



Dept. of Computer Engineering
Second Exam, First Semester: 2016/2017

Course Title: Engineering Analysis II
Course No: (630262)

Date: 28/12/2016
Time Allowed: 50 minutes

NOTES: - Round ALL your calculations to 4 significant digits
- Angles for trigonometric functions are in radian scale

Please choose your section:

Instructor: Eng. Anis Nazer Eng. Sultan Al-Rushdan

Lecture time: 8:10 ح خ 8:15 ن ن 11:15 ن ن

Question 1: _____ (5 marks)

Assume that $[A]=\begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$, $[B]=\begin{bmatrix} 1 & -1 \\ -2 & 1 \end{bmatrix}$, $[C]=\begin{bmatrix} -4 & 1 \\ 3 & 3 \end{bmatrix}$

a) Calculate $[B][A]$

b) Find $[A]^{-1}$

c) Use power method to find an eigen value of $[C]$. Start with $[V]=\begin{bmatrix} 1 \\ 1 \end{bmatrix}$, and perform 3 iterations

Question 2: _____ (5 marks)

Use Gauss-Seidel method to solve the following system, **rearrange the system if necessary**. Start with a=1, b = 2, c=3 and perform 2 iterations

$$\begin{bmatrix} 2 & -1 & 0 \\ 1 & 1 & -3 \\ 2 & 4 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 5 \\ -11 \\ 4 \end{bmatrix}$$

Question 3: _____ (5 marks)

a) Find the third order polynomial that passes through the points using Newton difference method, and **write the function in the simplest form**

b) Use the polynomial to approximate $f(0.2)$

x	-1.5	-0.5	0	1
f(x)	3	5.5	6.75	10

Question 4: _____ (5 marks)

Apply **linear** regression to find the best line for the following data

x	-3.7	-3.2	-2.5	-2	-1.9
y	1.5	2.2	3.1	4.1	4.2