Set-02

Symbol of Secularism & National Integration

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

(2013-14)

Subject: Signal & System
Marks: 30
Class: TE EXTC (V)

Test - II

Date: Oct. 13
Duration: 1 Hr
Branch: EXTC

Q1) Solve any One out of Two.

A) Explain the properties of Fourier transform. 10 Marks

B) Explain the basic continuous time system. 10 Marks

$$\frac{d}{dt} y(t) + t\,y(t) = x(t)$$

Q 2) Solve any Two out of Three.

A) A system describe by following different equation

$$y(n) = \frac{1}{2} y(n-1) + \frac{1}{4} y(n-2) + x(n) + x(n-1).$$

Obtain :

1) Direct from I realization.
2) Direct from II realization.
3) Cascade realization.

B). Consider the state variable model of a second order system: 10 Marks

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 2 \end{bmatrix} u$$

$$\begin{bmatrix} x_1(0) \\ x_2(0) \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} : u = \text{unit step}.$$

i) Find State transition matrix.

C). Relationship between Fourier & Laplace transform. 10 Marks

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T.E
E.X.T.C.
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ANJUMAN-I-ISLAM'S
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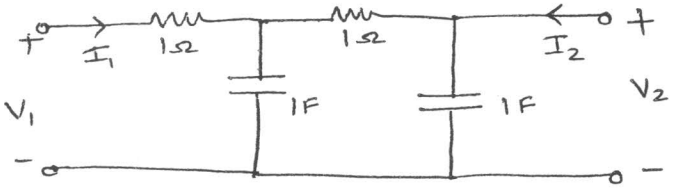
Subject: Circuit & Transmission Line | **Date:** Oct.13
Marks: 20 | **Duration: 1 Hr**
Class: TE EXTC (V) | **Branch: EXTC**

Test - II (2013-14)

Q1) Solve any Two out of Three.

A) For load impedance $Z_L = 60 - j80\ \Omega$, design two signal stub (Open circuit) shunt tuning network to match this load to 50Ω line. Assuming that load is matched at 2GHz, and the load consist of a resistor and capacitor in series. 10 Marks

