Tickets £20 tonight";`
					`}`
					
					`document.getElementById("prices").innerHTML= priceText;`
					
					May have used else if instead of or
					{} are optional as single line statements
					Last part may be two lines
					`foo = document.getElementById("prices")`
					`foo.innerHTML= priceText;`

GCSE

2018

b	i	- Tags to make "Features" a heading (accept h1, h2, h3 etc.)
		- Correct use of ol
		- Correct use of li tags
		- Use of <a tag Around the text "Download the Factsheet"
		- correct use of href="factsheet.pdf"
		(1 Mark per -, max 5)
			5
			(AO3.2)
				For making Features a heading only accept `strong/b` if accompanied by code to increase font size.
				
				`<h1>Features</h1>`
				`The new OCR Smart Watch:`
				`<ol>`
				`<li>Uses the CB2 RISC processor for long battery life</li>`
				`<li>Stores up to 20hrs of music</li>`
				`<li>Tracks fitness</li>`
				`</ol>`
				`<a href="factsheet.pdf">Download The Factsheet</a>`
				
				Li close tags are optional

	ii	- A program called a spider/crawler/bot - Traverses the web / following the links. - It takes each word in the document - ...It adds an entry for the page (under the word) in the index... - ...alongside the word's position on the page. (1 Mark per -, Max 3)	3 (AO2.1)	

AS - Level

2	a		(Onscreen) keyboard/touchscreen Allowing the user to type in/select reading/numbers on the screen. Camera Takes a photo of the meter/reading and the smartphone/application recognises the numbers. Microphone The user speaks the reading/numbers and the smartphone/application (using speech recognition software) interprets them. *(1 mark per input device, 1 mark per corresponding description of method)*	**2** **AO2.1** **(2)**	Accept keypad

	b		- Returns `false` if reading is not a number.
			- Returns `true` if reading is >=1
			- and <=999999 *(but no other values)*
			- Returns `false` for a number not between these values.
			
			(1 per -, max 4)
				4
				
				AO3.2
				(4)
					Example solution:
					`if(!isNaN(reading) && reading>=1 && reading<=999999)`
					`{`
					`  return true;`
					`}`
					`else`
					`{`
					`  return false;`
					`}`
					Do not penalise for lack of ;
					{ } are not needed in this case.
					
					NB: credit should be given for validating length

GCSE

2017

9	a		Only one element can have a given id/id is unique. (1) Class can be used assigned to multiple elements/used multiple times. (1)	2 (AO1.1)	
	b		h1{ (1 mark for open and close) font-family:Arial(;) (1 mark) } .customerQuote{ (1 mark) background-color: #E8C3E1(;) (1 mark) } #intro{ (1 mark) (font-)color: darkRed(;) (1 mark) }	6 (AO3.1)	.customerQuote must have . and opening and closing { } for 3rd mark. #intro must have # and opening and closing { } for 4th mark Must match case sensitivity, except for 'Arial' and 'darkRed' and colour code Allow quotes around Arial and darkRed
	c	i	JavaScript	1 (AO1.1)	**Cao** do not accept Java
	ii		Change line if(hour>9 && hour<17) … … To if(hour>8 && hour<17) (1 Mark) or … if(hour>=9 && hour<17) (1 Mark)	1 (AO3.3)	Accept Change 'greater than' to 'great than or equal to' or similar
	iii		- Won't work if JavaScript is disabled. (1) - Shows incorrect message if user's computer's clock is wrong/in different time zone. (1) - (Source) code is visible allowing it to be copied/modified. (1) (Max 1)	1 (AO2.2)	

AS - Level

3	a		1. Creates / declares / defines a variable (called total) (1) and assigns it an empty / blank (string). (1) 2. A loop that iterates 200,000 times. (1) 3. - 4. Concatenates (the string version of) j to total. (1)	4 AO3.3	For point 1 accept 'blank value' for empty string For point 4 accept *add* instead of *concatenates* only if it is clear it is building a string and not adding a numeric value. Accept 'append'.

