

EASTERN UNIVERSITY, SRI LANKA

Faculty of Commerce and Management

Department of Commerce

First Year / First Semester Examination in

Business Administration/Commerce (Repeat)

2002/03 & 2002/03(A)

COM 1024 Mathematics and Statistics

Answer All questions .

Time: Three (03) Hours.

Each question will carry equal marks.

1. (a) Simplify the following.

i. $\frac{y^4x^3 - y^2x^4}{x^4y^4 + x^5y^5}$

ii. $\frac{1}{(y^2 - 3y)} + \frac{4}{(y - 3)}$

(b) Solve the following equations.

i. $\frac{x - 1}{x + 1} + \frac{x + 1}{x - 1} = 75$

ii. $5x + 3y = 32$

$4x + 4y = 32$

2. (a) Find the coordinates of the point of intersection of two lines $3x + y = 2$ and $3x + 5y = -2$.
- (b) Find the coordinates of a point B such that C is the middle point of AB whose equation is $3x + y = 2$ and the coordinate of A is $(-2, 8)$.
- (c) Find the turning point of the graph $y = 2x^2 + 3x + 1$. Determine whether the turning point is maximum or minimum.
3. (a) What do you mean by a unit matrix?
Illustrate your answer with three examples.

- (b) Find the inverse matrix of

$$A = \begin{pmatrix} 3 & 4 & 2 \\ 1 & 0 & 1 \\ 0 & 2 & 1 \end{pmatrix}$$

- (c) Solve the following system of equations by using matrix algebra.

$$4x - y + z = 11$$

$$2x + y - z = 7$$

$$x + 4y + z = 12$$

4. (a) What do you mean by the terms 'Discrete Data' and 'Continuous Data'?

(b) Find the Mean, Median, Mode, Standard Deviation and Variance for the following distribution.

Class in kg	11 - 20	21 - 30	31 - 40	41 - 50	51 - 60
Frequency	20	35	50	30	25

5. An event has three possibilities in a trial outcome, namely A, B and C. Their probabilities are 20%, 30% and 50% respectively. Three trials were taken place.

(a) Write down the sample space for the outcome of the three trials.

(b) Determine the probability of the following outcomes of three trials:

(i) 1A, 1B, and 1C

(ii) 2A

(iii) 2A, 1C

(iv) 3B

(v) B, 2C

(vi) at least one A

(vii) B, A, and C in order

(viii) not having C