

# University of St Andrews



## DECEMBER 2019 EXAMINATION DIET

### SCHOOL OF COMPUTER SCIENCE

**MODULE CODE:** IS5103

**MODULE TITLE:** Web Technologies

**EXAM DURATION:** 2 hours

**EXAM  
INSTRUCTIONS**

- (a) Answer **three** questions.
- (b) Each question carries 20 marks.
- (c) Answer questions in the script book.

**PERMITTED  
MATERIALS**

Non-programmable calculator

**YOU MUST HAND IN THIS EXAM PAPER AT THE END OF THE EXAM.**

**DO NOT TURN OVER THIS EXAM PAPER UNTIL  
YOU ARE INSTRUCTED TO DO SO.**

1. *Web standards and frameworks*

- (a) How does a technology become a W3C recommendation?

[5 marks]

- (b) Using an annotated diagram, explain the process by which a browser displays the following web page.

`https://www.w3.org/standards/faq`

[5 marks]

- (c) Italia Tours are commissioning a new website and have been advised to make it responsive.

- (i) Advise them on what this means and the main design considerations.

[5 marks]

- (ii) Discuss five criteria the company could use when selecting technologies to implement their project.

[5 marks]

[Total marks 20]

## 2. *Cascading Style Sheets*

- (a) Style information can be external, embedded, inline or imported. Describe each method using the relevant code and discuss the merits or demerits of each approach. [10 marks]

- (b) Explain the effect and use of the following CSS3 style rule.

```
Section {  
    -moz-transform: scale(2) rotate(20deg) translateX(12px)  
    skewX(20deg);  
    -webkit-transform: scale(2) rotate(20deg) translateX(12px)  
    skewX(20deg);  
    -o-transform: scale(2) rotate(20deg) translateX(12px)  
    skewX(20deg);  
    -ms-transform: scale(2) rotate(20deg) translateX(12px)  
    skewX(20deg);  
    transform: scale(2) rotate(20deg) translateX(12px)  
    skewX(20deg);  
}
```

[5 marks]

- (c) Your latest web project makes use of non-standard web fonts, how would you proceed?

[5 marks]

[Total marks 20]

### 3. *Optimisation and sustainability*

- (a) A large company selling movie posters has employed you to improve the speed of their website and their environmental profile. What techniques would you implement or explore? [10 marks]

#### *Inheritance*

- (b) Examine the following web page and style sheets; explain how each element is displayed when printed. [10 marks]

```
<!DOCTYPE html>
<html>
<head>
  <title>Web Standards</title>
<link href="styling.css"
rel="stylesheet" />
<link href="print.css"
rel="stylesheet" media="print"/>
</head>
<body>
  <header>
    <h1> W3C and Standards</h1>
    <div id="logo"></div>
  </header>
<article>
  <h1> HTML5 Mark-up for meaning
  </h1>
  <h2>CSS Design for
  presentation</h2>
  <p> Understanding the
  separation of design logic
  from <em>meaningful</em>
  mark-up is essential. Get
  further help at
  <a href="https://www.w3schools.
  com">W3Schools</a>
  </p>
</article>
<h3>html5</h3>
<p class="center">Design using
CSS</p>
<footer>
  <p>Helping you make the web
  accessible.</p>
  <p><a
  href="http://w3c.ac.uk/access.h
  tml"> Design Guide</a>
  available online</p>
</footer>
</body>
</html>
```

#### ***styling.css***

```
body{
background-color: orange;font-
family: Tahoma, Geneva, sans-serif;
color: grey;
}
header{
background-color:rgba(255, 0,
0,.75);
}
h1,h2 {
font-family: Impact; text-
shadow:5px 5px 5px #000000;
}
p {
color: brown; font-size: x-small;
}

p.center {
text-align: center;
}

article{
  color: green;
}
```

#### ***print.css***

```
body{
  color : #000000;
  line-height: 1.3;
  background : #ffffff;
  font-family : "Times New
  Roman", Times, serif; font-size
  :10pt;
}
h1 {
  color:black;
}
#brand{ display : none;
}
@page {
  margin: 2 cm;
}
a:after {
  content: " (" attr(href) ")";
}
```

[Total marks 20]

#### 4. *Interactive form: usability and accessibility*

Examine the following mark-up designed to collect voting details

```
<form action="voter.php" method="post" autocomplete="on"
name="vote" id="vote">

<h1>Vote Now</h1>

<fieldset>

    <p>Your Details </p><p>Please supply a username, password,
    your voting email address and the date, when <strong>finished
    </strong> confirm your voting choice.</p>

    <p>Voter Code: <input type="text" name="vote_code"
    pattern="[A-Za-z]{3}" name="vote_code" title="Three letter
    voter code" autofocus required> </p>

    <p>Voter Password:<input name="vpsswd" id="vpsswd"
    type="password" required></p>

    <p>Email:<input type="email" name="vemail" id="vemail"
    placeholder="Enter a valid email address" required> </p>
    <p>Date of Vote: <input type="date" name="vdat" id="vdat">
    </p>

    <p><input name="status" type="hidden" id="status"
    value="unconfirmed"> </p>
    <p><input name="submit" type="submit" id="submit" value="Vote
    Now"></p>

</fieldset>
</form>
```

- (a) Describe using an annotated diagram what will be seen in a browser and what will happen when the user completes and submits the form.

[10 marks]

- (b) Explain the accessibility and usability features you would add to the voting page to comply with the POUR principles of WCAG2.1.

[10 marks]

[Total marks 20]

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