國 立 臺 北 科 技 大 學

九十九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【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. For three-phase-short-circuit fault protection, the wiring of current transformers (CTs) may use Y-connection or Δ -connection . Draw the wiring diagram of CTs with respect to Y-connection andΔ -connection and compare the performance of both connections based on the maximum burden impedance at CT secondary. (20%)
2. Sketch the simplified schematic diagram of current differential protection for an equipment or zone to be protected. Illustrate the basic principle of such protection scheme with respect to internal fault and external fault. In general, the current differential relay is percentage differential type, describe the main reason of using this type of relay. (20%)
3. For the transmission line protection, why did the distance relay be also called impedance relay? Draw the operation characteristic figure on the impedance plane (R-X plane) for the MHO type distance relay, in which the line impedance and load impedance should be shown. (20%)
4. The medium size and small generators are usually connected to bus directly, they are called bus-connected generators. Describe the typical protection of such generators by drawing the protection schematic diagram which includes various protection relays. The function of each protection relay in the diagram should be depicted . (20%)
5. Describe the main detrimental effect of negative sequence voltage on the three-phase induction motor by equivalent positive sequence and negative sequence circuit diagrams. How to protect induction motor from the negative sequence voltage ? (20%)