Computer Cable Analysis Assignment

This assignment refers to the ‘John Edmondson High School – Satellite Map’ (See Attached). Throughout you working, always round all distances to the nearest whole meter.

Understanding, Fluency and Communication

Part 1  (4 marks)
Using the ‘John Edmondson High School – Satellite Map’, draw a network diagram of all the labelled buildings connected by the covered walkways and existing trenches. Show the actual distances (to the nearest meter) on your diagram.

- Each vertex will represent a building and should be labelled with the appropriate letter from the Map (i.e., A to K, PL and P1 to P4)
- Each edge will represent a covered walkway, and should be labelled with the distance

Part 2  (6 marks)
The Department of Education wants to link the outside of each building to a computer network. Cable costs $45 per metre, and the covered walkways and existing trenches are to be used.

- They ask Company A to submit a proposal. Design and cost the most economical cable network for company A. Draw up Company A’s proposal, explaining your reasoning and justifying your working with calculations and network theory. Include a network diagram in your explanation

Problem Solving, Reasoning and Justification

Part 3  (6 marks)
In an effort to reduce the costs of cabling the school, the school executive decides that cable will be from Building ‘PL’ to Building ‘K’ connecting only those buildings that are on the shortest path.

- They ask Company B to submit a proposal for this. Find the shortest path from ‘PL’ to ‘K’ and cost this new cable network. Draw up Company B’s proposal, where cable costs $45 per metre, explaining your reasoning and justifying your working with calculations and network theory. Include a diagram in your explanation, and note the buildings that would not be included as part of the computer network in this proposal
Part 4  (6 marks)
The school asked Company C to consider the issues and submit a proposal for the construction. Company C decide that **no covered walkways will be used in their proposal**. Company C decides that they will charge $55 per metre for computing cable if it is laid in trenches which they dig, and $45 if existing trenches are used. The trenches would use the **shortest possible distance** between buildings and **ALL buildings** would be connected.
- Draw up Company C’s proposal, including a network diagram of the trenches that would need to be dug
- Include costing
- Justify your answer by calculations and network theory

Part 5  (6 marks)
The school asked Company D to consider the issues and submit a proposal for the construction. In addition to the covered walkways and existing trenches, Company D also has the ability to dig new trenches if required. Company D also charges $55 per metre for cable laid in a newly dug trenches and $45 per metre when using covered walkways and existing trenches.
- Company D is asked to submit a proposal for the most economical network **connecting every building** using a **combination** of covered walkways, existing trenches and new trenches (if required)
- New trenches use the shortest possible distance between buildings
- Draw up company D’s proposal, including a network diagram and a costing. Justify your answer with calculations and network theory

Part 6  (2 marks)
Imagine you are on the school executive. Which of the four proposals from either Company A, B, C or D would you accept? Explain why you made this decision.

End of Task