**ELEC 5970/6970-2 ELECTRIC VEHICLES Fall 2022**

**HOMEWORK #1**

**Issue Date: 8/17/2022 Due Date: 8/24/2022**

Problem 1 (50 points)

Click on the link below and read the article:

<https://www.ev-volumes.com/#:~:text=Global%20EV%20sales%20reached%206,4%2C2%20%25%20in%202020>.

* (20 points) Monthly plug-in vehicle sales & Year on Year Growth, for 2021, what month has the highest percentage growth from 2021
* (30 points) Global BEV & PHEV Sales:
  + How many units of BEV&PEV were sold in 2021?
  + How much is the percentage increase as compared to 2020 sales?

Problem 2 (30 points)

Click on the link below and read the article:

<https://spectrum.ieee.org/what-v2g-tells-us-about-evs-and-the-grid-2657785771>

* For utilities looking for ways to store power for later use, all those shiny new EVs might look like rolling batteries:
  + EV battery can only be charged (draw power) from the grid (T/F)
  + In a power system grid, when the power demand exceeds the supply, the EV battery can be used to make up the difference by discharging its stored energy into the grid. (T/F)
  + In the early 1990s Elon Musk produced a two-seater sports car called the Tesla, which featured bidirectional charging capability (T/F).

Problem 3 (20 points)

Click on the link below and read the article:

<https://www.energy.gov/eere/vehicles/articles/fotw-1251-august-15-2022-electric-vehicles-have-lowest-annual-fuel-cost-all>

* Estimates of annual fuel costs for model year (MY) 2022 light-duty vehicles show that electric vehicles (EVs) can save consumers thousands of dollars over gasoline or diesel vehicles. (T/F)
* Annual Fuel Cost for Model Year 2022 Light-Duty Vehicles of Battery Electric Vehicle (BEV) is less than $1000.- (T/F)