































(i) Complete the Truth Table below:

A	B	C <sub>in</sub>	S	C <sub>out</sub>
1	1	1		
1	1	0		
1	0	1		
1	0	0		
0	1	1		
0	1	0		
0	0	1		
0	0	0		

[4]

(ii) Explain what the circuit does. You should refer to C<sub>in</sub>, S and C<sub>out</sub> in your answer.

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[4]

(c) (i) Write a Boolean expression equivalent to S.

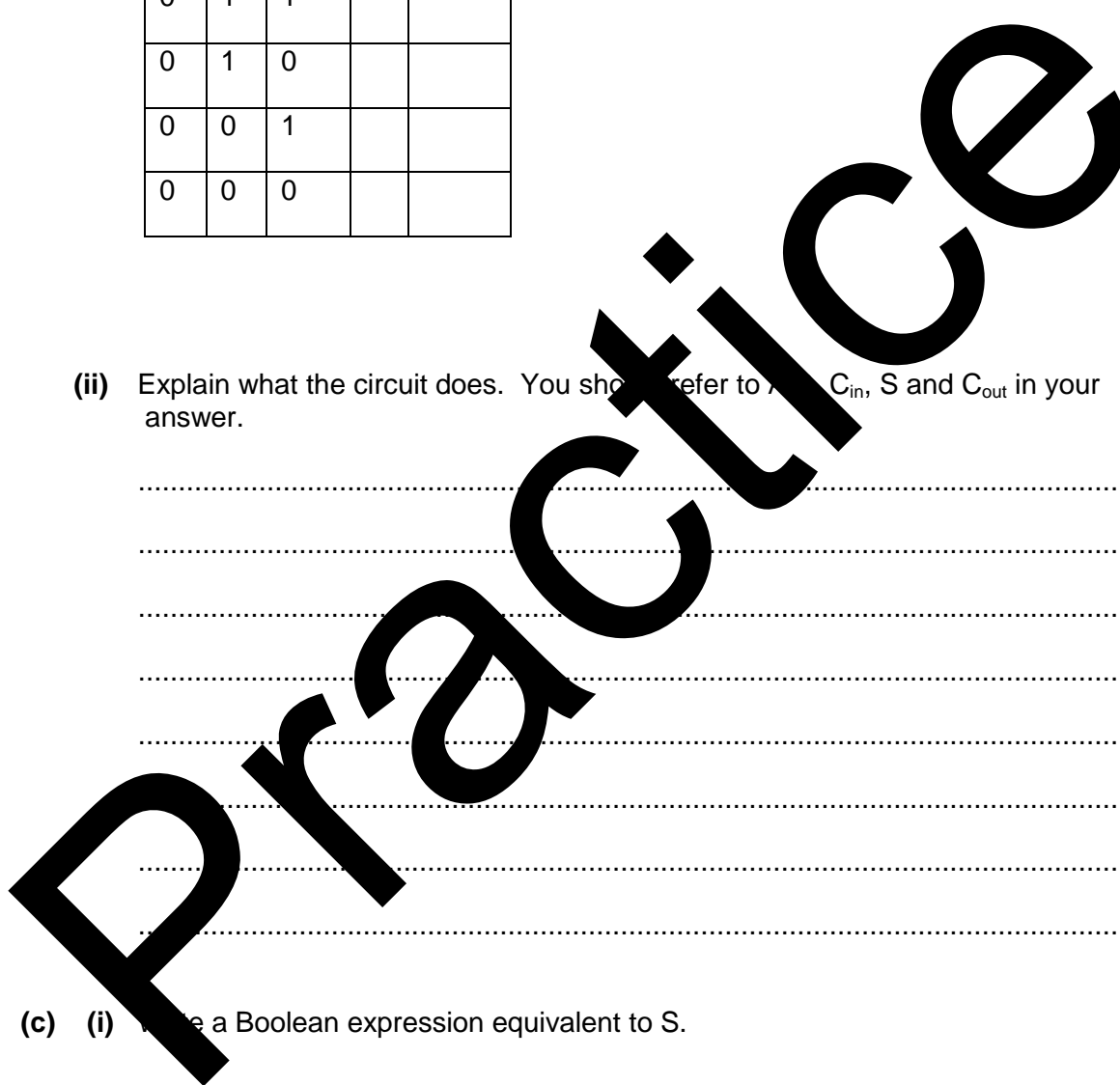
[1]

$$S \equiv$$

(ii) Write a Boolean expression equivalent to C<sub>out</sub>.