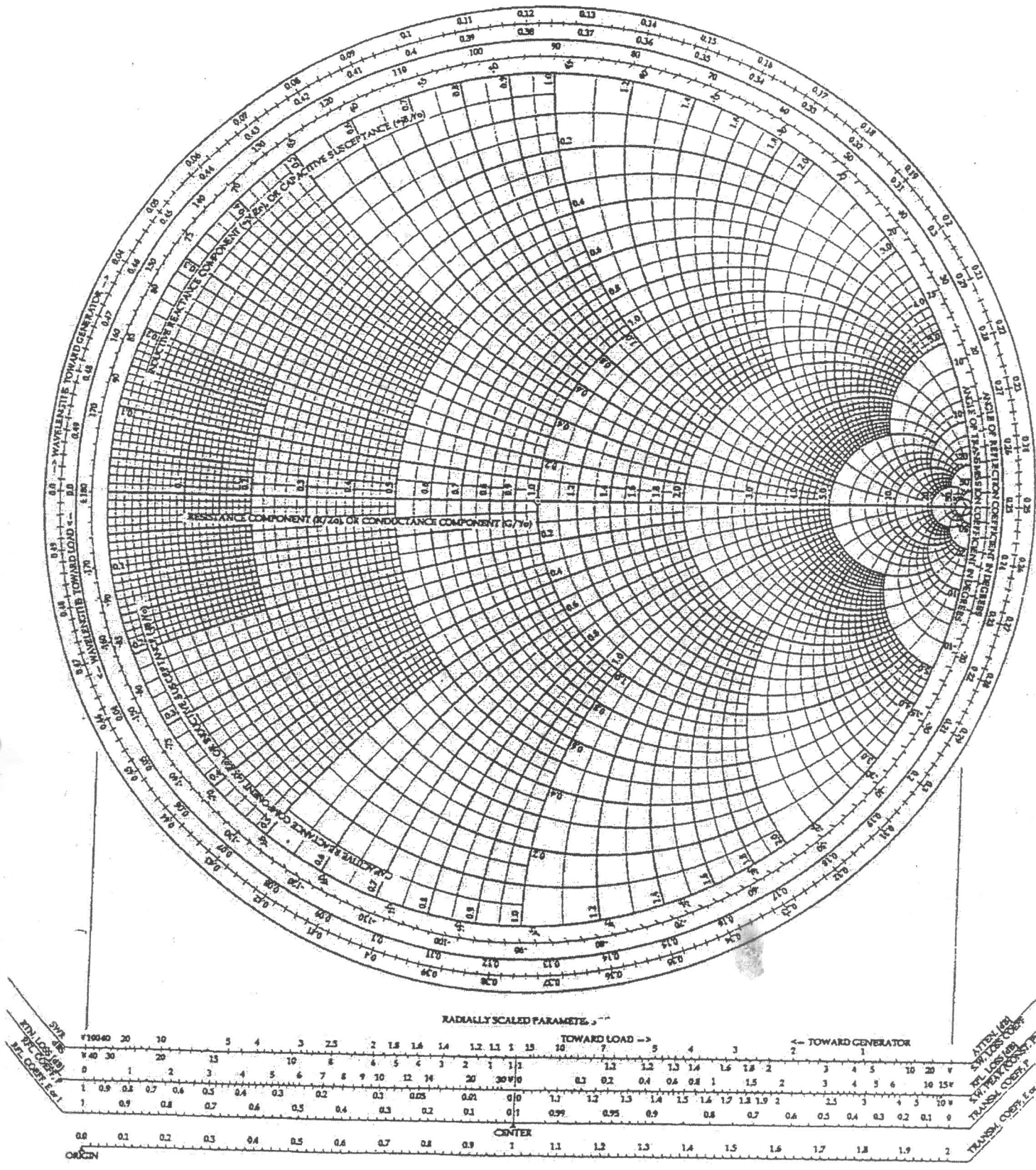
B) Determine Short circuit admittance parameters for the network. 10 Marks



C) Synthesis following impedance function in FOSTER 1 & FOSTER 2. 10 Marks

$$Z(s) = \frac{(s+1)(s+3)}{s(s+2)(s+4)}$$

The Smith Chart



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School of Engineering & Technology

Subject: RFCD **Date:** Oct '13 (2013-14)

Class: T.E (I) **Marks: 30**

Branch: EXTC Test II

Instructions:

Note:Q1 is *Compulsory and attempt any 2 from Remaining*

1.Implement a third order Low pass filter with fc=4GHz,Zo=50 ohms,3dB equiripple g1=g3=3.3487,g2=0.7117,g4=1

2.a)Prove the Kuroda's third identity.
b)Explain Large Signal Ebers Moll Transport Model

3.Write a Short notes on:
a) DC characterization of BJT
b)Explain in brief AC parameters of bipolar transistors

4 Design a prototype low pass filter Butterworth filter that will provide at least 20dB attenuation at f=2f3dB

Low-Pass Butterworth Filter Coefficients

N	g_1	g_2	g_3	g_4	g_5	g_6	g_7	g_8	g_9	g_{10}	g_{11}
1	2.0000	1.0000									
2	1.4142	1.4142	1.0000								
3	1.0000	2.0000	1.0000	1.0000							
4	0.7654	1.8478	1.8478	0.7654	1.0000						
5	0.6180	1.6180	2.0000	1.6180	0.6180	1.0000					
6	0.5176	1.4142	1.9318	1.9318	1.4142	0.5176	1.0000				
7	0.4450	1.2470	1.8019	2.0000	1.8019	1.2470	0.4450	1.0000			
8	0.3902	1.1111	1.6629	1.9615	1.9615	1.6629	1.1111	0.3902	1.0000		
9	0.3473	1.0000	1.5321	1.8794	2.0000	1.8794	1.5321	1.0000	0.3473	1.0000	
10	0.3129	0.9080	1.4142	1.7820	1.9754	1.9754	1.7820	1.4142	0.9080	0.3129	1.0000

