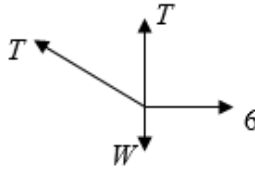


Modelling with Statics (without friction) - Edexcel Past Exam Questions MARK SCHEME

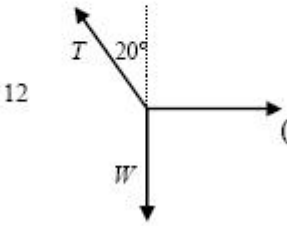
Question 1: June 05 Q3

| | | |
|---|--|--|
| 1 | <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>(a) R(\rightarrow) $T \cos \alpha = 6$ $\rightarrow T = \underline{7.5 \text{ N}}$</p> <p>(b) R($\uparrow$) $T + T \sin \alpha = W$ <i>Using same T's and solving</i> $\rightarrow W = \underline{12 \text{ N}}$</p> </div> </div> | <p>M1 A1 A1 (3)</p> <p>M1 A1 ↓ M1 A1 (4)</p> |
|---|--|--|

Question 2: Jan 07 Q1

| Question Number | Scheme | Marks |
|-----------------|---|--|
| (a) | $P \sin 30^\circ = 24$ $P = 48$ | <p>M1 A1 A1 <u>3</u></p> |
| (b) | $Q = P \cos 30^\circ$ ≈ 41.6 | <p>M1 A1 A1 <u>3</u> 6 <i>accept $24\sqrt{3}$, awrt 42</i></p> |

Question 3: June 07 Q1

| Question Number | Scheme | Marks |
|-----------------|---|---|
| 12 | <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>(a) $\rightarrow T \sin 20^\circ = 12$ $T \approx 35.1 \text{ (N)}$ awrt 35</p> <p>(b) $\uparrow W = T \cos 20^\circ$ $\approx 33.0 \text{ (N)}$ awrt 33</p> </div> </div> | <p>M1 A1 A1 (3)</p> <p>M1 A1 DM1 A1 (4) [7]</p> |

Question 4: June 09 Q5

| Question Number | Scheme | Marks |
|-----------------|--|---|
| | $F = P \cos 50^\circ$ $F = 0.2R \text{ seen or implied.}$ $P \sin 50^\circ + R = 15g$ <p>Eliminating R; Solving for P; $P = 37 \text{ (2 SF)}$</p> | M1 A1 B1 M1 A1 A1 DM1; D M1; A1 [9] |

Question 5: Jan 08 Q4

| Question Number | Scheme | Marks |
|-----------------|---|---------------------|
| (a) | $R (\parallel \text{ plane}): \quad 49 \cos \theta = 6g \sin 30$ $\Rightarrow \cos \theta = 3/5 \text{ *}$ | M1 A1 A1 (3) |
| (b) | $R (\text{perp to plane}): \quad R = 6g \cos 30 + 49 \sin \theta$ $R \approx \underline{90.1 \text{ or } 90 \text{ N}}$ | M1 A1 DM1 A1 (4) |

Question 6: Jan 10 Q3

| Question Number | Scheme | Marks |
|-----------------|--|-------------------------------------|
| | | |
| (a) | $R(\rightarrow) \quad 20 \cos 30^\circ = T \cos 60^\circ$ $T = 20\sqrt{3}, 34.6, 34.64, \dots$ | M1 A2 (1,0) A1 (4) |
| (b) | $R(\uparrow) \quad mg = 20 \sin 30^\circ + T \sin 60^\circ$ $m = \frac{40}{g} (\approx 4.1), 4.08$ | M1 A2 (1,0) A1 (4) [8] |