# 國立中正大學
# 108學年度碩士班招生考試
# 試 題

## [第1節]

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|---|---|
| **系所組別** | 電機工程學系-電力與電能處理乙組 |
| **科目名稱** | 電力系統 |

**—作答注意事項—**

※作答前請先核對「試題」、「試卷」與「准考證」之系所組別、科目名稱是否相符。

1. 預備鈴響時即可入場，但至考試開始鈴響前，不得翻閱試題，並不得書寫、畫記、作答。
2. 考試開始鈴響時，即可開始作答；考試結束鈴響畢，應即停止作答。
3. 入場後於考試開始40分鐘內不得離場。
4. 全部答題均須在試卷（答案卷）作答區內完成。
5. 試卷作答限用藍色或黑色筆（含鉛筆）書寫。
6. 試題須隨試卷繳還。

1. What is the definition of Line Transposition? What is its purpose? (5%)
2. What is the On-Load TAP-Changers (OLTC)? Please explain its functions? (5%)
3. What is the purpose of the Phase Shifter? (5%)
4. How to avoid the divergence situation when a power flow is implemented? (5%)
5. What are the Decoupled Power Flow and DC power low? What are their purposes? (10%)
6. Why the transmission loss affects the economic dispatch? Please clarify it (5%)
7. What is the difference between unit commitment and economic dispatch? (5%)
8. For the power flow calculation, in some cases, the original defined PV buses transfer to PQ buses. Please explain the reason? (15%)
9. Please clarify why the reactive power is affected by voltage and the active power is affected by angle? Please use mathematical equations to explain it. (15%)
10. For the power system in Fig. 1, please derive the power flow equations for $P_2$, $P_3$, and $Q_3$ for Fig.1. (15%)

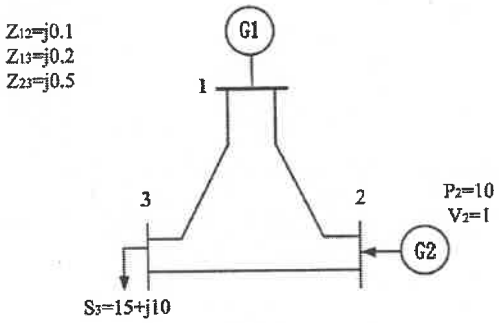


Fig. 1

11. In the power system network shown in Fig. 2, Bus 1 is a slack bus with V1 = $1\angle 0^0$ per unit and Bus 2 is a load bus with $S_2$ = 280 MW + j60 Mvar. The line impedance on a base of 100 MVA is $Z_{12}$ = 0.01 + j0.06 per unit. Using Gauss-Seidel method, determine V2. Use an initial estimate of V2= 1 + j0 and perform first iterations. (15%)

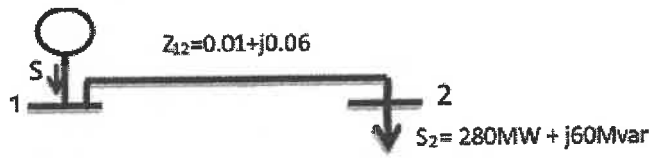


Fig. 2