

# Practice Final Exam

GRADE 10

## Part A: In Motion

### Multiple Choice

- 1.) b
- 2.) d
- 3.) b
- 4.) d
- 5.) a
- 6.) b
- 7.) a
- 8.) b
- 9.) b
- 10.) c
- 11.) a
- 12.) c
- 13.) d
- 14.) b
- 15.) c
- 16.) —
- 17.) b
- 18.) a
- 19.) —
- 20.) —
- 21.) —
- 22.) —
- 23.) c
- 24.) b
- 25.) d

### Short Answer

1.) a. Breaking Distance =  $K \cdot v^2$   
 $= 0.06 \times (16.7 \text{ m/s})^2$   
 $= 16.7 \text{ m}$

b.  $16.7 \text{ m/s} \times 2 = 33.4 \text{ m/s}$   
 $d = 0.06 \cdot (33.4 \text{ m/s})^2$   
 $d = 66.9 \text{ m}$

$\frac{66.9}{16.7} = 4.005 \rightarrow 4$   $\therefore$  Breaking distance would quadruple.

- c. - Make sure you are alert when driving  
- Avoid distractions  
- Don't drink and drive

2.) a. The bike, because it has less mass. According to Newton's 2<sup>nd</sup> Law, an object with greater mass will require a greater force to accelerate.

b.  $F = m \cdot a$   
 $F = 600 \text{ kg} \cdot 3 \text{ m/s}^2$   
 $F = 1800 \text{ N}$

3.) Impulse is a force applied over a period of time; it results in a change in momentum. In a collision, air bags inflate and provide a barrier between the driver and the steering wheel. As a result, it increases the amount of time it takes for the "second collision" to occur, which also decreases the amount of force applied to the body.

4.) Inertia is the tendency for an object to keep doing what it was doing (resist changes in motion). When a car is driving, its passengers are also moving at that velocity. When the vehicle stops, the passengers do not slow down at the same rate, and want to keep moving forward. Therefore, a seat belt will prevent your body from moving forward; reducing your inertia.

5.) —

6.) \* 60 km/h  $\rightarrow$  16.7 m/s (Don't worry about having to do this conversion on your exam!)

$$d = k \cdot v^2$$

$$d = (0.10) \cdot (16.7 \text{ m/s})^2$$

$$d = 27.9 \text{ m.}$$

## Part B: Weather Dynamics

### Multiple Choice

1.) c      17.) d

2.) c      18.) a

3.) d      19.) —

4.) b

5.) —

6.) a

7.) d

8.) —

9.) a

10.) d

11.) —

12.) d

13.) b

14.) —

15.) —

16.) —