國 立 臺 北 科 技 大 學

一〇四學年第二學期電機系博士班資格考試

電力系統保護與協調 試題

注意事項：

1. 本試題共【4】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. According to ANSI/IEEE standard of current transformer (CT), there are two standard classes namely class T and class C of CT. How to determine the accuracy for both classes of CT ? Consider a class C, 500:5, C100, CT with secondary connecting the protective relaying circuit with equivalent impedance 2 Ω seen from the CT secondary terminal. Determine the maximum CT primary current to assure that the CT ratio without exceeding 10% error. (25%)

2. Draw the system grounding schematic diagram for unit generator (large generator in utility system). Based on this schematic diagram, illustrate the basic principle of generator stator ground fault protection with primary protection by ground overvoltage (59G) relay and backup protection by overcurrent (50/51) relays. (25%)

3. For the transformer protection from overload-through-fault, the transformer damage curve should be determined. How to plot the transformer damage curve by ANSI/IEEE standard ? For the primary-delta secondary-wye-grounded（△／Y）transformer with overcurrent relays (51) or fuses on primary side, why the overcurrent relays or fuses protection curves of single phase-to-ground fault at secondary side is more important than that of phase-to-phase faults ? (25%)

4. Draw the arrangement of typical four-circuit breaker-and-a-half bus (1+1/2 bus) and the differential protection zones. Why the bus system will not loss of service when any bus or line faults trip ? (25%)