Assignment

B.A. (H) English II Year (Annual Mode)

DCC-Mathematics: Mathematical Methods

(Code: B-824)

पूर्णांक : 100
M.M. : 100

*Attempt any **two** questions in all.*
All questions carry equal marks.

Note : *The maximum marks printed on the question paper are applicable for the students. These marks will, however be scaled down proportionately in respect of the students of regular colleges, at the time of posting of awards for compilation of result.*

Q.1. (*a*) Use the Newton-Raphson method to determine a real root of each of the equation $x^4 - x - 10 = 0$ to three decimal places:

(*b*) Solve the following systems of equations using the Gauss elimination method.

$$2x_1 + x_2 + x_3 = 10$$
$$3x_1 + 2x_2 + 3x_3 = 18$$
$$x_1 + 4x_2 + 9x_3 = 16$$

Q.2. (*a*) Calculate Karl Pearson's coefficient of skewness for the following frequency distribution.

Class Interval:	383-387	388-392	393-397	398-402	403-407
Frequency:	8	10	15	17	8

(*b*) If the probability distribution function of a random variable is given by

$$p(x) = \begin{cases} x/15 & x = 1, 2, 3, 4, 5 \\ 0 & otherwise \end{cases}$$

then find

(*i*) P[X = 1 or 2]

(*ii*) Find $P\left[\frac{1}{2} < X < \frac{5}{2} | X > 1\right]$.

Q.3. (*a*) Using the method of least squares, find the line of best fit relating y to x for the following data. Also, plot the line and the data points.

x	2	3	4	5	6	7
y	3	5	5.5	6	8	9.5

(*b*) Obtain the equation of the line of regression of *y* on *x* for the following data. Also estimate *y* when *x* = 32.

x	23	27	28	28	29	30	31	33	35	36
y	18	20	22	27	21	29	27	29	28	29

Q.4. (*a*) Using graphical method, solve the following LPP:

Maximize $Z = 2x + 3y$

subject to

$x - y \leq 2$
$x + y \geq 4$
$x, y \geq 0$

(*b*) Explain zero sum game and non zero sum game.

Determine the optimum strategies for the two players A and B and find the value of the game for the following payoff matrix:

A \ B	I	II	III	IV
I	3	–1	4	2
II	–1	–3	–7	0
III	4	–6	2	–9