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3E1642

Roll No. _____ Total No of Pages: 4

3E1642

B. Tech. III - Sem. (Back) Exam., Dec. - 2018

Electrical Engineering

3EE2A Circuit Analysis - I

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

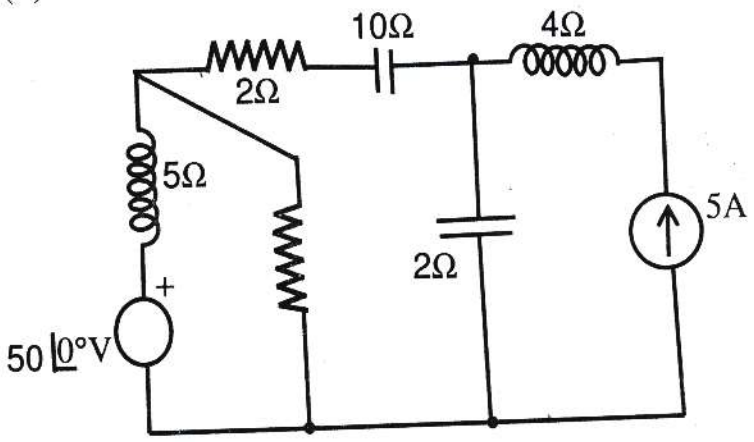
1. NIL 2. NIL

UNIT- I

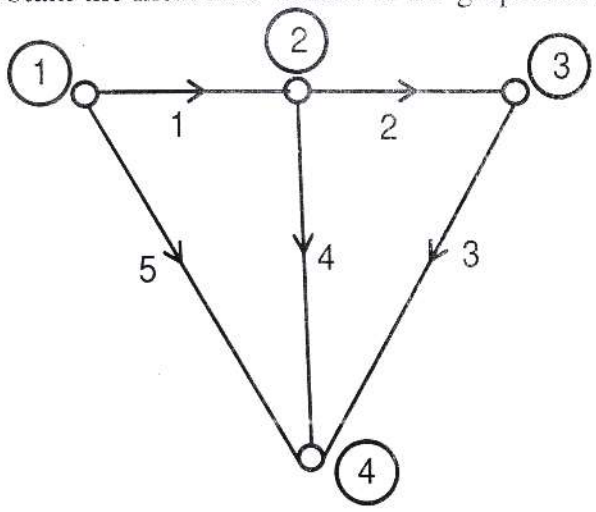
Q.1 (a) Develop the graph of the network shown in the figure given below. Select the tree and write the- [8]

(i) Tie Set Matrix

(ii) Cut – set Matrix



(b) Obtain the incidence matrix of the graph shown as given below. [8]



OR

Q.1 (a) Explain the variation of resistance, inductive and capacitive reactance with frequency. [8]

(b) Write a short note on parallel RLC circuit resonance. [8]

UNIT- II

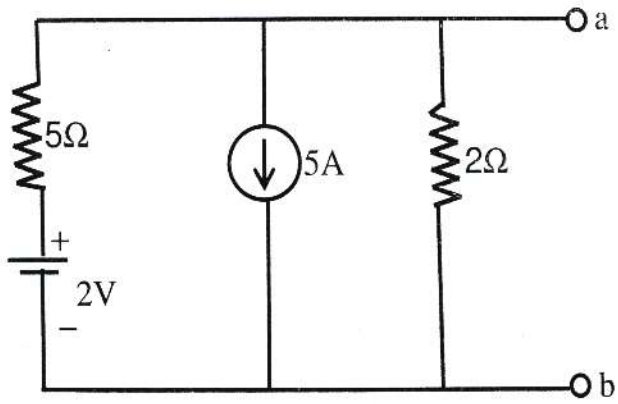
Q.2 (a) State Thevenin's theorem. Also write the steps for solving a network using Thevenin's theorem. [8]

(b) Explain Reciprocity theorem with the steps for solving a network. [8]

OR

Q.2 (a) Explain the Compensation theorem with its limitation. [8]

(b) Find the Norton's equivalent circuit across a-b for the network shown as in given figure. [8]



UNIT- III

Q.3 (a) What is the relationship between line and phase voltages and currents in a star connection? [8]

(b) Write short note on- [4×2=8]

(i) Power factor

(ii) Apparent power

(iii) Reactive power

(iv) Power Triangle

OR

Q.3 (a) A 3 phase load has a resistance of 10Ω in each phase and is connected in (i) Star and (ii) Delta against a 400V three phase supply. Compare the power consumed in both the cases. [8]

(b) A Voltage V(t) = 150 sin 10^3t is applied a series RLC Circuit where, R = 40Ω, L = 0.13H, C = 10μF. [8]

Find-

(i) The power supplied by the source

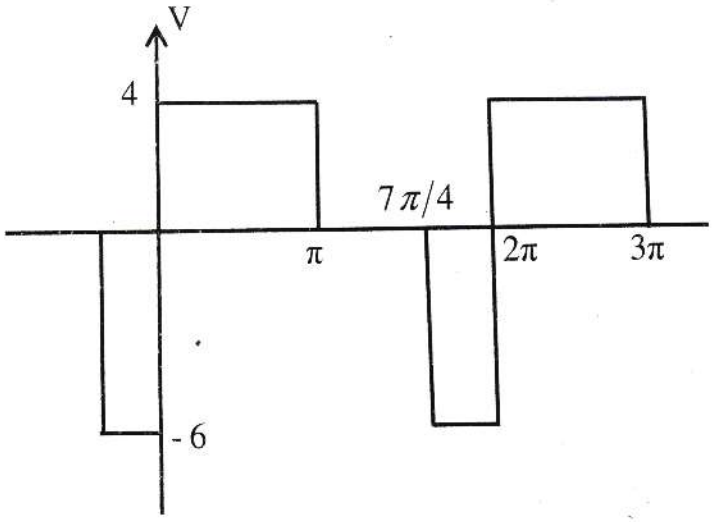
(ii) The reactive power supplied by the source

(iii) The reactive power of the capacitor

(iv) The reactive power of the inductor

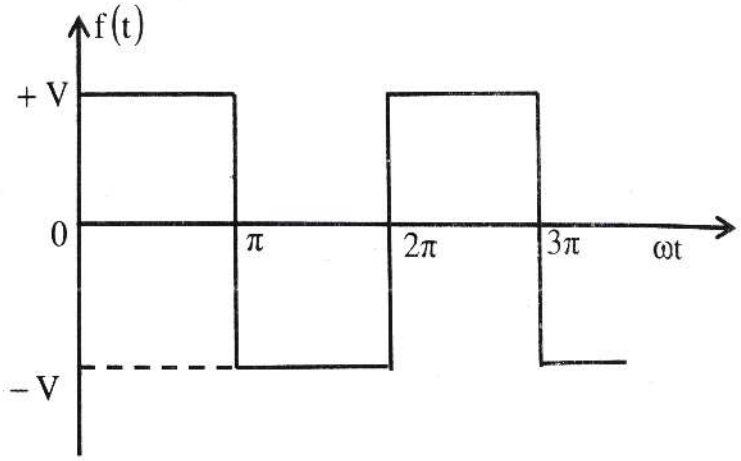
UNIT- IV

Q.4 (a) Find a and b coefficient of Fourier series of the given waveform. [16]



OR

Q.4 (a) Obtain the exponential Fourier series of the waveform given as. [8]



(b) Write short note on Symmetry in Fourier series. [8]

UNIT- V

Q.5 (a) Explain the step response of R-L network. [8]

(b) Explain the initial value and final value theorem. [8]

OR

Q.5 (a) An impulse function is given by $\delta(t - t_1)$. Obtain its Laplace transform. [8]

(b) A function, in Laplace domain is given by- [8]

$$F(s) = \frac{2}{s} - \frac{1}{s+3}$$

Obtain its value by Final value theorem in t domain.

