

# 國立臺北科技大學九十八學年度碩士班招生考試

系所組別：1410 1420 1431 1432 能源與冷凍空調工程系碩士班甲乙丙組

## 第一節 工程數學 試題

第一頁 共一頁

### 注意事項：

1. 本試題共五題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

一、Please find the solutions of the following equations.

1.  $y'''' - y'' + 2y = 0$  (10%)

2.  $y' = \sqrt{x+y}, \quad (x+y) > 0$  (10%)

二、Please find the solutions of the following equations.

1.  $x^2 y'' - 7xy' + 16y = 0$  (10%)

2.  $y'' + 2y' + (1 + \omega^2)y = 0$  (10%)

三、Please find the solutions of the following equations.

$y'' - y' - 12y = 144x^3 + 12.5, \quad y(0) = 5, \quad y'(0) = -0.5$  (20%)

四、Please find the solution of the following equation by the Power Series Method.

$(x^5 + 4x^3)y' = (5x^4 + 12x^2)y$  (20%)

五、Please find the solution of the following partial differential equations.

$u_t + u_x = 0; \quad t > 0, \quad x > 0$  (20%)

$u(0, t) = 2e^{-3t}$

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