

四技二專聯合複習考試 電機電子群電機類 專業科目（二） 詳解

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C	A	A	D	D	B	A	C	D	C	B	B	A	A	D	A	B	A	C	C
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
C	B	C	B	A	B	D	A	C	A	D	C	D	B	D	B	A	B	B	D

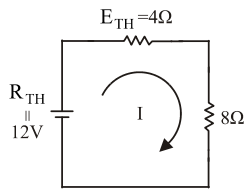
第一部份：電工機械

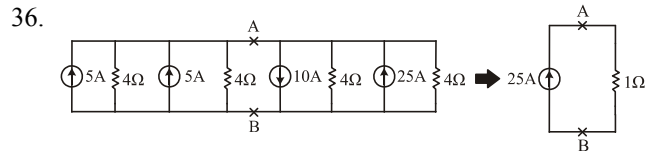
4. $\theta_e = 90^\circ$, $\theta_e = \frac{P}{2} \theta_M \Rightarrow \theta_M = 45^\circ$, 故 $\frac{45^\circ}{360^\circ} = \frac{1}{8}$ (轉)
5. $E = N \frac{\Delta\phi}{\Delta t} = N \frac{B \times A}{\Delta t} = 1000 \times \frac{10 \times 10^{-4} \times 10 \times 10^{-4}}{0.25}$
 $= 4 \times 10^{-3} = 0.004$ (v)
6. $E = 40 = \frac{2 \times 100}{60 \times 4} \times 0.04 \times n \Rightarrow n = 1200$ (r.p.m)
10. $\alpha = \frac{12^\circ}{\text{總去磁安匝}} = 4 \times \frac{12 \times 2}{360} \times (\frac{288}{2} \times \frac{120}{8}) = 576$ (安匝)
11. 轉 1 圈要 0.8's, $rps = \frac{1}{0.8} = \frac{1.25}{r.p.m} = 1.25 \times 60 = 75$
14. $T = \frac{4 \times 600}{2\pi \times 6} \times 0.03 \times 75 = 143.24$ (NT-m) = 14.61 (kg-m)

第二部份：電子學實習

21. Zener 沒有崩潰，故 R_L 之電壓 = $12 \times \frac{200}{100 + 200} = 8$ (v)
27. $V_m = 20$ (v), $V_{ab} = 2V_m = 40$ (v)

第三部份：基本電學實習

28. $I = \frac{150}{30k} = 5$ (mA)
- 當量測 200 V 時之內阻 = $\frac{200}{5(\text{mA})} = 40 \text{ k}\Omega$
- 故串聯之電阻 = $40 \text{ k}\Omega - 30 \text{ k}\Omega = 10 \text{ k}\Omega$
29. $E_{TH} = (-14) + 14 + 30 = 30$ (v)
- 則 $P_{RL(\max)} = \frac{E_{TH}^2}{4R_{TH}} = \frac{30^2}{4 \times 15} = 15$ (W)
- $R_{TH} = 3 + 7 + 5 = 15$ (Ω)
30. $R_{TH} = (4 // 4) + (6 // 3) = 4$ (Ω)
32. $I_T = (\frac{96}{4} + \frac{96}{8} + \frac{96}{12} + \frac{96}{16}) = 50$ (A)
- 並聯電壓 = $4 \times 24 = 96$ (V)
35.  , 故流過 8 Ω 之電流 $I = 1$ (A)



$\Rightarrow V_{AB} = 25$ (v)

37. 假設電流為 I , $-V_A = 15 \times I \Rightarrow V_A = -15 I$
 $120 = 30I + 2V_A + (-V_A) \Rightarrow 120 = 30I + V_A$
 $\Rightarrow 120 = 15I \Rightarrow I = 8$, 故 $V_A = -15 \times 8 = -120$ (v)
40. 假設 (A) 的地方短路

