Salahaddin University-Erbil College of Science Department of Physics 2<sup>nd</sup> Stage / General



**Subject: Analytical Mechanics** 

Period: 60 Minutes
Date: 8 May 2022
First Examination

Second Semester 2021-2022

Q.1/ Show that Kinetic Energy for a System of N-particles is given by:

$$T = \frac{1}{2} m v_{cm}^2 + \sum_{i=1}^{N} \frac{1}{2} m_i v_i'^2$$

Where  $v_{cm}$  is the velocity of the center of mass and  $v_i'$  is the velocity of the individual particles relative to the center of mass.

Good Luck

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