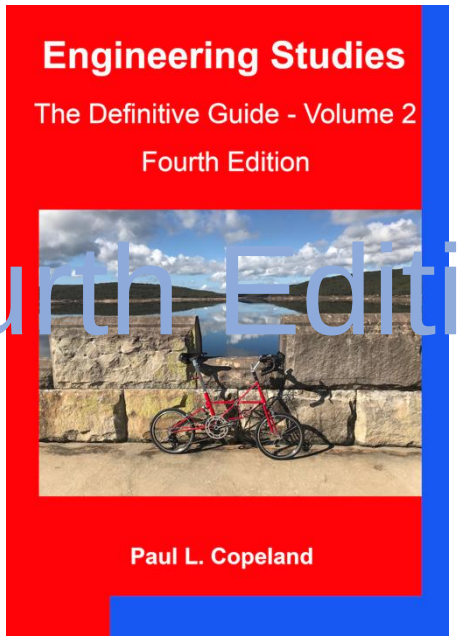
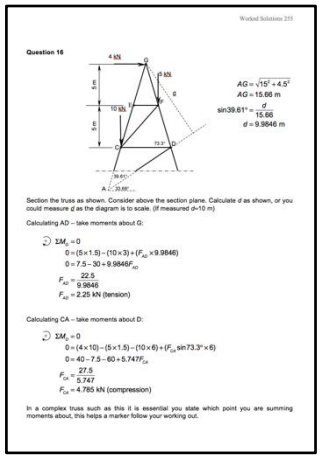
Engineering Studies
The Definitive Guide – Volume 2



Fourth Edition

The Fourth Edition of the premier guide to the Engineering Studies HSC course has just been released. This is the only text that follows the syllabus' module structure. New or updated content includes:

- Proof stress calculation
- Additional "friction on an inclined plane" example
- Austempered Ductile Irons
- Revised Heat treatment of Steels
- Precipitation Hardening
- Vector analysis of flight mechanics
- Titanium alloys and nickel alloys used in aviation
- Determining true length lines
- Digital Modulation Schemes
- Multiplexing Technologies
- GPS navigation
- Additional review questions
- Worked solutions to a selection of mechanics review questions


Worked Solutions 255

Question 16

Section the truss as shown. Consider above the section plane. Calculate d as shown, or you could measure d as the diagram is to scale. (If measured d=10 m)

Calculating AD – take moments about G:

$$\circlearrowright \Sigma M_G = 0$$
$$0 = (5 \times 1.5) - (10 \times 3) + (F_{AD} \times 9.9846)$$
$$0 = 7.5 - 30 + 9.9846F_{AD}$$
$$F_{AD} = \frac{22.5}{9.9846}$$
$$F_{AD} = 2.25 \text{ kN (tension)}$$

Calculating CA – take moments about D:

$$\circlearrowright \Sigma M_D = 0$$
$$0 = (4 \times 10) - (5 \times 1.5) - (10 \times 6) + (F_{CA} \sin 73.3° \times 6)$$
$$0 = 40 - 7.5 - 60 + 5.747F_{CA}$$
$$F_{CA} = \frac{27.5}{5.747}$$
$$F_{CA} = 4.785 \text{ kN (compression)}$$

In a complex truss such as this it is essential you state which point you are summing moments about, this helps a marker follow your working out.

This text has been used for almost 20 years across high schools and is an invaluable tool for students to learn the wide content of the Engineering Studies course. The wide external margin remains for note taking and the readable style remains making this text a key resource for success in the HSC examination.

For further information about the book please contact:

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