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Roll No. _____ Total No of Pages: 3

3E1645

B. Tech. III - Sem. (Back) Exam., Dec. - 2018
Electrical Engineering
3EE5A Electrical Machines – I
EE, EX

Time: 3 Hours **Maximum Marks: 80**
Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) Describe the principle of energy conversion. Show that the reaction of coupling magnetic field on the electrical or mechanical system is essential for the electro-mechanical energy conversion. [10]

(b) Define field energy and co-energy. Prove that field energy and co-energy in a linear magnetic system are given by identical expressions. [6]

OR

Q.1 (a) A Toroid coil having 500 turns, average radius 10 cm and cross sectional radius of 2cm. If the relative permeability is 1500, find the current required to establish a flux density of 0.5 T. [8]

(b) Write short notes on – [8]

(i) Magnetic flux and flux density

(ii) Reluctance

(iii) Permeance

(iv) Magnetic field intensity

UNIT- II

Q.2 Explain commutation Process. How we can improve the commutation by different method in DC generator? What are the causes of sparking at the Commutator Surface? [16]

OR

Q.2 (a) Explain armature reaction in DC generator with its effect. [8]

(b) Draw characteristics of shunt, series and compound DC generators. [8]

UNIT- III

Q.3 (a) Explain Swinburne's methods of testing of DC Machines. [8]

(b) What are the various starting method of DC motor? Explain any one method. [8]

OR

Q.3 (a) What is the significance of back e.m.f in DC motor? Derive the torque equation of DC motor. [8]

(b) Explain the method of controlling the speed of DC motor below and above the rated speed. Justify the statement that the DC series motors are never started at No load. [8]

UNIT- IV

Q.4 (a) Explain the process of finding efficiency of transformer by Sumpner's test. [8]

(b) Draw and explain the idea of a welding transformer. [8]

OR

Q.4 (a) Develop an equivalent circuit for the practical transformer. [8]

(b) A single phase transformer working at unity power factor has efficiency of 90% at both half load and at full load of 500w. Determine- [8]

(i) Iron loss and Copper loss

(ii) Maximum efficiency

UNIT- V

Q.5 (a) Explain Scott-connection for 3-phase to 2-phase conversion. [8]

(b) Explain excitation Phenomenon in transformer. [8]

OR

Q.5 Write short notes on- [4×4=16]

(a) Open delta connection

(b) Tertiary winding

(c) Parallel operation of 3-phase transformer

(d) Harmonics in 3-phase transformer

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3E1646

Roll No. _____ Total No of Pages: 4

3E1646

B. Tech. III - Sem. (Mercy/Back) Exam., Dec. - 2018
Electrical & Electronics Engineering
3EX6A Advanced Engineering Mathematics – I
EE, EX

Time: 3 Hours **Maximum Marks: 80**
Min. Passing Marks: 24

Instructions to Candidates:

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Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) Find the Laplace transform of [te^{at} Sin at]. [4]

(b) Find the inverse Laplace transform of $\frac{s+2}{s^2-2s+5}$ [4]

(c) Using Laplace transform solve the differential equation. [8]

$$(D^2 + 9)y = \cos 2t : y(0) = 1, y\left(\frac{\pi}{2}\right) = -1$$

OR

Q.1 (a) Find the Laplace transform of [$t^2e^t \sin 4t$]. [4]

(b) Find the Inverse Laplace transform of $\left\{\frac{s}{(s+1)^2(s^2+1)}\right\}$ [4]

(c) Solve the following partial differential equation using Laplace transform method.

$$\frac{\partial u}{\partial t} = 5\frac{\partial^2 u}{\partial x^2}, \text{ with } u(x, 0) = \text{Cos } 5x : \; u_x(0, t)=0, u\left(\frac{\pi}{2}, t\right)=0$$ [8]

UNIT- II

Q.2 (a) Find the Fourier sine transform of $e^{-|x|}$. Hence show that [8]

$$\int_0^\infty \frac{x \sin mx}{1+x^2}\, dx = \frac{\pi e^{-m}}{2} : m > 0$$

(b) Solve the following Partial differential equation using Fourier Sine transform technique. [8]

$\frac{\partial u}{\partial t} = 2\frac{\partial^2 u}{\partial x^2}$, if $u(0, t) = 0$, $u(x, 0) = e^{-x}$, $u(x, t)$ is bounded.

OR

Q.2 (a) Find f(x) if its Fourier sine transform is - [8]

$\frac{s}{1+s^2}$.

(b) Find the Fourier Cosine transform of e^{-x^2}. [8]

UNIT- III

Q.3 (a) Find the Fourier series expansion of $f(x) = 2x - x^2$ in (0, 3) and hence deduce that

$$\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \cdots - \infty = \frac{\pi}{12}.$$ [8]

(b) Find the curves on which the functional $\int_0^1 [(y')^2 + 12xy]dx$ with $y(0) = 0$ and $y(1) = 1$ can be extremised. [8]

OR

Q.3 (a) Obtain the first three coefficients in the Fourier Cosine Series for y. Where y is given in the following table. [8]

x	0	1	2	3	4	5
y	4	8	15	7	6	2

(b) Using Convolution theorem, find the discrete sequence $\{u_n\}$ corresponding to the function:

$$\bar{u}(z) = \frac{z^2}{(z-2)(z-3)}$$ [8]

UNIT- IV

Q.4 (a) Prove that the function f (z) defined by

$$f(z) = \frac{x^2(1+i)-y^2(1-i)}{x^2+y^2} : (z \neq 0),\ f(0) = 0$$

is Continuous and the Cauchy – Riemann equations are satisfied at the origin. Yet $f'(0)$ does not exist. [8]

(b) Determine the analytic function $f(z) = u + iv$, if $u - v = \frac{\cos x + \sin x - e^{-y}}{2(\cos x - \cos hy)}$ and $f\left(\frac{\pi}{2}\right) = 0$ [8]

