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جامعة بني سويف التكنولوجية
BANI SWEF TECHNOLOGICAL UNIVERSITY

Mid-Term Exam for First Year Students
First Semester 2022-2023 **Date: 8-12-2022**

Program: Autotronics **Time: One hour**
Course: Physics

Answer all of the following questions

1- A disk speeds up from rest at a constant rate of 2.5 rad/sec^2. If the radius of the disk is 50 cm:-

a) What is the final angular speed of the disk after 18 sec?

b) What is the linear speed of a point at the edge of the disk after 18 sec.

2- The speed of the car is 47.52 km/hr. A lorry wheel is rotating at 400 RPM. What is the radius (in cm) of a lorry wheel if the lorry has a same speed with the car?

3- Using the dimensional analysis, derive an equation for the speed of sound (υ) in a gas of density (ρ) and pressure (**P**). The proportional constant K is equal to Π (**K = Π**).

4- The equation for the change of position of a train starting at x = 0 (m) is given by $x = 1/2\ at^2 + bt^3$. What are the dimensions of (b)?