

**GHULAM ISHAQ KHAN INSTITUTE OF ENGINEERING SCIENCES AND TECHNOLOGY**  
**QUIZ-1 EXAMINATION Fall 2023**  
**PH-101 – Applied Physics**

**Time Allowed: 40 minutes**

**Maximum Marks: 100**

Name: \_\_\_\_\_

Reg No: \_\_\_\_\_

Faculty: \_\_\_\_\_

Instructor: Dr. Tahir Naseem

**Q1. [CLO-1][PLO-1]** The period  $T$  of a wire depends on its tension,  $F$ , its length,  $l$ , and its mass per unit length,  $\sigma$ . Assuming the relationship of the form,  $T = KF^\alpha l^\beta \sigma^\gamma$ , where  $K$  is a dimensionless constant, use dimensional analysis to find  $\alpha, \beta$  and  $\gamma$ . **(35 points)**

**Q2. [CLO-1][PLO-1]** While exploring a cave, a spelunker starts at the entrance and moves the following distances. She goes 75.0 m north, 250 m east, 125 m at an angle  $30.0^\circ$  north of east. Find the resultant displacement from the cave entrance. **(40 points)**

**Q3. [CLO-1][PLO-1]** A test car travels in a straight line along the  $x$ -axis. The graph in **Fig.** shows the car's position  $x$  as a function of time. Find its instantaneous velocity at points **A**, **C**, and **E**. **(25 points)**

