

國立臺北科技大學一〇三學年第一學期

國立臺北科技大學

一〇三學年第一學期電機系博士班資格考試

電力系統保護與協調 試題

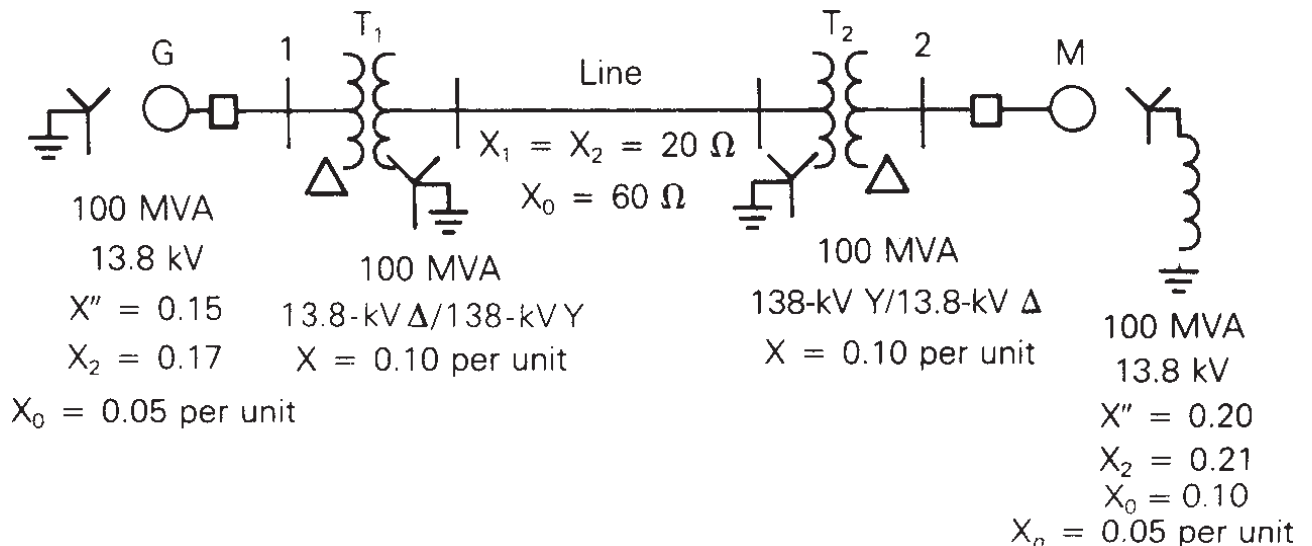
第一頁 共二頁



注意事項：

1. 本試題共【5】題，配分共 100 分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在試卷答案欄內，否則不予計分。
4. 考試時間：二小時。

1. (20%) Please write down the five basic facets of system Protection.
2. (20%) There are two most common connections for generators. What are they? Draw a simple diagram of them.
3. (20%) There are at least 10 advantages of per unit and percent. Please write down five of them in details.
4. (20%) In power system, please compare the system grounding`s and ungrounded system`s advantages and disadvantages.
5. (20%) For the system shown in the figure below



The negative-sequence and zero-sequence reactances are also given in the figure. The neutrals of the generator and Δ -Y transformers are solidly grounded. The motor neutral is grounded through a reactance $X_n = 0.05$ per unit on the motor base. Prefault voltage is $V_F = 1.05 \angle 0$ per unit. Prefault load current and Δ -Y transformer phase shift are neglected.

- a. (10%) Draw the per-unit zero-sequence, positive-sequence, and negative-sequence networks on a 100-MVA, 13.8-kV base in the zone of the generator.
- b. (10%) Calculate the per-unit subtransient fault currents in phases a, b, and c for a bolted three-phase-to-ground short circuit at bus 2.