

Name of the Student: _____

Max. Marks : 24 Marks

Time : 24 Minutes

Mark Schemes

Q1.

(a) (i) linear scales used
do not credit if less than half paper used 1

points plotted correctly
all of paper used 1

(straight) line of best fit drawn
allow a tolerance of \pm half square 1

(ii) correct **and** straight line through origin
all needed
e.c.f. if their (a)(i) is straight but not through the origin - incorrect because line does not go through origin
credit a calculation that shows proportionality 1

(iii) 62 ± 0.5 (m)
credit 1 mark for $KE = 490000$ or $490kJ$
credit 1 mark for correct use of graph clearly shown 2

(iv) any **one** from: wet **or** icy **or** worn **or** smooth road
accept slippery slope

brakes worn
accept faulty brakes

car heavily loaded
worn tyres
downhill slope
do not accept anything to do with thinking distance e.g. driver tired or drunk 1

(b) (i) acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$

accept correct transformation

accept $\frac{v-u}{t} = a$

accept $m/s^2 = \frac{m/s}{s}$

do **not** accept acceleration = $\frac{\text{velocity}}{\text{time}}$

1

(ii) 56

accept -56

1

(iii) deceleration is reduced

accept deceleration is slower

accept acceleration

1

force on car and or passengers is reduced

accept an answer in terms of change in momentum for full credit

1

[11]

Q2.

(a) (i) B unless unqualified
for 1 mark

1

(ii) B unless unqualified
for 1 mark

1

(iii) energy lost, doing work against
air resistance/friction
for 1 mark

1

(b) intensity of gravity less (not zero)
for 1 mark

energies/restoring forces less
for 1 mark

2

[5]

Q3.

(a) (i) 6
for 1 mark

1

(ii) 6
for 1 mark

1

(iii) 1.5
for 1 mark

1

(iv) 4.5
for 1 mark

1

(v) 3
for 1 mark

1

(b) initial ke = 12J;

final ke = 0.75J + 6.75J;

energy loss = 4.5J

for 1 mark each

(If wrong; any correct ke value gains 1 mark; maximum of 2
path through calculation clear and correct gains 1 mark)
(ignore either ball – max 1 mark)

3

[8]