

UNIVERSITY OF COLOMBO, SRI LANKA



UCSC 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	е
BIT Examination Index No	o:

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.

Questions Answered

- 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.

Indicate by a cross (x), (e.g. X) the nu	mbers of	the ques	stions ans	wered.
To be completed by the candidate by marking a cross (x).	1	2	3	
To be completed by the examiners:				

(a) Let $A=\left(a_{ij}\right)$ 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) $|\mathbf{A} + \mathbf{B}|$
- (ii) |C|

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

Find

(30 marks)

	<u>A</u>	N	S	N	Ł	K	<u> </u>	N	<u>'I</u>	Ή	Ц	<u>S</u> .	B(<u>U</u>	<u>X</u>																						
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2)	(a)	Prove that	$\sum_{n=1}^{\infty} \frac{1}{n(n+1)} =$	1
			$\frac{1}{n-1}$ $n(n+1)$	

(b)	Find the area bounded by the curves $y_1 = x_1$	x^2 and $y_2 = 1 + 2x - x^2$	
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(40 marks)

ANSWER IN THIS BOX

3) In probability distribution of the number of heads obtained is given below.

X	0	1	2	3
P[X=x]	С	c^2	c - 2c ²	$c^2 + 2c$

- (a) Determine the value of c.
- (b) Calculate the probability of getting at most one head.
- (c) If that player gets more than two heads he will win the game. Calculate the probability of winning the game.
- (d) Calculate the expected number of heads that the player can get.
- (e) Calculate the standard deviation of the number of heads obtained.

(**30** marks)

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