

Electromagnetics

2021 Homework 6

Deadline: 2021/6/8 10:15am

说明:

全用英文作答;

每题要对所有小问作答, 要给出全部必要的推导过程, 计算题要算出最终的数值结果, 比如开根号之类的;

所有计算出来的结果如果是有单位的物理量, 一定要写明单位;

每题的分数在括号中给出;

可以互相讨论, 也可以上网查, 但是不能抄袭, 也不能找别人代做;

所有的解答必须全部是手写的原件, 不接受扫描件与照片;

有问题请给老师或助教发邮件;

Textbook: Fundamentals of Applied Electromagnetics, 7th edition

Part I. Problems in textbook.

2.6 (10 points) Do not need to do (b).

2.13 (20 points)

2.26 (20 points)

2.33 (30 points)

2.38 (30 points)

2.41 (30 points) Do not need to use the CD Module.

2.42 (50 points)

2.43 (10 points)

2.45 (30 points)

2.46 (20 points)

PART II. Homemade.

1. (50 points) If a quarter wave transformer is used to match a load of $3Z_0$ to a transmission line with characteristic impedance of Z_0 at the frequency f_0 , calculate the characteristic impedance of the transformer. Calculate the frequency range (should be around f_0) within which the magnitude of the reflection coefficient on the Z_0 line is less than $1/3$.

2. (20 points) Use terminated transmission line theory to recalculate the reflection coefficient you found for problem 8.9.