

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
AS LEVEL  
Y413/01**

**FURTHER MATHEMATICS B (MEI)  
Modelling with Algorithms  
Printed Answer Booklet**

**THURSDAY 17 MAY 2018: Afternoon  
TIME ALLOWED: 1 hour 15 minutes  
plus your additional time allowance  
MODIFIED ENLARGED 24pt**

<b>First name</b>		<b>Last name</b>	
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<b>Centre number</b>						<b>Candidate number</b>				
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**YOU MUST HAVE:  
Question Paper Y413/01  
Formulae Further Mathematics B (MEI)  
sent with the standard paper.**

**YOU MAY USE:  
a scientific or graphical calculator**

**READ INSTRUCTIONS OVERLEAF**



## **INSTRUCTIONS**

**The Question Paper will be found with the Printed Answer Booklet.**

**Use black ink. HB pencil may be used for graphs and diagrams only.**

**Complete the boxes provided on the Printed Answer Booklet with your name, centre number and candidate number.**

**Answer ALL the questions.**

**WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED IN THE PRINTED ANSWER BOOKLET. If additional space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.**

**You are permitted to use a scientific or graphical calculator in this paper.**

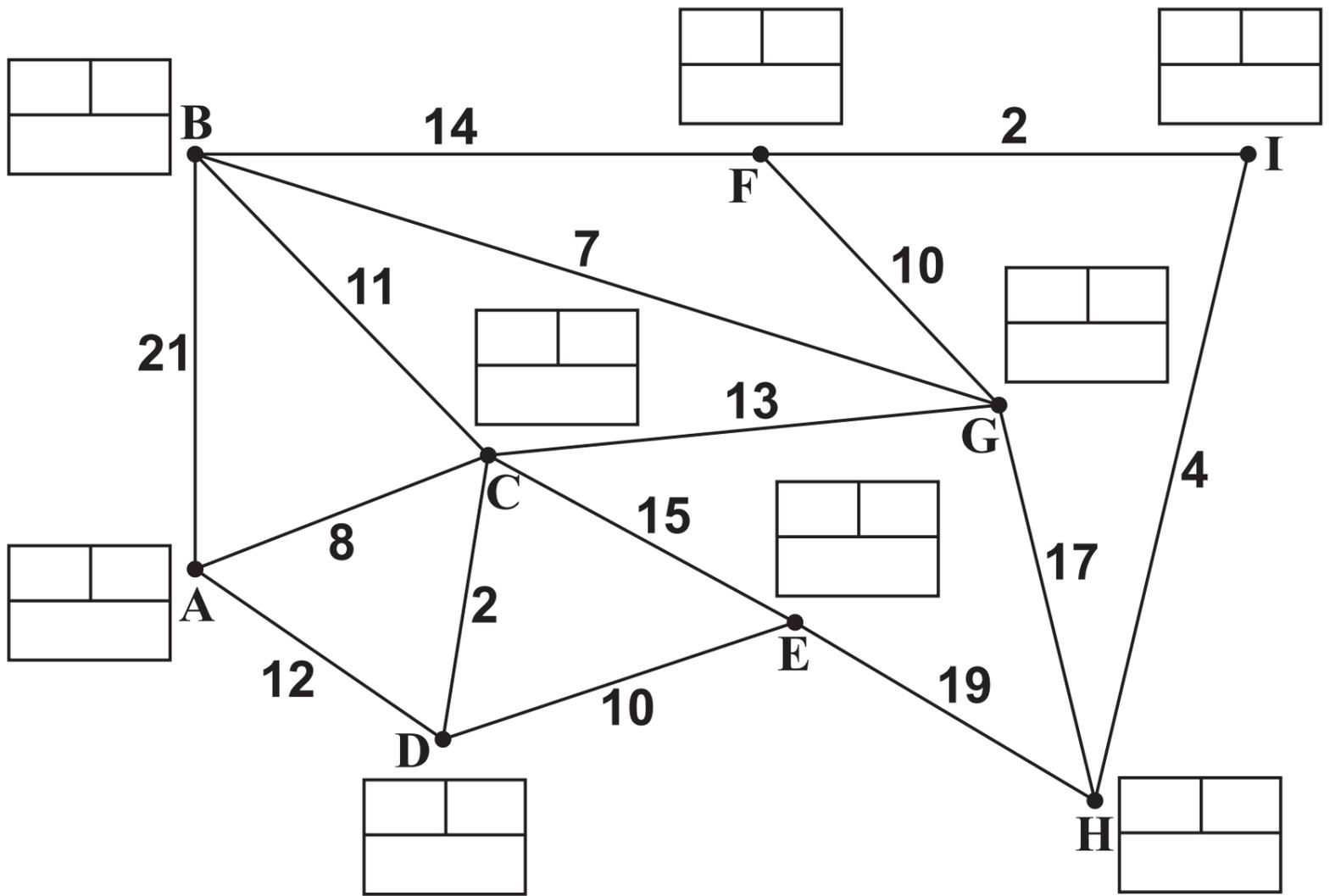
**Final answers should be given to a degree of accuracy appropriate to the context.**

## **INFORMATION**

**You are advised that an answer may receive NO MARKS unless you show sufficient detail of the working to indicate that a correct method is used. You should communicate your method with correct reasoning.**

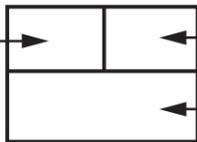
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1(i)



Key:

Order of becoming permanent

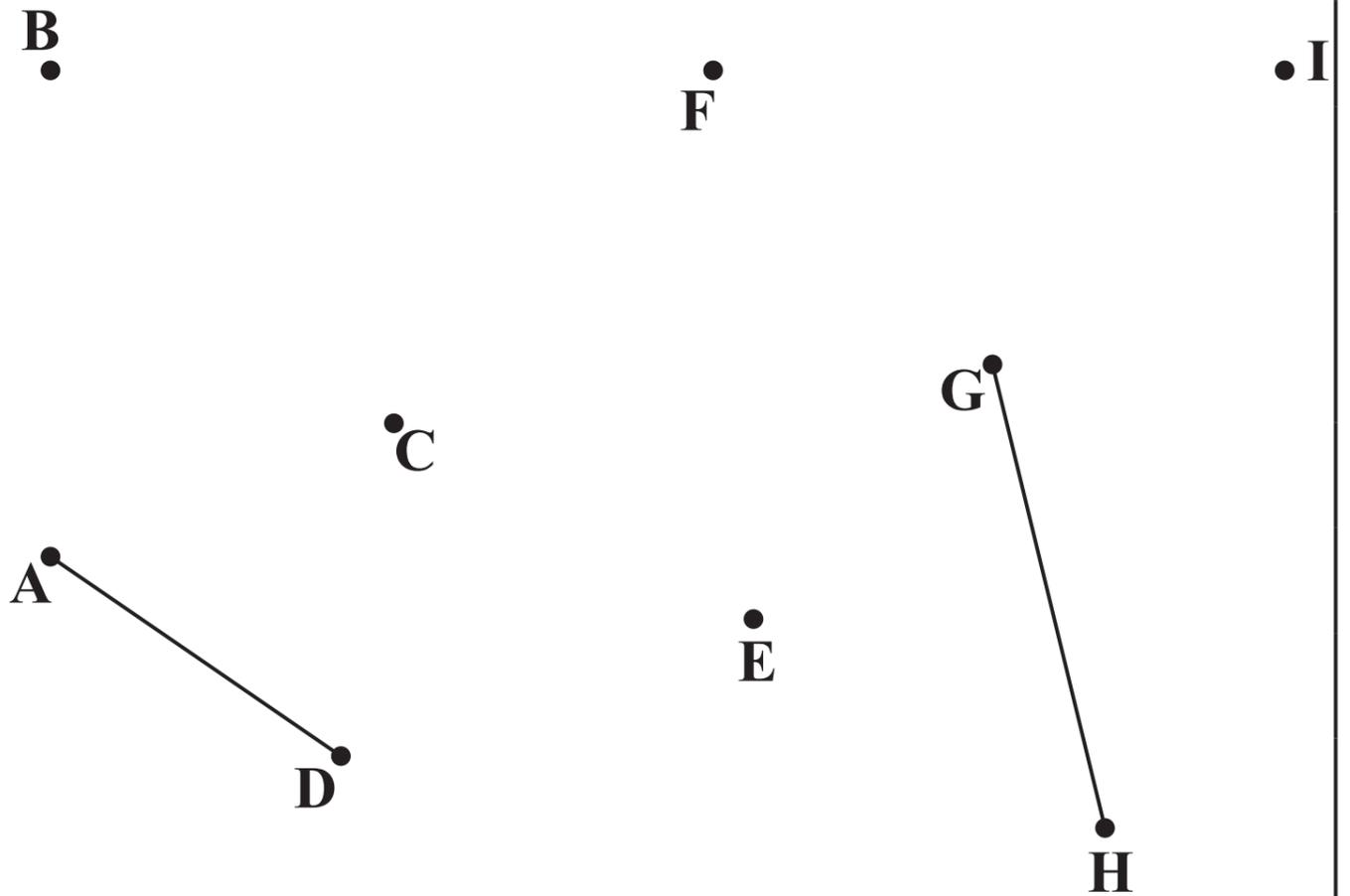


Permanent label  
Temporary labels (working values)

Do not cross out your temporary labels

1(ii)

- CD = 2
- FI = 2
- HI = 4
- BG = 7
- AC = 8
- FG = 10
- DE = 10
- BC = 11
- CG = 13
- BF = 14
- CE = 15
- EH = 19
- AB = 21



Total length of arcs in spanning tree =

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1(iii)


<b>2(i)</b>	

<b>2(ii)(A)</b>	

<b>2(ii)(B)</b>	

<b>2(iii)</b>	

<b>2(iv)</b>	<pre>graph LR; S((S)) --&gt; A((A)); S --&gt; D((D)); S --&gt; T((T)); S --&gt; B((B)); A --&gt; D; A --&gt; E((E)); D --&gt; E; B --&gt; E; B --&gt; G((G)); C((C)) --&gt; B; C --&gt; F((F)); F --&gt; G; E --&gt; G; G --&gt; T</pre>

<b>3(i)</b>	<b>12</b>	<b>34</b>	<b>15</b>	<b>23</b>	<b>10</b>	<b>25</b>
<b>3(ii)</b>						



<b>4(i)(B)</b>	
<b>4(ii)(A)</b>	
<b>4(ii)(B)</b>	
<b>4(iii)(A)</b>	
<b>4(iii)(B)</b>	
<b>4(iv)(A)</b>	



<b>5(ii)(B)</b>	
<b>5(iii)</b>	



<b>6(i) (continued)</b>	

<b>6(ii)</b>	

<b>6(iii)</b>	

<i>P</i>	<i>x</i>	<i>y</i>	<i>z</i>	<i>s</i> <sub>1</sub>	<i>s</i> <sub>2</sub>	<i>s</i> <sub>3</sub>	RHS

(answer space continued on next page)

**6(iii) (continued)**

<i>P</i>	<i>x</i>	<i>y</i>	<i>z</i>	<i>s</i> <sub>1</sub>	<i>s</i> <sub>2</sub>	<i>s</i> <sub>3</sub>	RHS

**6(iv)**

**6(v)**

**6(vi)**