OR

Q.4 (a) Evaluate the following integrals : [8]

(i) $\int_{|z|=2} \frac{e^{2z}}{(z+1)^4}\, dz$

(ii) $\int_{|z|=4} \frac{e^{z}}{(z^2+\pi^2)^2}\, dz$

(b) Find a bilinear transformation that maps the Points z = - 1, i, 1 into W = 1, i, - 1 respectively. [8]

UNIT- V

Q.5 (a) Explain $f(z) = \frac{1}{(z-1)(z-2)}$ in the regions : [8]

(i) $|z| < 1$

(ii) $1 < |z| < 2$

(iii) $|z| > 2$

(iv) $0 < |z-1| < 1$

(b) Use method of contour integration to prove that. [8]

$$\int_0^{2\pi} \frac{\cos 2\theta\, d\theta}{1-2a\cos\theta+a^2} = \frac{2\pi a^2}{1-a^2} : (a^2 < 1).$$

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OR

Q.5 (a) Find Taylor's expansion of - [8]

(i) $f(z) = \frac{1}{(z+1)^2}$, about the point $z = -i$.

(ii) $f(z) = \frac{2z^2+1}{z^2+z}$, about the point $z = i$.

(b) Evaluate $\int_0^\infty \frac{\sin mx}{x} dx$, when $m > 0$. [8]

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3E1614

Roll No. _____

Total No of Pages: 8

3E1614

B. Tech. III - Sem. (Main / Back) Exam., Dec. - 2018
Electrical & Electronics Engineering
3EX2A Circuit Analysis & Synthesis

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 26/24

Instructions to Candidates:

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Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

UNIT- I

Q.1 (a) Define following and explain – [3×2=6]

(i) Thevnin's theorem in the network.

(ii) Compensation theorem in the network.

(b) A current source is connected across x-y terminals of fig.1. What is the thevnin's equivalent of the given circuit across x-y? [5×1=5]

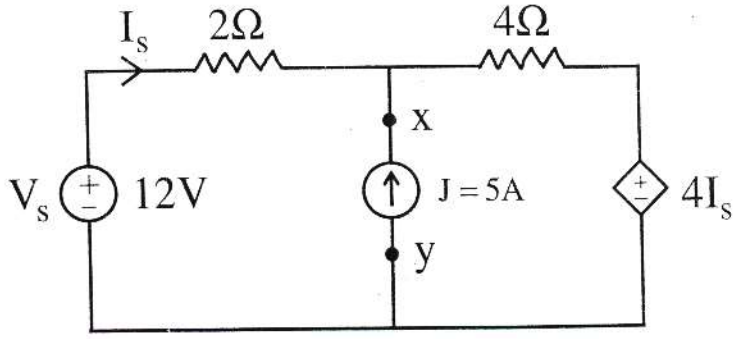


Fig – (1)

(c) In the network of fig. 2 $L_1 = 1H$, $L_2 = 2H$, $M = 1.2H$. Assuming the inductance coils to be ideal, find the amount of energy stored after 0.1sec of the circuit connected to a DC source of 10 V. [5×1=5]

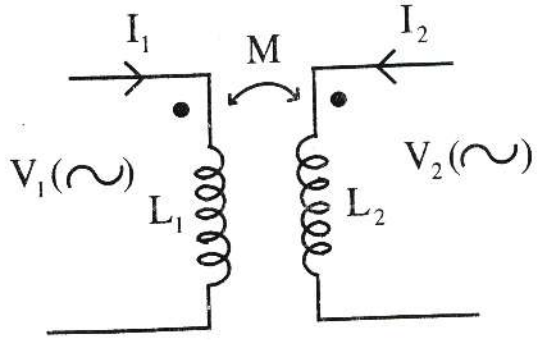
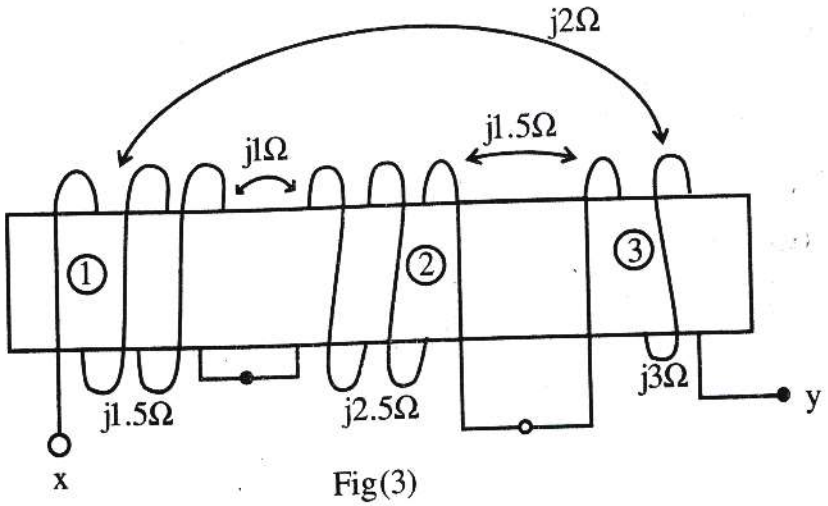


Fig – 2

OR

Q.1 (a) (i) Two coupled coils have K = ·8, N_1 = 500 turns, N_2 = 1000 turns and the mutual flux being ·9 wb, find the primary coil flux. If the primary current be 10 Amp, find the primary coil inductance. Also obtain the secondary inductance. [3×2=6]

(ii) Find the equivalent circuit and the net inductance of the iron cored coupled coils in series connection as shown in fig. 3.



Fig(3)

(b) In fig. 4, find the current through the 1 Ω resistor using Norton's theorem. [6×1=6]

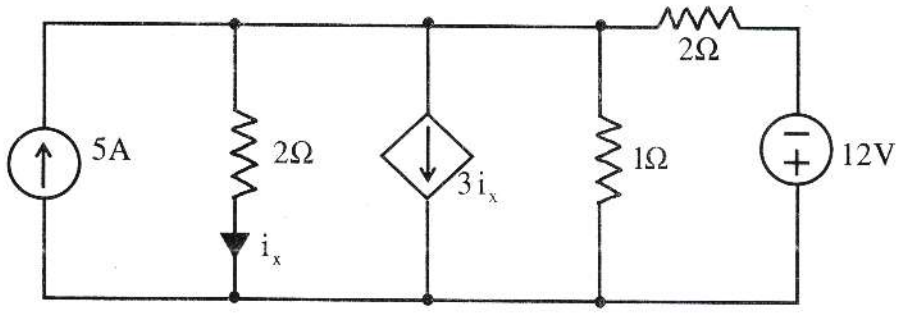


Fig – (4)

(c) Find V_x in the circuit of fig.5 using superposition theorem. [4×1=4]

