1. The following list of ten numbers is to be sorted into ascending order.

18 13 21 17 23 14 20 15 16 19

(a) Use bubble sort to sort the list into ascending order. You should only show the result of each pass.

(3)

(b)

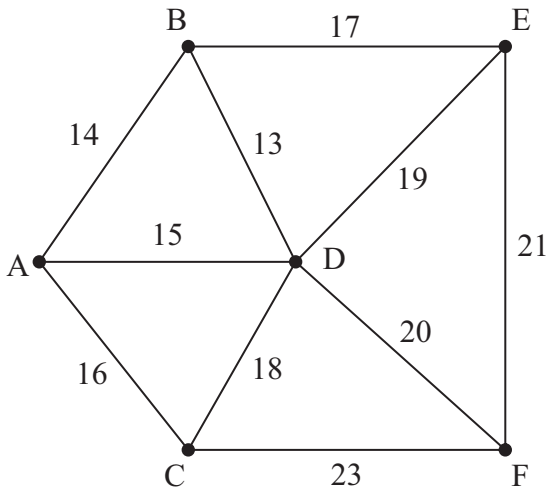


Figure 1

The list of ten numbers in part (a) represents the lengths of cables, in metres, that connect six workstations, as shown in Figure 1.

The workstations must be connected using the minimum amount of cabling.

(i) Use Kruskal's algorithm to find the minimum spanning tree for the network. You must clearly show the order in which the arcs are selected.

(ii) State the weight of the minimum spanning tree.

(4)

(Total for Question 1 is 7 marks)

Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International Advanced Level

Thursday 14 May 2026

Morning (Time: 1 hour 30 minutes)

Paper reference **WDM11/01A**

Mathematics

International Advanced Subsidiary/Advanced Level
Decision Mathematics D1
Answer book

You must have:
Question paper (sent separately)
Calculator

Total Marks

Candidates may use any calculator allowed by Pearson regulations. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B). Coloured pencils and highlighter pens must not be used.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- There are 8 questions in this question paper. The total mark for this paper is 75.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.

Turn over ▶

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P:1/1/

P 8 7 9 4 9 A 0 1 2 4

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Question 1

Write the answer to Question 1 on these 4 pages

18 13 21 17 23 14 20 15 16 19

DO NOT WRITE IN THIS AREA

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Question 1 continued

18 13 21 17 23 14 20 15 16 19

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Question 1 continued

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Question 1 continued

This is the end of Question 1 answer space. Please turn the page for Question 2 answer space.

(Total for Question 1 is 7 marks)