

2.1 COMPUTATIONAL THINKING · 2.1.1

Thinking abstractly

Original practice questions · 30 marks · about 40 minutes · spec 2.1.1(a)–(d)

Instructions. Answer all questions. The number of marks is shown in brackets []. The extended question is marked for quality of written communication.

1 Total: 6 marks

(a) State what is meant by *abstraction*. [2]

.....

(b) Give one everyday example of an abstraction and state one detail it removes. [2]

.....

(c) State the difference between abstraction and decomposition. [2]

.....

2 Total: 6 marks

Sat-nav software represents a road network as a graph, with junctions as nodes and roads as weighted edges.

(a) Explain how this graph is an abstraction of the real road network. [3]

.....

(b) Identify **two** features of the real road that are irrelevant and so removed. [2]

.....

(c) State one benefit of representing the network this way. [1]

.....

3

Total: 6 marks

A team is designing a system to produce a school timetable. The school office has supplied a large amount of data.

(a) Explain why the developers need to use abstraction to solve this problem. [2]

(b) List **three** data items that would be **relevant** to the timetabling problem. [3]

(c) List one data item that would be **irrelevant** to solving the problem. [1]

4

Total: 3 marks

Give **three** potential differences between an abstraction and the reality it represents. [3]

END OF QUESTIONS