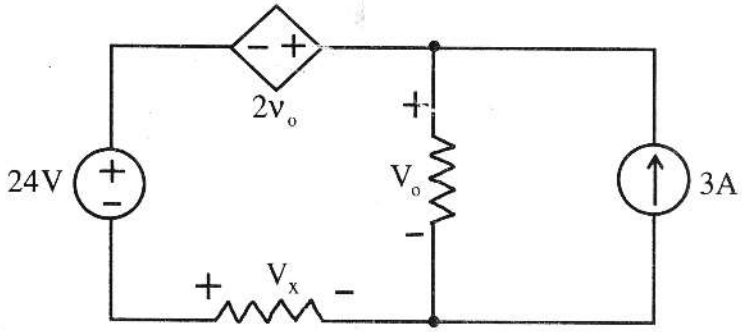


Fig – (5)

UNIT- II

Q.2 (a) (i) Obtain the equation of f(t) for the fig. 6. [3×2=6]

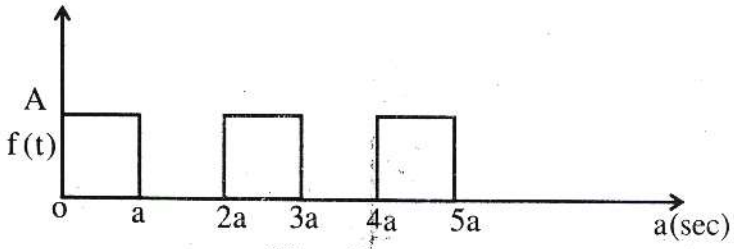


Fig – (6)

(ii) Find the line spectrum of the following wave using Fourier analysis as shown in fig. 7 (a) to (7) (c).

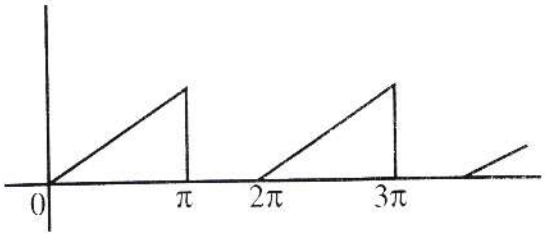


Fig – 7(a)

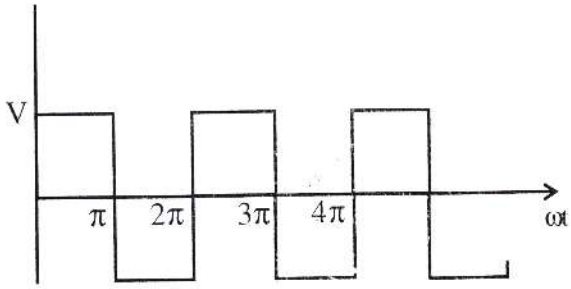


Fig – 7(b)

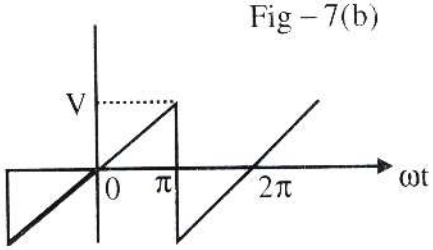


Fig – 7(c)

(b) Initial voltage retained by the capacitor C_1 is 100V while there is no initial voltage stored in C_2. Switch 'K' is closed at t = 0. Find the voltage drops across the capacitors C_1 and C_2 at $t = \infty$ as shown in fig. (8). [6×1=6]

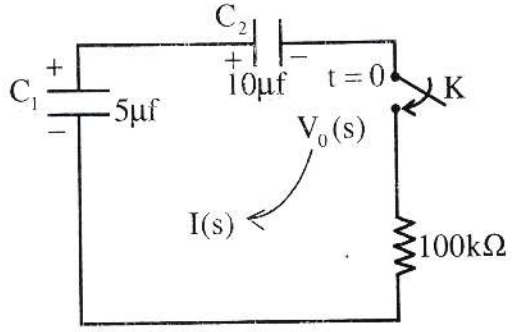


Fig – 8

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(c) A 100t u(t) V step voltage is applied across a series RC circuit where R = 5kΩ a C=4μf. Find the drop across the 5kΩ resistor using Lapla transformation. [4×1=

OR

Q.2 (a) A ramp voltage 2r (t - 2) is applied in a series RC circuit at t = 0 where R = 3Ω C = 1 F. Assuming Zero initial conditions, find i (t). [5×1=

(b) Obtain the Fourier series for the waveform as shown in fig. (9). [3×1=3

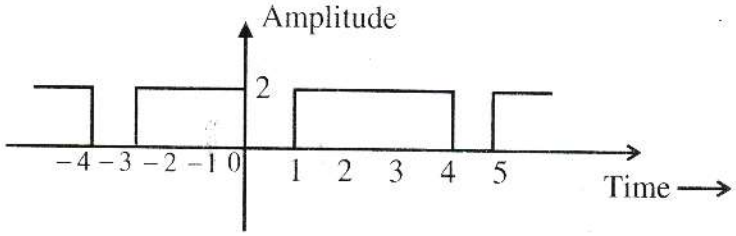

Fig – 9

(c) Explain the initial and final value condition across an inductor and capacitor. [1+1=2]

(d) A time domain network is shown in fig. (10). Find the loop currents (following switching) in Laplace domain as well as in time domain when $r_1 = r_2 = r_3 = 1\Omega$, L = 1H and C = 1F. Initial potential in the capacitor is e_o though the initial current through the inductor and capacitor are zero. [6×1=6]

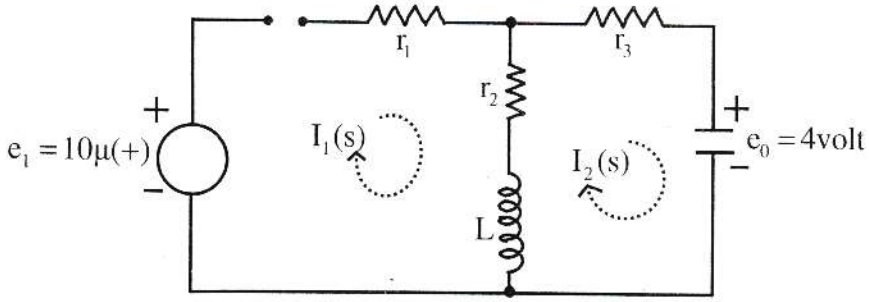

Fig – (10)

UNIT- III

Q.3 (a) Write any three property of positive real functions. Check whether the following function is positive real or not. [2+1+1+1+1=6]

(i) $F(s) = \frac{s^2+10s+4}{s+2}$

(ii) $F(s) = \frac{s^2-1}{-s+8}$

(iii) $Y(s) = \frac{s^2+2s+20}{s+10}$

(iv) $Z(s) = \frac{8-s}{s+1}$

(b) Find the driving point impedance in Laplace form of the given network across a –b as shown in fig. (11). [6×1=6]

