FAST National University of Computer and Emerging Sciences, Lahore

Course: EE–117: Applied Physics
Session: Fall 2019
Date of Examination: 4 Sep 2019
Section: B
Name: _____

Instrument: Quiz–1
Instructor: Muhammad Shiraz Ahmad
Time duration: 30 min
Total Points: 20
Roll No.: _____

Note: All problems must be attempted. At the slightest suspicion of cheating, your paper will be marked zero. There will be no extension in time.

Q. 1 (5 points) Proof that the range remains the same for angles θ_1 and θ_2, if $\theta_1 + \theta_2 = \pi/2$

Q. 2 (5 points) A vector is given by $\vec{R} = \hat{i} + \hat{j} + 3\hat{k}$. Find (a) the magnitudes of the x, y, and z components, (b) the magnitude of $\vec{R}$, and (c) the angles between $\vec{R}$ and the x, y, and z axes.

Q. 3 (5 points) A Ferrari Enzo is able to reach a speed of 134 miles per hour ($60\,\mathrm{m\,s^{-1}}$) from $0\,\mathrm{m\,h^{-1}}$ in 11 seconds. Assuming constant acceleration, how far would the Enzo travel in this amount of time?

Q. 4 (5 points) A projectile is fired horizontally from a gun that is $45.0\,\mathrm{m}$ above flat ground, emerging from the gun with a speed of $250\,\mathrm{m\,s^{-1}}$. (a) How long does the projectile remain in the air? (b) At what horizontal distance from the firing point does it strike the ground?