PY–201

B. Pharm. (Second Semester)
EXAMINATION, June, 2012
(Grading/Non-Grading)
ADVANCED MATHEMATICS
(PY – 201)

Time : Three Hours

Maximum Marks : 70

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) Form a differential equation by eliminating arbitrary constants :

$$y = A \cos\left(\frac{x}{k}\right) + B \sin\left(\frac{x}{k}\right)$$

(b) Solve :

$$\sec^2 x \cdot \tan y \cdot dx + \sec^2 y \cdot \tan x \, dy = 0$$

2. (a) Solve :

$$\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = e^{5x}$$

(b) Solve :

$$\frac{d^2y}{dx^2} - 7 \cdot \frac{dy}{dx} + y = e^{2x}$$

3. Solve :

$$\frac{dx}{dt} - 7x + y = 0, \frac{dy}{dt} - 2x - 5y = 0$$

4. (a) Find the Laplace transform of :

   (i) $\sin 2t \cos 2t$

   (ii) $\sin^3 2t$

   (b) Find the inverse Laplace transform of :

$$\frac{p+2}{p^2 + 4p + 3}$$

5. Using Laplace transform technique solve the equation :

$$\frac{d^2x}{dt^2} - 3\frac{dx}{dt} + 2x = 0$$

Subject to the conditions $x = 2, \frac{dx}{dt} = 0$, at $t = 0$.

6. (a) (i) Write the rules according to which numbers are rounded off.

   (ii) Round off the numbers to four significant figures :

$$1{\cdot}6381, 29{\cdot}0568, 0{\cdot}859279, 3{\cdot}14159$$

   (b) Explain the terms related with frequency histogram, frequency polygon and ogive.

7. (a) From a pack of 52 cards 6 cards are drawn at random. Find the probability that 3 are red and 3 are black cards.

   (b) If the names of 5 boys and 4 girls are written on the cards, find the probability to write the names of 3 boys and 3 girls on 6 cards at random.

8. Fit a straight line to the following data regarding x as the independent variable :

x	y
0	1·0
1	1·8
2	3·3
3	4·5
4	6·3