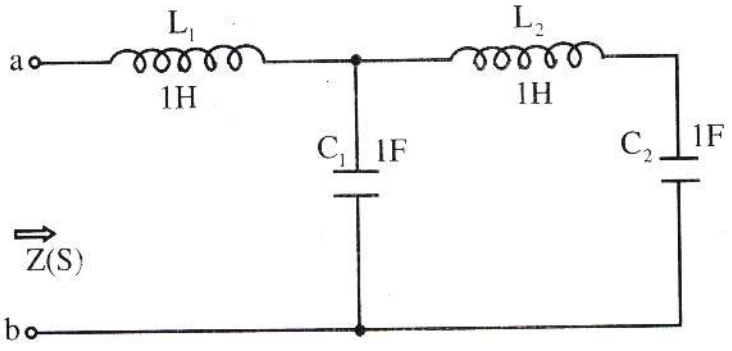

Fig – (11)

(c) Realise the network having impedance function. [4×1=4]

$Z(s) = \frac{s^2+2s+10}{s(s+5)}$

OR

Q.3 (a) Check whether the following functions are Hurwitz or not. [3+3+3+3=12]

(i) $P(s) = 4s^6 + 2s^5 + 17s^4 + 8s^3 + 16s^2 + 6s + 3$

(ii) $s^5 + 3s^4 + 3s^3 + 4s^2 + s + 1$

(iii) $s^4 + 3s^2 + 2$

(iv) $P(s) = s^3 + 6s^2 + 11s + 6$

(b) Write the necessary and sufficient condition of positive real function and Hurwitz function. [2+2=4]

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UNIT- IV

Q.4 (a) Write the condition of symmetry and reciprocal network for ABCD and h-parameter. [3+3=6]

(b) Obtain Z-parameter for fig. (12) [8]

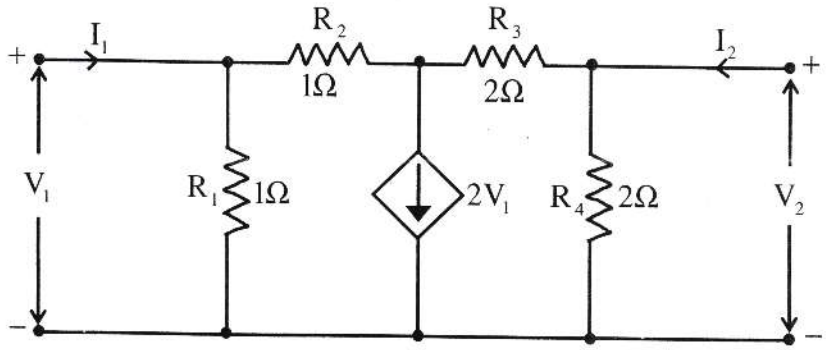


Fig – (12)

(c) Define image impedance of a two port network. [2]

OR

Q.4 (a) In a two port network. [8]

$Z_{11} = 2\Omega$, $Z_{12} = Z_{21} = 5\Omega$, $Z_{22} = 1\Omega$

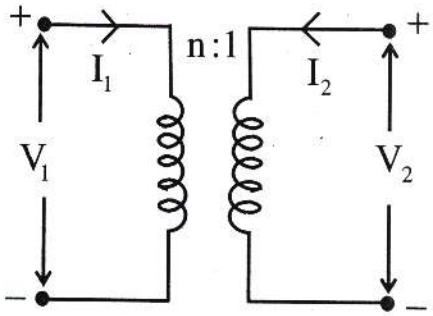
Find:-

(i) Y – parameters

(ii) h – parameters and

(iii) ABCD parameters

(b) An ideal transformer with trurns ratio n : 1 as shown in fig (13) check whether model is reciprocal or not. [4]



Fig–(13)

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(c) Derive an inter relationships between parameters of two port networks. [4]

(i) Y – parameter in terms of ABCD parameters

(ii) ABCD parameters in terms of h – parameter

(iii) h – parameter in terms of y – parameter

(iv) Z – parameter in terms of h – parameter

UNIT- V

Q.5 (a) Driving point impedance is given by $Z_{LC}(s)= \frac{s(s^2+4)(s^2+6)}{(s^2+1)(s^2+5)}$ [8]

Obtain the first form of cauer network.

(b) An impedance function at the input of a network is represented by- [8]

$Z(s) = \frac{s^2+5s+4}{s^2+2s}$

Express it in both foster form.

OR

Q.5 (a) Find the first and second forms of cauer network for the function [8]

$Z(s) = \frac{s^2+5s+4}{s^2+2s}$

(b) Is it possible to realise in the second form of RC cauer network? [4]

$Y(s) = \frac{(s+2)(2s+7)}{(s+1)(s+2)}$

(c) Realise the function [4]

$Z(s)= \frac{s(s^2+4)}{2(s^2+1)(s^2+9)}$

In both the cauer and foster forms of LC network.

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3E1485

Roll No. _____ Total No of Pages: 2

3E1485

B. Tech. III - Sem. (Main / Back) Exam., Dec. - 2018
Electrical Engineering
3EE5(O) Electrical Measurements

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks: 24/26

Instructions to Candidates:

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Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT- I

Q.1 Explain the working principle, constructional details of single phase induction type energy meter. [16]

OR

Q.1 (a) Explain the testing and calibration of single phase energy meter by phantom loading. [10]

(b) Discuss the compensation and adjustment of the error in wattmeter. [6]

UNIT- II

Q.2 Draw the equivalent circuit and phasor diagram of current transformer. Also derive the expression for ratio and phase angle error. [16]

OR

Q.2 Discuss the measurement of power by two wattmeter method. [16]

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UNIT- III

Q.3 Describe the basic principle of operation of d.c potentiometer. Explain why a potentiometer does not load the voltage source whose voltage is being determined. [16]

OR

Q.3 (a) Explain the term 'standardization' of a potentiometer. Describe the procedure of standardization of a d.c potentiometer. [10]

(b) What is a volt – ratio box? Explain it's applications. [6]

UNIT- IV

Q.4 Describe the substitution method of measurement of medium resistance. List the factors on which the accuracy of the methods depends. [16]

OR

Q.4 (a) What are the difficulties encountered in the measurement of high resistances? [8]

(b) What is the importance of the value of earth's resistance? What are the factors which influence its value? [8]

UNIT- V

Q.5 Explain how Wien's bridge can be used for experimental determination of frequency. Derive the expression for frequency in terms of bridge parameters. [16]

OR

Q.5 Describe how an unknown capacitance can be measured with the help of De Sauty's bridge. What are the Limitations of this bridge and how are they overcome? [16]

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3E1101

Roll No. _____ Total No of Pages: 4

3E1101

B. Tech. III - Sem. (Main) Exam., Dec. - 2018

BSC Aeronautical Engineering

3AN2 – 01 Advanced Engineering Mathematics - I

AE, AG, AN, CE, EC, EI, ME, MH, MI

Time: 3 Hours **Maximum Marks: 120**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Construct the forward difference table for the function $f(x) = \tan x$ for $0.10 \leq x \leq 0.30$ by taking $h = 0.5$.

