

MARKING SCHEME AND MODEL ANSWERS

Chapter 4: Laws of Motion

Maximum Marks: 40 | Suggested time: 60 minutes

Use after attempting the paper. Accept equivalent correct methods.

Suggested mark allocation:

1 mark: Correct fact, formula, unit or direction.

2 marks: Principle/formula (1); explanation, working or result (1).

3 marks: Relation (1); working/reasoning (1); final result and unit (1).

4 marks: Principle (1); setup/equation (1); working (1); result/interpretation (1).

Mark splits are a guide; award partial credit for valid steps.

Q1 - 1 mark

Mass.

Q2 - 1 mark

$F=ma$.

Q3 - 1 mark

No.

Q4 - 1 mark

$p=mv$.

Q5 - 1 mark

Zero.

Q6 - 1 mark

Opposes relative sliding.

Q7 - 1 mark

Inward resultant of actual forces.

Q8 - 1 mark

$\mu_s N$.

Q9 - 2 marks

4 m/s^2 .

Q10 - 2 marks

-3 kg m/s .

Q11 - 2 marks

98 N.

Q12 - 2 marks

24 N.

Q13 - 2 marks

10 N s.

Q14 - 2 marks

Water exerts a forward reaction.

Q15 - 3 marks

4 m/s^2 .

Q16 - 3 marks

-60 N.

Q17 - 3 marks

5 m/s^2 ; 86.6 N.

Q18 - 3 marks

20 N inward.

Q19 - 4 marks

$a=5 \text{ m/s}^2$; $v=15 \text{ m/s}$.

Q20 - 4 marks

$\Delta t = -10 \text{ N s}$; force = -100 N.