

# University of St Andrews



## **DECEMBER 2021 8 HOUR TAKE HOME EXAM SCHOOL OF COMPUTER SCIENCE**

<b>MODULE CODE:</b>	<b>IS5103</b>
<b>MODULE TITLE:</b>	Web Technologies
<b>TIME TO HAND IN:</b>	8 hours
<b>EXAM INSTRUCTIONS</b>	<ul style="list-style-type: none"><li>a. Answer all three questions</li><li>b. Each question carries 20 marks</li></ul>

This assessment consists of exam-style questions and you should answer as you would in an exam. As such, citations of sources are not expected, but your answers should be from your own memory and understanding and significant stretches of text should not be taken verbatim from sources. Any illustrations or diagrams you include should be original (hand or computer drawn). You may word-process your answers, or hand-write and scan them. In either case, please return your answers as a single PDF. If you handwrite, please make sure the pages are legible, the right way up and in the right order. Your submission should be your own unaided work. While you are encouraged to work with your peers to understand the content of the course while revising, once you have seen the questions you should avoid any further discussion until you have submitted your results. You must submit your completed assessment on MMS within 8 hours of you downloading the exam. Assuming you have revised the module contents beforehand, answering the questions should take no more than three hours.

No questions have word limits.

1. Web Standards

- (a) Discuss the relationship between the W3C standardisation process and the rapidly evolving needs of web developers and web users. [10 marks]
- (b) What are CSS vendor-prefixes? Why are they used and how do they relate to W3C standards? Give an example of a CSS property with a vendor-prefix. [4 marks]
- (c) Explain the difference between valid markup and semantic markup. Give a short example of some markup that is valid but does not contain semantic elements. Explain how this impacts accessibility. [6 marks]

[Total marks 20]

2. Interactivity, Usability and Accessibility:

St Andrews Run Club (SARC) are commissioning a new webpage to allow individuals to register for their races. The new registration webpage must gather the following information:

- Personal details: title (optional), name, date of birth, sex, and t-shirt size
  - Contact information: phone number, email address, and postal address
  - Payment details: credit card number, expiry date, and 3-digit security code
- (a) Write HTML5 markup for SARC's new registration webpage. Elements should be grouped and labelled appropriately. Inputs should be restricted to accept only appropriate data. If a title is supplied it must be either Dr, Mr, Miss, Mrs, or Mx. Sex is either male or female. T-shirt size is either extra-small, small, medium, large, extra-large, or extra-extra-large. [10 marks]
  - (b) Describe how CSS can be used to improve the usability of a form. Illustrate your answer with suitable code examples. [4 marks]
  - (c) Describe 2 ways to ensure a form can be navigated by keyboard. Illustrate your answer with suitable code examples. Explain how this affects accessibility. [6 marks]

[Total marks 20]

3. Responsive Web

- (a) Describe 3 CSS techniques for use when developing a responsive webpage. Illustrate your answer with suitable code examples. [6 marks]
- (b) Describe a method for integrating CSS in web pages to ensure only relevant styles are downloaded for the device viewing the page. Use relevant code to illustrate your answer. [2 marks]

- (c) Describe how you would write a CSS rule that will be applied only to devices that do not have a colour screen and that cannot be interacted with using a mouse. Use relevant code to illustrate your answer. [2 marks]
- (d) RWD and AWD are different approaches to providing mobile and desktop friendly websites. Compare and contrast these two approaches. Explain the benefits and drawbacks of each. [10 marks]

[Total marks 20]

**\*\*\* END OF PAPER \*\*\***