Q.2 Prove that $E = e^{hD}$, where symbols have their usual meanings.

Q.3 Write Gauss forward and Gauss backward interpolation formula.

Q.4 What is numerical integration formula in Simpson's 3/8 rule?

Q.5 Using Runge – Kutta second order method, the approximate solution of the differential equation $\frac{dy}{dx} = f(x, y);\ y(x_0) = y_0$ is given by –

$y_{n+1} = y_n + 2\alpha(k_1 + k_2)$, where $k_1 = hf\ (x_n, y_n)$ and $k_2 = hf\ (x_n + \beta h, y_n + \gamma k_1)$ Then what are the values α, β, γ ?

Q.6 State existence condition of Laplace Transform.

Q.7 Find Laplace transform of $b^x f(ax)$.

Q.8 State convolution theorem for Fourier transforms.

Q.9 Write damping rule for z – transform.

Q.10 Write a function whose z– transform is equal to 1.

PART – B

(Analytical/Problem solving questions) **[5×8=40]**

Attempt any five questions

Q.1 Prove that

$$u_1x + u_2x^2 + u_3x^3 + \cdots = \frac{x}{1-x}u_1 + \left(\frac{x}{1-x}\right)^2 \Delta u_1 + \left(\frac{x}{1-x}\right)^3 \Delta^2 u_1 + \cdots$$

Q.2 Using Lagrange's interpolation formula, find the value of $\log_{10} 301$ for the following data –

x	300	304	305	307
$\log_{10} x = f(x)$	2.477	2.482	2.484	2.4871

Q.3 Evaluate $\sqrt{28}$ to 4 decimal places by Newton – Raphson method.

Q.4 Using Runge – Kutta method, obtain a solution of the equation

$$\frac{dy}{dx} = xy; y(1) = 2$$

for x = 1.4, using h = 0.2.

Q.5 Define Dirac Delta Function and find its Laplace and Fourier transforms.

Q.6 Find the Fourier transform of f(x) defined by –

$$f(x) = \begin{cases} 1, & |x| < a \\ 0, & |x| > a \end{cases}$$

And hence evaluate $\int_{-\infty}^{\infty} \frac{\sin sa \cos x}{s} ds$.

Q.7 Using convolution theorem, evaluate

$$Z^{-1}\left\{\frac{z^2}{z^2-4z+3}\right\}.$$

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) **[4×15=60]**

Attempt any four questions

Q.1 (a) Find inverse Laplace transform of $s\ log\left(\frac{s-1}{s+1}\right) + 2$.

(b) Using Newton – Gregory forward formula, find interpolation polynomial, which passes through the points (1, -1), (2, -1), (3, 1) and (4, 5).

Q.2 (a) Given that $\frac{dy}{dx} = \frac{1}{2}(1 + x^2)y^2$ and y(0) = 1, y(0.1) = 1.06, y(0.2) = 1.12, y(0.3) = 1.21. Evaluate y(0.4) by Milne's predictor method.

(b) Find the value of $\log_e 2$ from $\int_0^1 \frac{x^2}{1+x^3}\,dx$, using Simpson's $\frac{1}{3}$ rule by dividing the range into five ordinates.

Q.3 (a) Use Laplace transform theory to solve the initial value problem

$$\frac{dy}{dt} + y = f(t),\ y(0) = 2, \text{where } f(t) = \begin{cases} 0, & 0 \le t < \pi/2 \\ \cos t, & t \ge \pi/2 \end{cases}$$

(b) Use Stirling formula to find y_{28} given:

$y_{20} = 49225$, $y_{25} = 48316$, $y_{30} = 47236$, $y_{35} = 45926$, $y_{40} = 44306$.

Q.4 (a) Find the complex Fourier transforms of $e^{-|x|}$.

(b) Using Regula Falsi method find real root of equation $x^2 + 4 \sin x = 0$.

Q.5 (a) Find f(x) if its Fourier cosine transform is $\frac{1}{i+s^2}$.

(b) Using Z – transform solve the difference equation $6u_{n+2} - u_{n+1} - u_n = 0$, given that $u(0) = 0$, $u(1) = 1$.

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3E1147

Roll No. _____ Total No of Pages: 3

3E1147

B. Tech. III - Sem. (Main) Exam., Dec. - 2018
PCC Electronics & Communication Engineering
3EC4 – 04 Digital System Design
EC, EI

Time: 3 Hours **Maximum Marks: 120**

Instructions to Candidates:

Attempt all ten questions from Part A, selecting five questions from Part B and four questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Write Decimal no. $(125)_{10}$ in BCD. [2]

Q.2 Convert $y = AB + \overline{A}\,\overline{B}$ (sop) form in equivalent POS form. [2]

Q.3 Define Fan-out of logic system. [2]

Q.4 Write the name of two modeling style in VHDL. [2]

Q.5 Draw the state diagram of any one finite state machine (FSM). [2]

Q.6 Find the total no. of select line, when a 8×1 Mux is implemented using 2×1 Mux. [2]

Q.7 Draw the circuit diagram of any two Dynamic memory cell. [2]

Q.8 Write any one use of tristate logic. [2]

Q.9 Write the name of one Parallel Adder. [2]

Q.10 Write VHDL code for $y = A\overline{B}$ in structural model. [2]

PART – B

(Analytical/Problem solving questions) **[5×8=40]**

Attempt any five questions

Q.1 Derive a minimum cost circuit that implement the function- [8]

$$f(x_1 \ldots x_u) = \sum m(4,7,8,11) + D(12,15)$$

Q.2 Draw the output waveform of a four bit serial in parallel out shift register for six clocks. Assume the Data input is =10111011… [8]

Q.3 Implement y= A + BC in ECL logic and explain its working. [8]

Q.4 How SR FF is converted to JK FF? Draw its circuit diagram and explain. How the JK FF determine output when both J = K = 1? [8]

Q.5 Write VHDL code for a Half Adder in Data flow style. [8]

Q.6 How Mux is used for implement combinational logic? Implement y = A+BCD using a Mux. [8]

Q.7 Draw the general diagram of a single bit serial Adder. Calculate the total delay taken in Addition of two four bit data in it. [8]

PART – C

(Descriptive/Analytical/Problem Solving/Design Question) **[4×15=60]**

Attempt any four questions

Q.1 Draw the 2 input NAND gate using TTL logic and calculate its minimum noise level at input that disturb the true output for A = B = 0. Assume the supply is V_{DD} = 9 volt. [15]

Q.2 The state diagram of a FSM is given below, design its logic (fig-2(c)) [15]

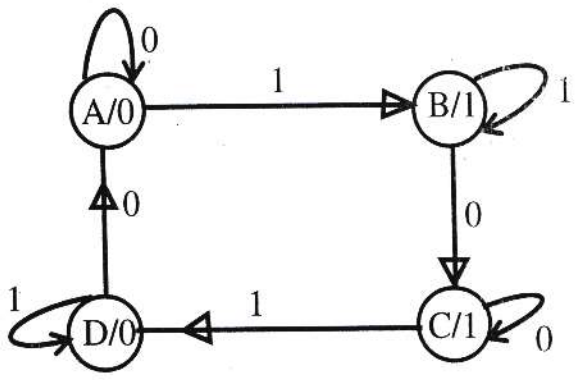


fig - 2(c)

Show its state table, state assignment table and final implemented logic.

