

Department of Mathematics and General Sciences

Physics 1 (PHY105) Second Major Exam

Second Semester, Term 132 Date: Mon. 28/04/2014

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

Q.1. which one of the following is the basic unit of Power in SI System?

A) J/s B) N C) J D) N.m

Q.2. A horse pulls a cart on a plain surface such that cart - horse system only overcomes friction. The cart moves with

A) Constant accelerationB) Negative accelerationC) Constant velocity.D) None of the above.

Q.3. The apparent weight of a 60 kg man in an elevator with a downward acceleration of 3.8  $m/s^2$  is,

A)	300N	B) 588N	C) 360N	D) 876 N
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Q.4. A mass of 100 kg slides down a frictionless incline plane inclined at an angle of  $30^{\circ}$ . Force of gravity on this mass along incline plane is,

A) 30 N. B) 490 N. C) 980 N. D) None of these

Q.5. A player stops a ball of mass 0.2 kg moving at 10 m/s. Work done by player is,

A) - 10 J. B) 20 J. C) - 100 J. D) + 10 J

Q.6. A 10 kg ball is dropped from 20 m above the ground. Its kinetic energy just before hitting the ground is

A) 1.96x10<sup>3</sup> J B) 196 J C) 200J D) None

## SCENTION II (9 marks): ANSWER COMPLETELY SHOWING ALL YOUR WORK. use $g = 9.8 \text{ m/s}^2$ .

Q1. A car moving at 90 km/h on a road with dip in the road. The dip is a part of a circle of radius of 60 m. Find the force felt by a 60 kg passenger at the lowest point on the road. (3 marks)



Q2. A 10 kg pot of flowers hangs by two ropes as shown in the diagram. Angle  $\Theta = 45^{\circ}$ . What are the tensions T<sub>1</sub> and T<sub>2</sub> in respective wires? (3 marks)



A 1000 kg box made of wood is sliding along an inclined surface. Surface is inclined at  $30^{\circ}$ . The box moves 20 m along the inclined surface with a constant velocity.

a) What is the coefficient of kinetic friction between wood and the surface?

b) What is the work done by gravity sliding box 20 m along the incline plane?

c) What is the work done against friction?

Scratch paper DO NOT REMOVE