

2013-14

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

**Subject: Signal Processing**

**Date: 21/02/2014**

**Marks: 20**

**Duration: 1hrs**

**Class: S.E**

*Dem IV*

*UT - I*

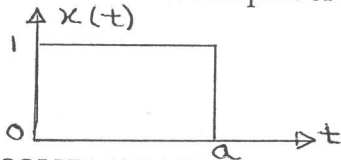
**Branch: EE**

**Q 1. SOLVE ANY FIVE OUT OF SIX**

**EACH 2 MARKS**

- (i) Write short note on energy and power signal.
- (ii) Determine whether given signal is periodic or non periodic. In case the signal is periodic specify its fundamental period
  - a)  $X_1(n) = \cos(0.001\pi n)$
  - b)  $X_2(t) = 3\cos\sqrt{2}t + 7\cos 5\pi t$
- (iii) Check following system for causality, linearity, time variance and static or dynamic
 
$$Y(n) = x(2n)$$
- (iv) Sketch the signal:-
  - a)  $x(n) = 2u(n) - u(n-2) - u(n-4)$
  - b)  $x_1(n) = x(n-2)$
- (v) Find even and odd component for signal-
 
$$H(n) = \{1, 3, 2, 3, -2\}$$

↑
- (vi) sketch even and odd part of signal-



**Q 2. SOLVE ANY ONE OUT OF TWO**

**5 MARKS**

- (i) For the following signals, determine and sketch linear convolution  $y(n)$  graphically

$$X(n) = n \quad \text{for } 0 \leq n \leq 2$$

$$= 0 \quad \text{elsewhere}$$

$$H(n) = 1 \quad \text{for } -1 \leq n \leq 1$$

$$= 0 \quad \text{elsewhere}$$

- (ii) Given the two sequence of length  $N$  are:

$$X(n) = \{0, 1, 2, 3\} \quad H(n) = \{2, 1, 1, 2\}$$

Find the circular convolution

**Q 3. SOLVE ANY ONE OUT OF TWO**

**5 MARKS**

- (i) State and explain sampling theorem.

- (ii) Obtain linear convolution of following sequences using tabular method:

$$X(n) = \{0, 1, 2, 3\} \quad H(n) = \{2, 3, 1\}$$

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School of Engineering & Technology

Subject: ADIC

Date: 22/02/14

Marks: 20

Duration: 1 HR

Class: S.E

Branch: ELECTRICAL

sem IV

UT - I

**Q.1 SOLVE ANY FIVE OUT OF SIX (EACH 2 MARKS)**

- Draw symbol and IC pin out diagram for IC 741 op-amp.
- State any 5 characteristics of Ideal op-amp and practical op-amp.
- Draw the circuit diagram for op-amp as a voltage follower.
- Draw the circuit diagram for op-amp as an inverting adder to add three voltages.
- Compare Inverting and Non inverting configurations of op-amp.
- Design a circuit to produce an output  $V_o = 3V_1 + 5V_2 - 6V_3$ .

**Q.2 SOLVE ANY ONE OUT OF TWO (EACH 5 MARKS)**

- Explain Virtual Short and Virtual Ground concept.
- Explain op-amp as an Integrator.

**Q.3 SOLVE ANY ONE OUT OF TWO (EACH 5 MARKS)**

- Derive the Expression for closed loop voltage gain of Non-Inverting amplifier.
- Short note on Instrumentation Amplifier.



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Subject: EM-1 Date: 2/02/14  
Marks: 20 Duration: 1 Hr  
Class: SE Sem IV U.T.I. Branch: ELECTRICAL

Q 1. SOLVE ANY FIVE 10 MARKS

1. State working principle of transformer.
2. State Fleming left hand rule.
3. Differentiate between electric and magnetic circuit.
4. Define MMF & Reluctance.
5. Draw phasor diagram of transformer on no load.
6. Explain hysteresis loss.

Q 2. SOLVE ANY ONE 5 MARKS

1. Derive emf equation of transformer.
2. The magnetic circuit has dimensions  $A=4 \times 4 \text{ cm}^2$ ,  $l_g=0.06 \text{ cm}$ ,  $l_c=40 \text{ cm}$ ,  $N=600$  turns. Assume the value of  $\mu_r=600$  for iron. Find exciting current for  $B_c=1.2 \text{ T}$  and the corresponding flux and flux linkages.

Q 3. SOLVE ANY ONE 5 MARKS

1. A 250/500 V transformer gave following results  
OC TEST. 250V, 1A, 80W on LV side  
SC TEST. 20V, 12A, 100W on HV side  
Calculate circuit constants.
2. Draw phasor diagram of transformer under inductive and capacitive load including Resistive and reactive drop.



Subject: NMOT

Duration: 1Hrs

Branch: Electrical Engg.

Date: Feb 2014

Marks: 20

Class: SE - EE

Sem IV U.P. I

Q. 1. Solve any Five out of Six.

(10)

- Using Bisection method find root of  $x^3 - 5x + 1$  up to three iteration.
- Using false position method find out the root of  $f(x) = x^{10} - 1$  up to three iteration.
- Explain the method of finding the Root of equation? and which as most approximated method and why?
- Explain with suitable examples different types of errors encountered in numerical computations.
- Solve by the Cramers Rule.

$$\begin{aligned}3x + y + 2z &= 3 \\2x - 3y - z &= -3 \\x + 2y + z &= 4\end{aligned}$$

- Q. 2. Obtain an initial approximation to the root of the equation

$$f(x) = \cos x - x e^x = 0$$

2. solve any One out of Two.

(5)

Obtain the smallest positive Root of the following equation by Regular Falsi method

$$x^3 - x - 4 = 0$$

Use Newton Raphson method to obtain Root upto three decimal Places of the following equation.

$$x \sin x + \cos x = 0$$

Q.3. Solve any one out of Two.

(5)

a) Solve by Gauss elimination method

$$2x_1 + x_2 + x_3 = 10$$

$$3x_1 + 2x_2 + 3x_3 = 18$$

$$x_1 + 4x_2 + 9x_3 = 16$$

b) Find the value of  $x_1, x_2, x_3$  by Gauss Jordan elimination method.

$$x_1 + x_2 + x_3 = 1$$

$$4x_1 + 3x_2 + x_3 = 6$$

$$3x_1 + 5x_2 + 3x_3 = 4$$