Q.3 Draw the state diagram for the logic circuit shown in fig 3(c). [15]

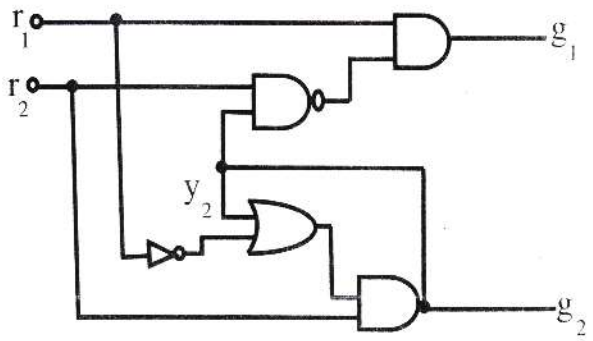


fig - 3(c)

Q.4 Design a 4 bit synchronous down counter using D-FF. Draw its state diagram and all design tables. [15]

Q.5 How FPGA are used for logic implement? Show the OR and AND Space for a 2 variable input. Also show the connection in FPGA for implement $y = \overline{A}\,\overline{B}$ in it. [15]

3E1148

Roll No. _____ Total No of Pages: 3

3E1148

B. Tech. III - Sem. (Main) Exam., Dec. - 2018
PCC Electronics & Communication Engineering
3EC4 – 05 Signal & Systems
EC, EI

Time: 3 Hours **Maximum Marks: 120**

Instructions to Candidates:

Attempt all ten questions from Part A, selecting five questions from Part B and four questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. Calculator 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×2=20]**

All questions are compulsory

Q.1 Check whether the signal $x(n) = (-0.5)^n\ u(n)$ is energy signal, power signal or neither. [2]

Q.2 Find period of signal $x(t) = \exp\left(j\left(\frac{\pi}{2}t - 1\right)\right)$ [2]

Q.3 The impulse response of discrete LTI system is given by $h(n) = \left(\frac{1}{2}\right)^n u(n)$. Let $y(n)$ be the output of system with input $x(n) = 2\,\delta(n) + \delta(n-3)$. Find $y[1]$ and $y[4]$. [2]

(Where $u(n)$ is unit step signal and $\delta(n)$ is unit impulse signal)

Q.4 $x(n) = n\,a^n\,u(n)$. Find its Z- transform. [2]

Q.5 Find the nyquist rate of following signal [2]

(a) $sinc^2(50t)$

(b) $\sin(50\pi t) + \cos(100\pi t)$

Q.6 $x(t) = e^{-3t}u(t)$. Plot the ROC (region of convergence) of X(s) so that signal x(t) is causal and stable. (X(s) is Laplace transform of x(t)). [2]

Q.7 The exponential fourier series coefficients of periodic impulse train $x(t) = \sum_{k=-\infty}^{\infty}\delta(t - kT_0)$ where T_0 is period of x(t) [2]

Q.8 If fourier transform of x(t) is X(w). What will be the fourier transform of x(at)? (a > o)

Q.9 Find the Z- transform of $x(n) = \left(\frac{1}{2}\right)^n u(-n-1)$ [2]

Q.10 Find the value of exponential fourier series coefficients of signal $x(t) = \cos(2\pi t)$ [2]

PART – B

(Analytical/Problem solving questions) **[5×8=40]**

Attempt any five questions

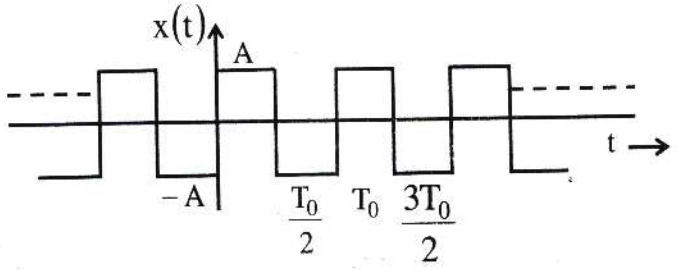
Q.1 Check for the causality, stability and memory-less property for following signals.

(a) $h(t) = e^{-at}\,u(t)$ [4]

(b) $h(n) = u(n) - u(n-1)$ [4]

Q.2 Define different properties of system with suitable example. [8]

Q.3 Determine Fourier series coefficient of x(t) given as- [8]



Q.4 Explain properties of ROC of Z- transform. (ROC: Region of convergence) [8]

Q.5 Find the inverse Laplace transform of $X(s) = \frac{2s+4}{s^2+4s+3}$ for given ROC $(-3 < Re(s) < -1)$ [8]

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Q.6 Obtain the Fourier transform of-

(a) $\frac{1}{a^2+t^2}$ [4]

(b) e^{-at} u(t) [4]

Q.7 Differentiate between real and flat top sampling. [8]

PART – C

(Descriptive/Analytical/Problem Solving/Design Question) **[4×15=60]**

Attempt any four questions

Q.1 If x(t) = u(t) – u(t-3), h(t) = u(t) – u(t-2) [15]

Find y(t) = x(t) ∗ h(t) ; here ∗ = convolution

Q.2 The response y(t) = 2 e^{-3t} u(t) if input x(t) = u(t) to a continuous time LTI system [15]

(a) Find impulse response of system

(b) Find output y(t) if input is changed to x(t) = e^{-t} u(t)

Q.3 Find the inverse z – transform of following [15]

(a) $X(z) = \frac{z}{2z^2-3z+1}$ $|z| < \frac{1}{2}$

(b) $X(z) = \frac{z}{2z^2-3z+1}$ $|z| > 1$

Q.4 Explain properties of continuous time fourier transform (CTFT). [15]

Q.5 State the sampling theorem for low pass signals. Proof that there is loss of information due to aliasing or undersampling. [15]

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3E1149

Roll No. _____ Total No of Pages: 8

3E1149

B. Tech. III - Sem. (Main) Exam., Dec. - 2018
PCC Electronics & Communication Engineering
3EC4 – 06 Network Theory
EC, EI

Time: 3 Hours **Maximum Marks: 160**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×3=30]**

All questions are compulsory

Q.1 State Thevenin's theorem.

Q.2 What are poles & zeros?

Q.3 Define Q – factor for the series resonant circuit.

