

2013-14

EXTC

Set-03

AIKTC, School of Engineering & Technology

UNIT TEST 1

FEB 2014

SE- All Branches

Sem IV (CBSGS)

Applied Maths IV

Q.1 a) Prove that Eigen values of a Hermitian matrix are real numbers. (12)

b) $A = \begin{bmatrix} -1 & 2 & 3 \\ 0 & 3 & 5 \\ 0 & 0 & -2 \end{bmatrix}$ Find the Eigen values and Eigen vectors for $A^3 + 5A + 8I$.

c) $A = \begin{pmatrix} \pi & \pi/4 \\ 0 & \pi/2 \end{pmatrix}$ Find $\cos A$

Q.2) Given $A = \begin{bmatrix} 2 & 1 & 1 \\ 2 & 3 & 2 \\ 3 & 3 & 4 \end{bmatrix}$ (8)

a) Find Eigen values and eigen vectors of A.

b) Is A Diagonable? Explain.

c) Is A derogatory? Explain.

OR

Q.2) Given $A = \begin{bmatrix} 1 & -2 & 0 \\ 1 & 2 & 2 \\ 1 & 2 & 3 \end{bmatrix}$ (8)

a) Find Eigen values and Eigen vectors of A.

b) Is A Diagonable? Explain.

c) Is A Derogatory? Explain.



ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL
School of Engineering & Technology

Subject: WTP

Date: 21 - 02 - 2014

Marks: 20

Duration: 1 Hr/s

Class: SE *Sem IV*

UT - I

Branch: EXTC

ALL QUESTIONS ARE COMPULSARY

Q1. Solve **any five** of the following **[5x02]**

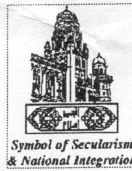
- (a) State Biot Savart's Law.
- (b) State Maxwells equations in point form and integral form for time varying field.
- (c) The general boundary conditions for dielectric-dielectric interface are $E_{1t} = \underline{\hspace{1cm}}$, $D_{1t} = \underline{\hspace{1cm}}$, $E_{1n} = \underline{\hspace{1cm}}$ and $D_{1n} = \underline{\hspace{1cm}}$.
- (d) State uniqueness theorem.
- (e) State the equation for uniform plane waves in non conducting media in the terms of electric field intensity and magnetic field intensity.
- (f) The electric flux density is given as 10 C/m^2 . Find the electric field intensity if the relative permittivity is 4.4.

Q2. Attempt **any one** of the following **[05]**

- (a) Point charge Q_1 , $300 \mu\text{C}$ located at $(1, -1, -3)$ m experiences a force, $\vec{F} = (8\vec{a}_x - 8\vec{a}_y + 4\vec{a}_z) \text{ N}$ due to point charge Q_2 at $(3, -3, -2)$ m. Determine the charge Q_2 .
- (b) Show that $\nabla^2 V = -\rho_v / \epsilon$

Q3. Attempt **any one** of the following **[05]**

- (a) If $\rho = 3xy \text{ C/m}^2$. Find out the total charge present on top surface of a cube of side 2 m and centred at origin with edges parallel to the axis.
- (b) Write short note on electromagnetic pump.



2013-14

ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL
School of Engineering & Technology

Subject: MP

Marks: 20

Class: Second Year Sem IV UT-I

Date: Feb. 14

Duration: 1 Hr/s

Branch: EXTC

Instructions:

Q.1 Attempt any four (3) out of six (6).

12 M

1. Draw format of flag register of 8085 microprocessor and explain.
2. Explain following pin signal of 8085 microprocessor: -
 - a) HOLD
 - b) HLDA
 - c) \overline{RD}
 - d) ALE
3. Explain De-Multiplexing process of Address and Data Bus in 8085 microprocessor based system.
4. Explain register organization of 8085 microprocessor.
5. Explain pipelining concept in 8086 microprocessor.
6. Give the advantages of Memory segmentation.

Q.2 Attempt any one of the following.

8 M

1. Draw the architecture of 8086 microprocessor and explain function of Bus interface unit.
2. Explain Memory segmentation and how 20 bit physical address is generated in 8086 microprocessor.
3. Explain the maximum mode pin signals of 8086 microprocessor.



2013-14

ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL
School of Engineering & Technology

Subject: Signal & System

Duration: 1 Hr

Class: S.E

Branch: Electronics & Telecommunication

Feb. 14

Sem IV

UT - I

Instructions: Attempt any 4

20 marks

1) a) Determine Given Signal is periodic or non periodic **5**

i) $x(t) = 2\cos t + 3\cos t/3$

ii) $x(n) = e^{j(\pi/4)n}$

2) $x(n) = (0.5)^n u(n)$ state whether it is energy or power signal justify **5**

3) Find and sketch the even and odd components of the following: 5

a) $x[n] = 1 ; -1 \leq n \leq 2$
 $= 0.5 ; 3 \leq n \leq 4$
 $= 0 ; \text{ Otherwise}$

4) Check whether the signal Linearity, Time variance, causal or non causal **5**

i) $y(t) = x(t) \cdot \cos 100 \pi t$

ii) $y(n) = x(n) + n x(n+1)$

5) plot the signal with respect to time

$x(t) = u(t) - r(t-1) + 2r(t-2)$

**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL
School of Engineering & Technology**

Subject: Control System (ETC405)

Date: Feb 2014

Marks: 20

Duration: 1 Hr

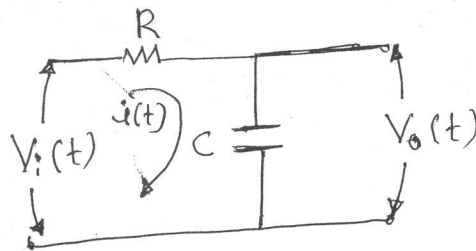
Class: IV V.T. I

Branch: EXTC

Instructions:

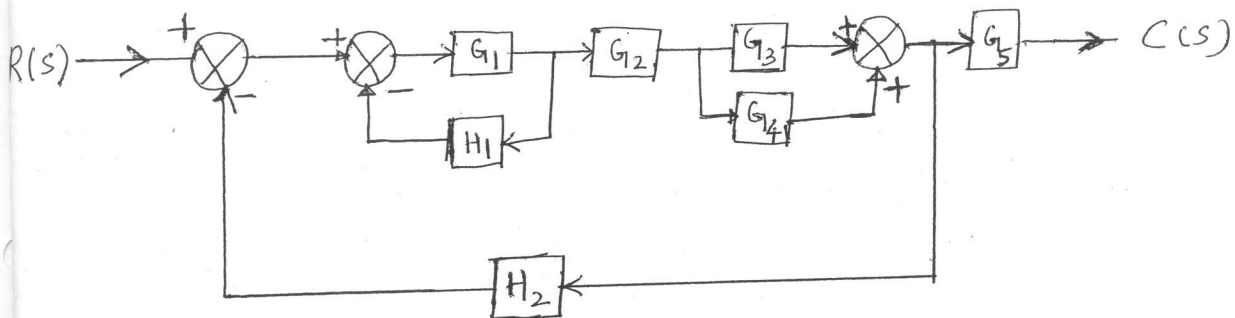
Q1. Attempt any two of the following. (6x2=12 Marks)

1. What is need of a control system? Compare closed loop control system over open loop control system.
2. Describe the terms:
 - i) Characteristics equation
 - ii) Poles
 - iii) Zeroes
3. Find the transfer function and response of a RC network. And comment on the stability of the RC network.



Q2. Attempt any one of the following. (8x1=08 Marks)

1. Find transfer function of following block diagram.



2. Find the transfer function of the following system by using signal flow graph.

