

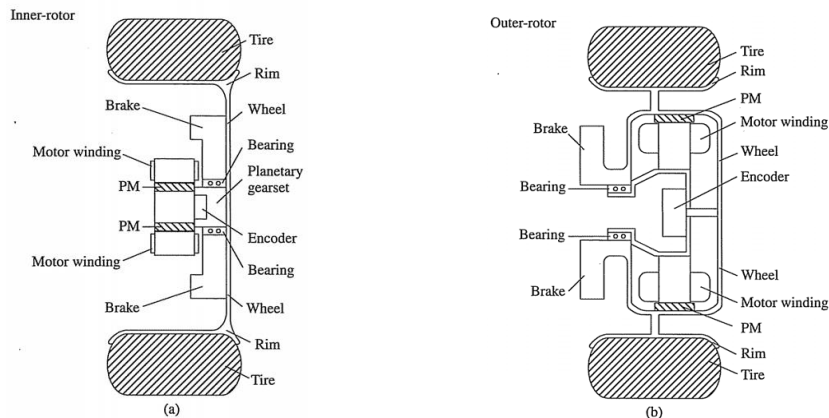
## EE512 First Test

- Time allowed 90 min. (plus 10 min scan and upload time)
- Do not answer with long paragraphs of writing. Answer in point form.
- Where suitable, use diagrams, charts, and graphs to help with your answer.
- Answer all questions (by hand). 25% per question.
- When finished, scan or photograph your answer sheets.
- Upload to the drop box link. File name: ChanDaiMan.pdf or ChanDaiMan1.jpg, ChanDaiMan2.jpg, etc.
- By submitting to the drop box link, you agree to acknowledge that all the submission work are done by you, with no external help.

### Question 1

Draw a torque speed dots graph (similar to page 9 of notes 5-19) of a single gear electric vehicle, when it is driving through a hilly terrain (e.g. Tai Mo Shan road). Explain the content of your graph.

### Question 2



Compare the operational differences and their advantages/disadvantages of the above two in-wheel motor.

### Question 3

With the help of a diagram(s), compare the differences between a DC Brush Motor, and a DC Brushless Motor. Explain why DC Brushless Motor is much preferred in electric vehicle.

### Question 4

In the control of switched reluctance motors, two control strategies exist. (1) APC Angular Position Control; and (2) CCC Constant current chopping control.

- (a) Why do we need two control strategies in a single controller?
- (b) Compare the differences between the two control strategies.

----- END -----