

Write your name here

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**Pearson**  
**Edexcel GCE**

Centre Number

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Candidate Number

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# Mechanics M1

## Advanced/Advanced Subsidiary

Wednesday 8 June 2016 – Morning  
**Time: 1 hour 30 minutes**

Paper Reference

**6677/01**

**You must have:**

Mathematical Formulae and Statistical Tables (Pink)

Total Marks

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**Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. 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.
- Whenever a numerical value of  $g$  is required, take  $g = 9.8 \text{ m s}^{-2}$ , and give your answer to either two significant figures or three significant figures.
- When a calculator is used, the answer should be given to an appropriate degree of accuracy.

### Information

- 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.

Turn over ►

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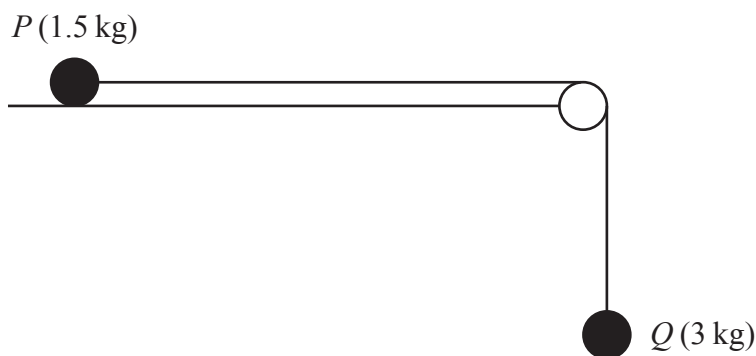


Figure 3

Two particles  $P$  and  $Q$  have masses  $1.5 \text{ kg}$  and  $3 \text{ kg}$  respectively. The particles are attached to the ends of a light inextensible string. Particle  $P$  is held at rest on a fixed rough horizontal table. The coefficient of friction between  $P$  and the table is  $\frac{1}{5}$ . The string is parallel to the table and passes over a small smooth light pulley which is fixed at the edge of the table. Particle  $Q$  hangs freely at rest vertically below the pulley, as shown in Figure 3. Particle  $P$  is released from rest with the string taut and slides along the table.

Assuming that  $P$  has not reached the pulley, find

- (a) the tension in the string during the motion, (8)
- (b) the magnitude and direction of the resultant force exerted on the pulley by the string. (4)

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