

Name of the Student: \_\_\_\_\_

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

**Q1.**

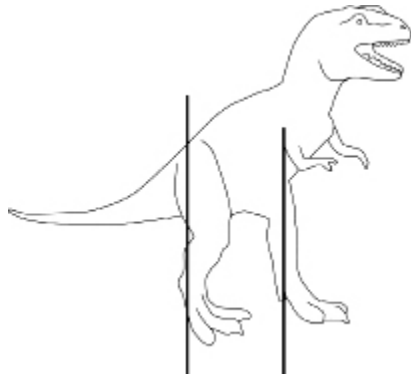
- |     |             |   |   |     |
|-----|-------------|---|---|-----|
| (a) | <b>C</b>    |   | 1 |     |
| (b) | moment      | <i>accept any unambiguous correct indication</i>            | 1 |     |
| (c) | bigger than | <i>accept any unambiguous correct indication</i>            | 1 |     |
| (d) | 120 (Ncm)   | <i>allow 1 mark for correct substitution<br/>ie 12 × 10</i> | 2 | [5] |

**Q2.**

- |     |          |  |   |     |
|-----|----------|--|---|-----|
| (a) | (i)      | 12   | 1 |     |
|     | (ii)     | 0.2  |   |     |
|     |          | <i>allow 1 mark for their (a)(i) ÷ 60 and correctly calculated</i>   | 1 |     |
|     |          | m/s <sup>2</sup>   |   |     |
|     |          | <i>accept correct unit circled in list<br/>accept ms<sup>-2</sup><br/>do <b>not</b> accept mps<sup>2</sup></i> | 1 |     |
| (b) | <b>B</b> |  | 1 | [4] |

**Q3.**

- |     |     |   |  |  |
|-----|-----|---|--|--|
| (a) | (i) | centre of <b>X</b> above the feet and in the body   |  |  |
|     |     | <i>a vertical line from their <b>X</b> falls between two lines in diagram - judged by eye</i> |  |  |



1

- (ii) where the mass seems to be concentrated  
*accept it's above the base (area)*  
*accept because otherwise it would topple*  
*accept line of action (of weight) passes through the base*  
*do **not** accept where the mass is concentrated*

1

(b) any **two** from:

- make (the area of) feet / base bigger
- make feet wider apart
- makes legs shorter / heavier
- make head smaller / lighter
- make tail touch the ground / make the tail longer  
*accept 'make centre of mass / gravity lower'*

2

[4]

#### Q4.

(a) (i) moment

1

(ii) rotation

1

(iii) the girl moves nearer to point **P**

1

(b) (i) **X** drawn in the centre of the space enclosed by the tyre  
*judge by eye*

1

(ii) below

1

[5]