电工电子部分习题参考答案

练习三 （计算题）

1. $a_0 = A,\quad a_k = 0,\quad b_k = \frac{A}{k\pi}(1 - Cosk\pi)$

2. $F = \sqrt{\frac{1}{T}\int_0^T f^2(t)\,dt} = \frac{A}{\sqrt{3}} = 0.5774A$

3. $i = 0.2\sqrt{2}\,Sin1000t + 0.011\sqrt{2}\,Sin(10000t - 113.7°)$ mA

   $u_C = 20\sqrt{2}\,Sin(1000t - 90°) + 0.11\sqrt{2}\,Sin(10000t - 203.7°)$ mV

   P= $P = I_{\omega 1}^2 R + I_{\omega 2}^2 R = 0.004$ mW

4. $U = \sqrt{U_0^2 + U_1^2 + U_3^2 + U_5^2} = 13.75$ V ， P=P_0+P_1+P_3+P_5=270mW

5. $u_0 = 219.9\sqrt{2}\,Sin314t + 3.4\sqrt{2}\,Sin(31400t - 79°)$ V

6. $i_B = 0.025 - 0.01\sqrt{2}\,Sin(10000t - 0.3°)$ mA

7. τ =1S, $u_C = 20 - 30e^{-t}$ V, $i = 0.006e^{-t}$ A

8. τ =0. 2S, $i = 10e^{-5t}$ mA, $u_R = 40e^{-5t}$ V, W=0. 04J

9. τ =0. 004S, $u_1 = 20 - 15e^{-250t}$ V, $i = 4 - 4e^{-250t}$ A a

10. τ =0. 002S, $u_2 = -90e^{-500t}$ V, $i = 6e^{-500t}$ A

11. τ =1S, $u_2 = 10.8e^{-t}$ V