

## Mark schemes

<b>1</b>	D	[1]
<b>2</b>	D	[1]
<b>3</b>	C	[1]
<b>4</b>	A	[1]
<b>5</b>	C	[1]
<b>6</b>	C	[1]
<b>7</b>	C	[1]
<b>8</b>	B	[1]
<b>9</b>	B	[1]
<b>10</b>	A	[1]
<b>11</b>	B	[1]
<b>12</b>	D	[1]

## Examiner reports

- 1** This question tested candidates' understanding of some of the features of uniform circular motion. Just over half of the candidates realised that a particle moving at a constant speed must have unchanged kinetic energy - the correct response. 18% considered that momentum would be constant (distractor C), showing a failure to appreciate that momentum is a vector, whilst 17% considered that the force is in the same direction as the particle's displacement (distractor A).
- 2** This question raised similar demands to the previous question, in that they required more than one concept to be combined to give an algebraic result. In this question, the topics were circular motion and kinetic energy. Candidates were more successful here, producing a facility of 62% and good discrimination. Confusion between  $T$  and  $T^2$  caused 19% of them to select discriminator C.
- 4** This question, which tested angular speed, showed a facility from 55% to 78%. It was also one of the best discriminators in this test.
- 5** This question was also found to be easy (facility 84%), although a lower discrimination index than the first six questions points to the fact that even the best candidates do not always fully understand what is happening in circular motion.
- 6** Most candidates were able to deal competently with this question, where almost four-fifths of them obtained the correct value for the angular speed of the roundabout.
- 7** Understanding of the forces involved in circular motion was a prerequisite for this question. Although the examination facility of this question was 62%, the discrimination index (0.30) was the poorest of any question on this paper (however this is better than when the question was last used in an old AS paper). For teaching purposes it is important to note that nearly 20% of the candidates considered that the force keeping the mass at rest relative to the disc is a frictional force directed along a tangent to the circular path.
- 8** This question involved calculating the displacement of a model car moving in a circle. Just over half of the candidates chose the correct response, more or less in line with the previous facility of 57% for this old A level question.