

Physics-306
Homework Set (7)

This set is due by Tuesday 1st of Sha'ban, 1436 (19th of May, 2015) at 10.00 p.m. (*).

In *all homeworks*, please solve *fully* and *clearly*, *state assumptions*, and *comment* wisely (when applicable).

Please circle your final answer.

Feel free to study from books, and discuss with your instructor, or discuss with colleagues.

I wish you well, wa assalam alaikum!!

Zain Yamani
Phys-306 Instructor

(*) slip it under my Office door, in 15-3100

Question-1: In the (ct, x, y, z) basis, write down the Lorentz transformation matrix for a frame moving in the *negative-y* direction with a speed $12/13 c$, where c is the speed of light.

Question-2: Griffith Problem 12.19.

Question-3: Using the examples of parallel plate capacitor, and long solenoid, show that for system moving in the *positive-x* direction with a speed v , the electric and magnetic fields in the moving frame are related to that of the 'original' frame according to Griffith's Eqn. (12-108).

Question-4: State your *best* choice of *ten* E&M *lessons* learnt in phys-306 this semester, clearly justifying why they are your most special.

Your response should be supported with definitions, sketches, formulas, word-explanation, simulation, or otherwise. Your grade will be determined by not just quantity, but quality. If you are handwriting your answer, then make sure that it is legible.

Note: homework-7 has a *large* weight especially due to Question-4, so please solve diligently.