

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

gravity
newtons
balanced

each for 1 mark

[3]

Q2.

- (a) work done = force $\times$ distance **or** 250×5 **NB** if formula given must be correct

gains 1 mark

but

1250

gains 2 marks

[In this and similar examples, a correct answer only gets full marks.

From an incorrect formula, do not allow marks for 'error carried forward'

2

- (b) • (mainly) (transferred as) it is kinetic / movement energy (not 'mechanical')
• (some) lost / wasted / transferred as heat / sound
[Answers must refer to 'energy'. Do not allow 'it drives the bike']

or

used to overcome friction / air resistance

each for 1 mark

2

[4]

Q3.

- (a) force distance (either way round)
 energy
for 1 mark each

3

- (b) joules

for 1 mark

1

Q4.

- (a) reference to
- weight / force of gravity / acting downwards
 - unbalanced (by any upwards force)
- for 1 mark each*

2

- (b) *ideas that* forces balance(d)
- gains 1 mark*

but

weight / force of gravity / downwards force balanced by friction / air resistance / drag / upwards force

gains 2 marks

latter increases with speed

(*accept* arrows or relevant length and direction if clearly labelled, as answers to parts (a) and (b))

for 1 further mark

3

[5]**Q5.**

- (a) evidence of
- $$\text{speed} = \frac{\text{distance}}{\text{time}} \text{ (travelled) or } \frac{100}{20} \text{ or } \frac{40}{20}$$
- gains 1 mark*

but or any correct calculation of gradient
(*except when zero*) *gains 2 marks*

$$\frac{140}{70} \text{ or } 2$$

gains 1 mark

units metres per second **or** m/s **or** ms⁻¹

(not mps)

for 1 mark

3

- (b) *evidence of* calculating the two speeds
- $$\left(\frac{100}{20} \text{ and } \frac{40}{20} \text{ or } 5 \text{ and } 2 \right) \quad (\text{evidence of this may be in (a)})$$

or

noting distances travelled in same time (20 secs) i.e. 100m and 40m **but** 2.5

gains 2 marks

2

[5]