

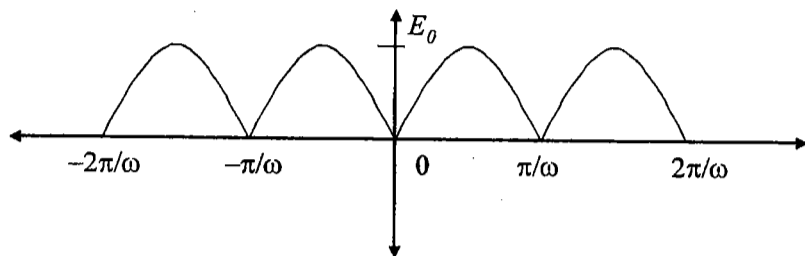
大葉大學 九十二 學年度 研究所碩士班 招生考試試題紙

系 所 別	組 別	考 試 科 目 (中文名稱)	考 試 日 期	節 次	備 註
電信工程	甲	工程數學	4月13日	第一節 08:30~10:00	1/1 共 2 頁

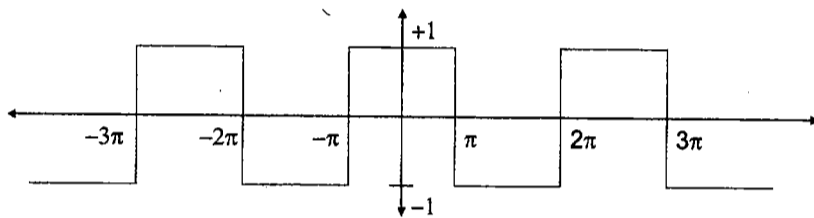
註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶）

答題應詳列計算步驟，否則一概不予計分

1. (10%) Find the Fourier series of the resulting periodic function of a full-wave rectifier



2. (10%) Find the Fourier series of the square-wave function and show that $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \dots = \frac{\pi}{4}$



3. (10%) Evaluate $\int_{-\infty}^{\infty} \frac{dx}{x^4 + 16}$

4. (10%) Evaluate $\oint_C \tan \pi z dz$, $C : |z| = 1$

5. (10%) Find the general solution of $2 \cos y dx = \sin y dy$

6. (10%) Find a general solution of $xy''' + 3y'' = e^x$

7. (10%) Let $f(t) = \sin \sqrt{t}$ Show the Laplace transform of $f(t)$ is $(\sqrt{\pi} / 2 s^{3/2}) e^{(-1/4)t}$

8. (10%) Using Laplace transform to solve the integration $y(t) = \sin 2t + \int_0^t y(\tau) \sin 2(t - \tau) d\tau$

9. (10%) Solve the nonhomogeneous equation $y'' + y = 2 \cos t$ with given initial value $y(0) = 3, y'(0) = 4$

10. (10%) Calculate the inverse from $\begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos x & -\sin x \\ 0 & \sin x & \cos x \end{bmatrix}$