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(2013-14)

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Subject: MM-I **Date:** Oct. 13
Marks: 30 **Duration: 1 Hr/s**
Class: T.E (V) Test-II **Branch: EXTC**

Instructions:

Q.1 With the help of neat diagram explains the interfacing of ADC with 8085 microprocessor (10 marks)

Q.2 Explain Port 1 structure of 8051 Microcontroller with neat diagram. (10 Marks)

Q.3 Design a 8085 Microprocessor based system with the following specifications: EPROM of 16KB using 4KB chips, RAM of 8KB using 4KB chips and 8255. (10Marks)

Q. 4 a) Draw and explain TMOD format? (5 Marks)
b) Draw the block diagram of 8255. (5 Marks)

Q. 5 Draw the interfacing diagram & Write a program to generate square wave of 10KHz at port pin P1.5 using Timer 0. (10 Marks)

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(2013-14)

ANJUMAN-I-ISLAM'S
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Subject: Principle of Control System **Date:** Oct-13

Marks: 30 **Duration:** Max. 1 hr.

Class: Third Year(V) **Branch:** EXTC Test-II

Instructions:

1)Question no. 1 is compulsory.

2)Attempt any two out of remaining three.

Q.1 For a unity Feedback System with open loop T.F given below determine Phase Margin and Gain margin. 10

$$G(s) = \frac{10}{s(1+s)(5+s)}$$

Q.2 a) Define Sensitivity and Stable system. 5

b)Compare the following 5

i) Root Locus ii) Routh Criterion

Q.3 Derive the time response of second order control system subjected to unit step input. 10

Q.4 a) Find the range of K for stability of given system and frequency of oscillations. 5

$$s^4 + 22s^3 + 10s^2 + s + K = 0$$

b)Drive the steady state error for type-1 system subjected to ramp input. 5

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(2013-14)

ANJUMAN-I-ISLAM'S
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Subject: Random signal analysis **Date:** Oct-13
Marks: 30 **Duration: 1 Hr/s**
Class: TEET (V) Class Test-II **Branch: EXTC**

Instructions: Q.1 is compulsory. Solve any two out of three.

Q.1 Attempt any two. (2x5=10 Marks)

(a) Define central limit theorem and give its significance.
(b) Describe the sequence of random variable.
(c) Define strict sense stationary and WSS random process.

Q.2 (10 marks)

State and prove the properties of autocorrelation function and cross correlation function.

Q.3 (10 marks)

A random Process is given by $X(t) = Sin(\omega t + Y)$, where Y is uniformly distributed in $(0, 2\Pi)$. Verify whether $\{x(t)\}$ is wss-process.

Q.4 (10 marks)

If a random process $\{x(t)\}$ is given by, $x(t)=10\cos(100t+\theta)$ where θ is uniformly distributed over $(-\Pi, \Pi)$, prove that $\{x(t)\}$ is correlation ergodic.

23/10/13 Afternoon
2:30 to 3:30

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ANJUMAN-I-ISLAM'S (2013-14)

KALSEKAR TECHNICAL CAMPUS, NEW PANVEL

School of Engineering & Technology

Subject: Environmental Studies **Marks: 20**

Date: 23/10/2013 **Duration: 1hr(2.30 to 3.30)**

Div : ME/ET/CO/ELEC(SEM-V) **Unit Test : 2**

N.B. (1) Q No. **1 is Compulsory**
(2) Attempt **any ONE** question from Q **No. 2 & 3**

1. Answer **any three:** **[4 * 3]**

(a) Write a note on Solid Waste Management

(b) What are the problems faced by children who are either AIDS victims or live in AIDS-affected families?

(c) What are the problems that a resident of an urban slum faces?

(d) Explain the requirement of an Environmental Impact Assessment for certain types of projects.

2. Write an essay on the impact of dams on people. What are the usual expected benefits? What are the negative impacts on people? What does the World Commission say on the topic? What do the cases of Narmada and the Three Gorges dams illustrate? **[8]**

3. Describe the major international efforts to save biodiversity. What has been the role of Indian governments in these efforts? **[8]**