

**ΘΕΜΑ Α****A1.**

1. α
2. β
3. α
4. β
5. β

**ΘΕΜΑ Β****B1.**

- 1 → ε
- 2 → β
- 3 → α
- 4 → γ
- 5 → στ

**B2.**

- i. Ατομική αντιστάθμιση
- ii. Ομαδική
- iii. Κεντρική

**B3.**

- i. Μετασχηματιστής
- ii. Ανορθωτική διάταξη
- iii. Φίλτρο
- iv. Σταθεροποιητής τάσης

**ΘΕΜΑ Γ****Γ1.**

$$X_L = \omega L = 250 \cdot 0,16 = 40\Omega$$

$$Z = \sqrt{R^2 + X_L^2} = \sqrt{30^2 + 40^2} = \sqrt{900 + 1600} = \sqrt{2500} = 50\Omega$$

$$\text{Γ2. } I = \frac{U}{Z} = \frac{150}{50} = 3A$$

**Γ3.**

$$X_L = X_C \Leftrightarrow \omega L = \frac{1}{\omega C} \Rightarrow C = \frac{1}{\omega^2 L} = \frac{1}{250^2 \cdot 0,16} = \frac{1}{10000} = 100\mu F$$

**Γ4.**

$$I' = \frac{U}{Z} = \frac{U}{R} = \frac{150}{30} = 5A$$

Γ5.

$$Q\pi = \frac{\omega L}{R} = \frac{250 \cdot 0,16}{30} = \frac{40}{30} = \frac{4}{3} = 1,3$$

**ΘΕΜΑ Δ**

Δ1.

$$S = UI = 200 \cdot 5 = 1000VA = 1kVA$$

Δ2.

$$\sigma\upsilon\nu\phi = \frac{P}{S} = \frac{600}{1000} = 0,6$$

Δ3.

$$Q = \sqrt{S^2 - P^2} = \sqrt{1^2 + 0,6^2} = \sqrt{1 - 0,36} = \sqrt{0,64} = 0,8KVAR$$

Δ4.

$$\sigma\upsilon\nu\phi' = \frac{P}{S'} \Rightarrow S' = \frac{P}{\sigma\upsilon\nu\phi'} = \frac{0,6}{0,8} = 0,75kVA$$

$$Q' = S' \cdot \eta\mu\phi = 0,75 \cdot 0,6 = 0,45kvar$$

Δ5.

$$Q_c = Q - Q' = 0,80 - 0,45 = 0,35 = 0,35kvar = 350var$$

$$C = \frac{Q_c}{\omega U^2} = \frac{350}{700 \cdot 200^2} = 1,25 \cdot 10^{-5} F = 12,5\mu F$$