

UNIVERSITY OF NAIROBI
DEPARTMENT OF PHYSICS
SPH 101 CAT

ATTEMPT ALL QUESTIONS
QUESTION ONE

DUE DATE: FEBRUARY 26, 2018

- (a) With a combined word count of 600 words or less, discuss any personal encounter you have had with the following physical processes
- (i) Linear motion
 - (ii) Moment of Inertia
 - (iii) Newton's Third Law of motion
- (b) Imagine you are competing in snow skating competition at the 2018 Winter Olympics and one of the winning strategies is to leap the furthest distance while airborne. Discuss the strategy you would employ in any one of the physical process in (a) to win gold.

QUESTION TWO

- (a) Discuss any two areas you have personally applied (not in the laboratory), the concept of Bernoulli's Principle citing exactly how the principle was employed. Use relevant equations and prove that using the equations, the application was a success or otherwise.
- (b) Is there any structural engineering design strategy you can think of that can be applied in local building industry that can apply the principle in 2 (a) above.

QUESTION THREE

- (a) How do you differentiate between a system that is undergoing uniform circular motion and one that undergoes rotational dynamics?
- (b) The picture below shows some structures for road construction.



Justify the shapes of the structures that guarantee strength of the materials and identify the principle employed in utilizing the shapes.