

**UCSC****UNIVERSITY OF COLOMBO, SRI LANKA****UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING****DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)****Academic Year 2010/2011 – 2nd Year Examination – Semester 3*****IT3304: Mathematics for Computing-II******PART 2 - Structured Question Paper*****25th February 2011****(ONE HOUR)****To be completed by the candidate**

BIT Examination Index No:

Important Instructions:

- The duration of the paper is **1 (One) hour**.
- The medium of instruction and questions is English.
- This paper has **3 questions** and **07 pages**.
- **Answer all questions.**
- **Question 2 (40% marks) and other questions (30% marks each).**
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.

Questions AnsweredIndicate by a cross (×), (e.g.

×

) the numbers of the questions answered.

To be completed by the candidate by marking a cross (×).				
	1	2	3	
To be completed by the examiners:				

1)

(a) Let $A = (a_{ij})$ be a square matrix of order n and C_{ij} be the cofactor of a_{ij} .

(i) Write an expression to find $|A|$ by expanding along the row i .

(ii) Write an expression to find $|A|$ by expanding along the column j .

(b) Let $A = \frac{1}{3} \begin{pmatrix} 11 & -2 & 8 & 5 \\ -4 & 2 & -6 & 2 \\ 8 & 1 & 6 & 9 \\ -7 & 12 & 3 & 6 \end{pmatrix}, B = \frac{1}{3} \begin{pmatrix} -8 & 3 & 9 & -2 \\ 3 & -5 & 2 & -3 \\ -7 & 10 & -6 & -8 \\ 6 & 1 & 4 & -7 \end{pmatrix}, C = \frac{1}{3} \begin{pmatrix} 9 & 11 & 7 & 2 \\ 0 & 1 & 8 & 12 \\ 0 & 0 & 3 & 6 \\ 0 & 0 & 0 & 1 \end{pmatrix}.$

Find

(i) $\left| \mathbf{A} + \mathbf{B} \right|$

(ii) $|\mathbf{C}|$

(c) Let $A = \frac{1}{3} \begin{pmatrix} 2 & -2 & 1 \\ 1 & 2 & 2 \\ 2 & 1 & -2 \end{pmatrix}$.

Find

(i) A^{-1}

(ii) $|A^{-1}|$

(30 marks)

ANSWER IN THIS BOX

2)

(a) Prove that $\sum_{n=1}^{\infty} \frac{1}{n(n+1)} = 1$

(b) Find the area bounded by the curves $y_1 = x^2$ and $y_2 = 1 + 2x - x^2$.

(40 marks)

ANSWER IN THIS BOX

ANSWER IN THIS BOX

[illegible]