[2]

$$C_{out} \equiv$$



8 A database stores information about songs on a music streaming service.

One of the tables called `Song` has the fields.

`Title`, `Artist`, `Genre`, `Length`

(a) Explain why none of these fields would be suitable as a primary key.

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.....  
.....  
.....  
..... [2]

(b) Give **one** advantage and **one** disadvantage of indexing the field `Artist`.

Advantage.....  
.....  
Disadvantage.....  
..... [2]

(c) Users can build up playlists of their songs. Another table is created called `Playlist`.

Explain why a third table which we shall call `PlaylistEntry` is needed. You should use an ER diagram to illustrate your answer.

[4]



(d) A band called *RandomBits* removes their permission for their songs to be streamed.

The company removes all the songs belonging to *RandomBits* from their service.

(i) Identify the law with which the company are complying.

.....  
..... [1]

(ii) Write an SQL statement that will remove all songs by *RandomBits* from the table *Song*.

.....  
.....  
..... [2]

(iii) When the songs have been removed, explain what must happen to the table *PlayListEntry* if the database is to retain its referential integrity. (You are not expected to write the SQL to do this).

.....  
.....  
..... [1]

Practice



10 A software development company is building an operating system for a mobile phone that is in the process of being designed.

(a) Give **one** reason the phone needs an operating system.

.....  
..... [1]

(b) Explain how the developers could use virtual machines.

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..... [2]

(c) One of the developers is responsible for writing the code for what happens when the CPU receives an interrupt. Outline what the code must do.

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..... [6]

(d) The developers follow the waterfall lifecycle.

(i) List **three** stages of the waterfall lifecycle.

- 1.....
- 2.....
- 3..... [3]

(ii) Justify why the waterfall lifecycle is suited to the development of the operating system.

- .....
- .....
- .....
- ..... [2]

(iii) Give **one** disadvantage of using the waterfall lifecycle to develop the operating system.

- .....
- .....
- ..... [1]

Practice



11 A website has the following HTML code.

```
<html>
<head>
<title>My Stamp Collection - European Stamps</title>
</head>
<body>
<h1 style="font-family:Arial; color:darkGreen">United
Kingdom</h1>
<p>These are my stamps from the uk.</p>
<!-- Code A -->

<!-- Code B -->

</body>
</html>
```

the site's owner wants to add the photo UKstamps.jpg in place of the comment  
<!-- Code A -->

(a) Write the code that should go in place of the comment <!-- Code A -->:

.....  
.....  
.....  
..... [2]

(b) Where the comment <!-- Code B --> is, the site's owner wants to add the text:

Find out more about UK stamps

as a link to the UK Stamp Collectors Guild website which has the URL:

<http://ukstampcollectorsguild.co.uk>

Write the code that should go in place of the comment <!-- Code B -->

.....  
.....  
.....  
..... [2]

(c) The site uses styling set out as attributes in tags rather than a linked CSS file.

(i) Give **one** disadvantage of this to the site's owner.

.....  
..... [1]

(ii) Give **one** disadvantage of this to the site's visitors.

.....  
..... [1]

(d) The site needs a light green (web colour lightGreen) background.  
Explain what change needs to be made to the current page in order to do this.

.....  
.....  
.....  
.....  
.....  
.....  
..... [3]

(e) The site's owner notices that his site doesn't come up high in the results from a search engine that uses the PageRank algorithm. State what would affect his site's ranking.

.....  
.....  
.....  
..... [2]

**END OF QUESTION PAPER**

**ADDITIONAL ANSWER SPACE**

If additional answer space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).

Practice

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