# 國立臺北科技大學

## 106 學年第二學期電機系博士班資格考試

## 交流電機控制試題

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。
5. 可以使用計算器及參考任何資料作答。

1. What is the flux-oriented control of a three-phase induction motor? （20%）

2. What is the direct rotor flux-oriented control of a three-phase induction motor? Compare the control techniques between indirect field-oriented control and direct field-oriented control for applying to an induction motor. (30%)

3. What is the direct torque control of a three-phase induction motor? Compare the control techniques between field-oriented control and direct torque control for applying to an induction motor. (30%)

4. A three-phase balanced-voltage, sequential *a-b-c* in phase; $v_a = 10\sin(10\,t)$ V, Calculate the *d*, *q* voltages ($v_d + jv_q$) in stationary and synchronous frames: （20%）

   (a) $v_q^s$ , $v_d^s$ ;  (b) $v_q^e$ , $v_d^e$