PRINCE SULTAN UNIVERSITY
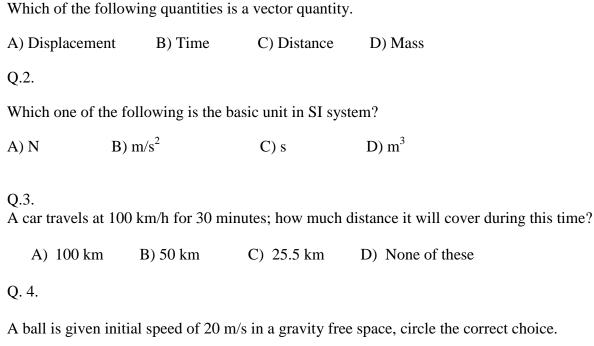جامعة الأمير سلطان

Name:	
ID number:	
Section number or time:	
Instructor's name:	

Important instructions:

1. Examination time: 60 minutes.
2. Write your name now before starting with the questions.
3. Switch off your mobile phone and put any books and notes away.
4. Check that you have 6 pages in total, including this cover page and a scratch paper.
5. You may use a calculator but you may *not* borrow one.

Good Luck!

	Mark
Part 1	
Part 2	
Total	

SCECTION I (7 Marks): Circle the letter of the correct answer. Use $g = 9.8 \text{ m/s}^2$

Q. 1.

Which of the following quantities is a vector quantity.

A) Displacement   B) Time   C) Distance   D) Mass

Q.2.

Which one of the following is the basic unit in SI system?

A) N   B) m/s^2 C) s   D) m^3

Q.3.

A car travels at 100 km/h for 30 minutes; how much distance it will cover during this time?

  A) 100 km   B) 50 km   C) 25.5 km   D) None of these

Q. 4.

A ball is given initial speed of 20 m/s in a gravity free space, circle the correct choice.

  A) Ball's acceleration is zero and it will always move with 20 m/s.
  B) Ball needs constant force to maintain its speed of 20 m/s.
  C) Ball will stop after sometime.
  D) Cannot determine.

Q.5

A baseball of mass 150 g is stopped by a player from a speed of 108 km/h in 0.1 s; what is the average retarding force on the baseball?

  A) 30 N.   B) 45 N.   C) 300 N.   D) None of these

Q.6

(2)

A body moves such that its initial position vector is $\vec{r_i} = 2\hat{x} - 3\hat{y}$ and the final position after 2 seconds is given by position vector $\vec{r_f} = 4\hat{x} + 3\hat{y}.$ What is the speed of this body?

A) 0.1 m/s.   B) 12.64 m/s.   C) 1 m/s.   D) 3.16 m/s.

SCENTION II (12 marks): ANSWER COMPLETELY SHOWING ALL YOUR WORK. Use $g = 9.8 \text{ m/s}^2$.

Q.1. (3 marks)

A baseball player throws a ball up along y-axis, with initial speed of 12 m/s.

    (a) What is the balls' maximum height above its release point?

    (b) How long does the ball take to reach a point 4.9 m above its release point?

Q2   (3 marks)

A Plane is flying horizontally with a velocity of 144 km/h due east. At a height of 0.1 km above the ground plane drops a package.

(a) Where does the package strike the ground relative to the point at which it was released?

(b)What is the velocity of the package when it hits the ground? (Write your answer in vector form).

Q.3.   (3 marks)

To avoid an accident a 1500 kg car skids due to breaking; car makes 200 m long skid mark on the road. Assuming that cars' deceleration was constant and coefficient of kinetic friction between road and tires is 0.5.

(a) What was the breaking force on the car?

(b) What was cars' speed when breaks were applied?

Scratch Paper (DO NOT REMOVE)