8			**Mark Band 3–High Level** **(7-9 marks)** The candidate demonstrates a thorough knowledge and understanding of a wide range of technical and design measures that make a website accessible; the material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate provides a thorough discussion which is well-balanced. Evaluative comments are consistently relevant and well-considered. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Mark Band 2 –Mid Level** **(4-6 marks)** The candidate demonstrates reasonable knowledge and understanding of a range of technical and design measures that make a website accessible; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation The candidate provides a reasonable discussion, the majority of which is focused. Evaluative comments are for the most part appropriate, although one or two opportunities for development are missed. *There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.* **Mark Band 1-Low Level** **(1-3 marks)** The candidate demonstrates a basic knowledge of how a website can be made accessible. Limited understanding shown of how these design or technical issues behind it; the material is basic and contains	**9** **AO1.1** **(2)** **AO1.2** **(2)** **AO2.1** **(2)** **AO3.3** **(3)**	**AO1: Knowledge and Understanding** The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive: Methods of improving accessibility: Using text alternatives for images Changing styles using CSS Avoiding combining colours that may be indistinguishable by those with colour blindness. Using character sets and fonts that support different alphabets. Using server side processing to amend the content shown. Writing web pages to facilitate screen readers (such as giving hyperlinks meaningful names and not just "click here"). Using tables for tabular data (as they are intended) and not layout (again to aid screen readers). Ensuring that all content can be accessed with the keyboard alone in a logical way. Avoiding CAPTCHA. **AO2.1: Application** The selected knowledge/examples should be directly related to the specific question. The example below is not prescriptive or exhaustive: -Using the `alt` attribute with the `img` tag allows descriptive text to be shown where the image cannot be loaded or the user has disabled images (e.g. a
			some inaccuracies. The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided. The candidate provides a limited discussion which is narrow in focus. Judgments if made are weak and unsubstantiated. *The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.* **0 marks** No attempt to answer the question or response is not worthy of credit.		screen reader). -By having multiple external style sheets the look of the page can be switched. This might include changing the layout for smaller devices or increasing font size and contrast of colours for people who are visually impaired. -JavaScript may be used to allow users to switch style sheets without having to reload the page -Choosing colours is important as to people with colour blindness might for example not be able to see green text on a red background. -Designers also need to have an awareness of the cultural meanings of colours. -Use of Unicode supports all character sets. -If the website is processed Server side the content itself can be changed according to the user. The language used may be determined by the user's IP address. Cookies may be used to save the user's preferences. **AO3.3: Evaluation** The following is indicative of possible evaluation points that candidates may refer to but is not prescriptive or exhaustive: Simple design considerations can have a positive effect on accessibility. Colours and fonts affect readability. A good design can be accessible to a wide audience. Standards exist to help maximum accessibility for those with disabilities. Use of web technologies can then personalise the output to help ensure the site is specifically accessible to the individual.

