



QUESTION WORKBOOK

Statics of a particle

Mechanics · Year 12–13

6 questions · 20 marks

PRINT EDITION

SECTION A · Warm-up

- A1** State the condition for a particle to be in equilibrium, and how it is used in practice. [2]

- A2** A particle of weight 30 N rests on a smooth slope inclined at 25° , held by a string parallel to the slope. Find the tension and the normal reaction. [3]

SECTION B · Standard

- B1** A 10 N weight hangs in equilibrium from two strings making 20° and 70° with the horizontal. Find both tensions. [5]

- B2** A particle of weight 40 N is held at rest on a smooth 30° slope by a horizontal force P. Find P and the normal reaction. [4]

SECTION C · Stretch

- C1** For the two-string question, verify that $T_1^2 + T_2^2$ equals the weight squared, and explain why that happens for these particular angles. [3]

- C2** Explain the phrase 'limiting equilibrium', and what it adds to the two resolving equations when friction is present. [3]