b		• Page will include JavaScript (which allows page content to be dynamic) (AO2.2) *(1 per -, Max 1)* **Plus** • When a material is selected (JavaScript) code can be executed…(AO3.1) • …the appropriate picture is shown…(AO3.1) • …and hides the original picture. (AO3.1) *(1 per -, Max 3)*	4 **AO2.2 (1)** **AO3.1 (3)**	Allow alternative solution using JQuery or other library/plug-ins. Accept AJAX can be used to prevent all images having to be pre-loaded. Credit 'replaces/changes previous picture with new picture' with BP 3 and 4 (i.e. 2 marks)
d		**Mark Band 3–High Level (7-9 marks)** The candidate demonstrates a thorough knowledge and understanding of a wide range of the technical issues the coding team might have considered; the material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided and come to a well argued conclusion. Evidence/examples will be explicitly relevant to the explanation. The candidate provides a thorough discussion which is well-balanced. Evaluative comments are consistently relevant and well-considered. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Mark Band 2 –Mid Level (4-6 marks)** The candidate demonstrates reasonable knowledge and understanding of the technical issues the coding team might have considered; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. A reasoned conclusion is drawn. Evidence/examples are for the most part implicitly relevant to the explanation The candidate provides a reasonable discussion, the majority of which is focused. Evaluative comments are for the most part appropriate, although one or two opportunities for development are missed. *There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.* **Mark Band 1-Low Level (1-3 marks)** The candidate demonstrates a basic knowledge of the technical issues the coding team might have considered with limited understanding shown; the material is basic and contains some inaccuracies. A conclusion is made though it may not be well supported. The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided. *The candidate provides a limited discussion which is narrow in focus. Judgments if made are weak and unsubstantiated. The information is basic and lacks supporting evidence.*	9 **A01.1 (2)** **AO1.2 (2)** **AO2.1 (2)** **AO3.3 (3)**	AO1: Knowledge and Understanding The following is indicative of possible that candidates may refer to but is not prescriptive or exhaustive: Java One version needs be written and can be used on any device/OS combination that has the Java Virtual Machine rather than having to write multiple versions. Code running on a VM tends to be slower than compiled. C++ Multiple versions of the code will need to be maintained for different architectures… …however there may be minimal differences between them, and then just need compiling with different compilers. Program will run quicker than alternatives. JavaScript As interpreted likely to be by far the slowest option. Will run in any browser. AO2: Application The selected knowledge/examples should be directly related to the specific question. The following is indicative of possible factors/evidence that candidates may refer to but is not prescriptive or exhaustive: Java Multiple devices can include devices other than PCs (i.e. phones, tablets). People with unusual operating systems or architectures would have access to the application. It makes commercial sense to sell to as wide an audience as possible. The speed reduction compared to compiled code will likely be noticeable with such a processor intensive task. As running on a VM coders will have limited (if any) access to some of the low level features (e.g. access to the GPU) which can optimise the program. Intermediate code is used helping protect intellectual property. C++ Some less used architectures may not be developed for as not commercially viable. Compiled code will run quicker than the other options. This is likely to be noticeable given the nature of the task. Easier to get access to lower level features (such as GPU access). Compiled code is not human readable helping to preserve intellectual property JavaScript Most people have web browsers so by far most compatible option (don't even need VM). The slow speed may be frustrating… …though as no user interaction is needed this may be a trade off worth making.

GCST

EXTRA

		2		– The number of sites that link to their site – The PageRank of the linking sites – The number of outward links from the site (1 per –, max 2)	2

1	a		Code enclosed within #warning{…} (1)
			color: red; (1)
			font-family: monospace; (1)
				3	#warning{
					color: red;
					font-family: monospace;
					}
					Also accept hex color and RGB color notations.
					Don't penalise for missing semicolons.
					
					Accept a named suitable font like Courier New.

	b		Creates a textbox (1) To hold the username/which is referred to as username (1)	2	

The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate provides a thorough discussion which is well balanced. Evaluative comments are consistently relevant and well-considered. *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Mark Band 2–Mid Level (4–6 marks)** The candidate demonstrates reasonable knowledge and understanding of client and server side processing; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate provides a sound discussion, the majority of which is focused. Evaluative comments are for the most part appropriate, although one or two opportunitiesfor development are missed. *There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.* **Mark Band 1-Low Level (1-3 marks)** The candidate demonstrates a basic knowledge of client and server side processing; the material is basic and contains some	3	Server side processing takes place on the webserver. Data is sent from the browser to the server, the server processes it and sends the output back to the browser. Client side processing takes place in the web browser. **AO2.1: Application** Client side processing doesn't require data to be sent back and forth meaning code is much more responsive. Code is visible which means it can be copied. The browser may not run the code either because it doesn't have the capability or because the user has intentionally disabled client side code. Server side processing takes away the reliance of the browser having the correct interpreter. It hides the code from the user, protecting copyright and avoiding it being amended/circumvented. Server side processing puts extra load on the server. This is at the cost of the company hosting the website. **AO3.3: Evaluation** Client side processing is best used when it's not critical code that runs. If it is critical then it should be carried out on the server. Client side processing is also best where a quick response is needed – an example being games. Server side processing is best used where it is integral that processing is carried out. It is often used for generating content. It can be used to access data including secure data. For this reason any data passed to it has to be checked carefully. With some things like validation good practice is to do both: First on the client for a quick response if there is an issue, then on the server in case the client side processing has been circumvented.

If you found this useful, drop a follow to help me out!

THANK YOU!

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