Q.4 Define Power Factor.

Q.5 State Tellegen's theorem.

Q.6 Write down the Kirchhoff's Laws.

Q.7 Define voltage transfer ratio with reference to a two port network.

Q.8 Define h – parameters.

Q.9 What do you mean by Apparent Power?

Q.10 A voltage of 220V is applied across a 1000 W heater. Determine the following –

(i) Resistance of heater

(ii) Current supplied

PART – B

(Analytical/Problem solving questions) **[5×10=50]**

Attempt any five questions

Q.1 Explain the concept of Duality. Use mesh analysis to find the current i_x in the network shown in fig 1.1 – [3+7=10]

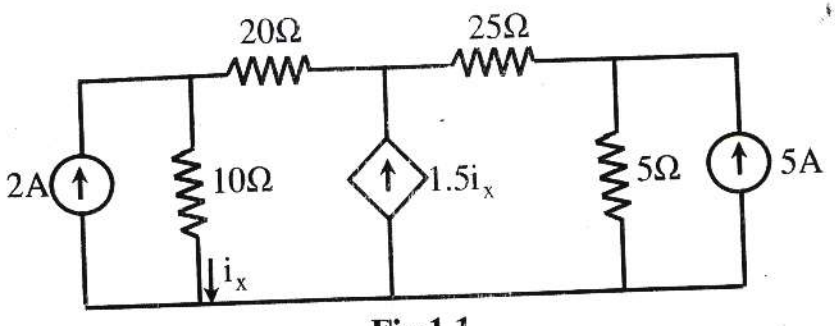


Fig 1.1

Q.2 State superposition theorem. Using the principle of superposition find v in the circuit of Fig 2.1 – [3+7=10]

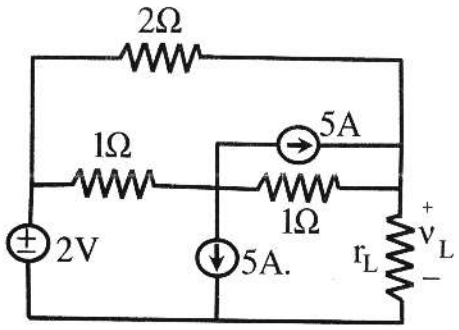


Fig 2.1

Q.3 Find the current in 2Ω resistor using Thevenin's theorem in fig 3.1. Verify the result by Norton's theorem – [10]

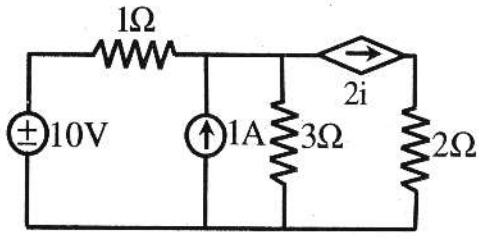


Fig 3.1

Q.4 Determine the Fourier series for the square waveform shown below and plot the magnitude & the phase spectra – [6+2+2=10]

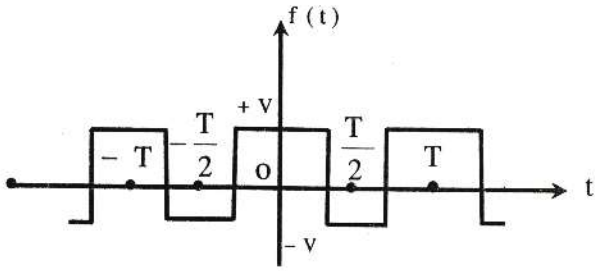


Fig 4.1

Q.5 The series RL circuit shown in fig 5.1 is excited by a DC voltage of 50 V. Assume the initial current flowing through the inductor to be 5A and find the current i(t) for $t > 0$. Use Laplace method – [10]

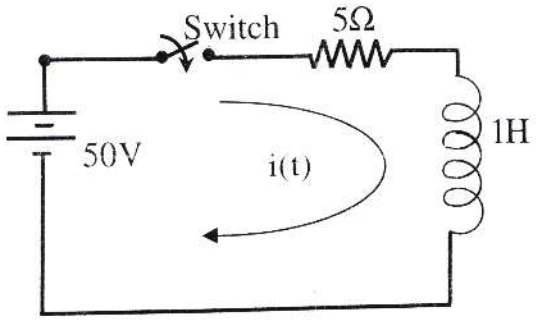


Fig 5.1

Q.6 What is the driving point and transfer impedance of the network shown in fig 6.1– [10]

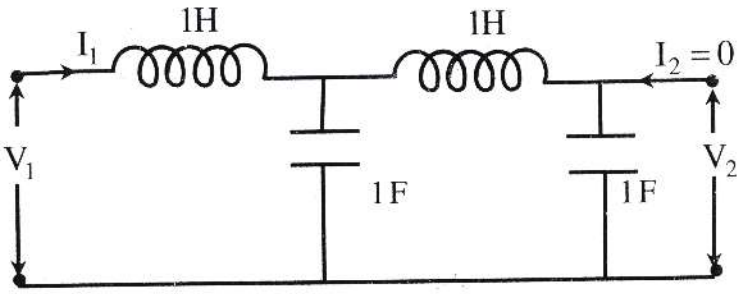


Fig 6.1

Q.7 A 240 V, 100 Hz AC source supplies a series RLC circuit consisting of a capacitor and a coil. If the coil has 55 mΩ resistance and 7 mH inductance. Calculate – [2×5=10]

(i) The value of the capacitor at 100 Hz resonance frequency

(ii) The Q – factor

(iii) The hay power frequencies of the circuit

(iv) Input current at resonance

(v) Maximum instantaneous energy stored in the inductor

PART – C

(Descriptive/Analytical/Problem Solving/Design Question) **[4×20=80]**

Attempt any four questions

Q.1 (a) Using the source transformation, find the current through the 3 - Ω resistor shown in fig 1.1 – [10]

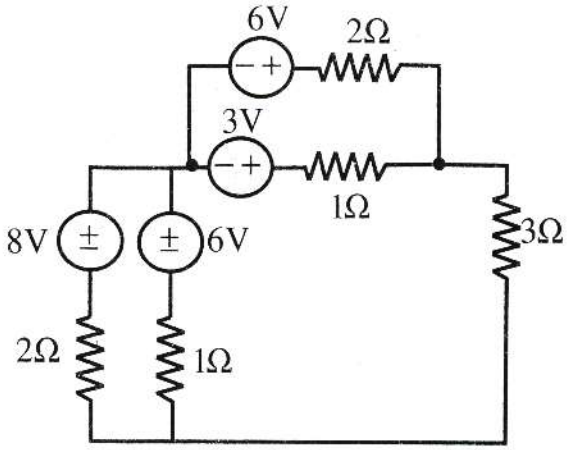


Fig 1.1

(b) Use nodal analysis to determine V_1 and power being supplied by the dependent current source in the circuit shown in fig 1.2 – [10]

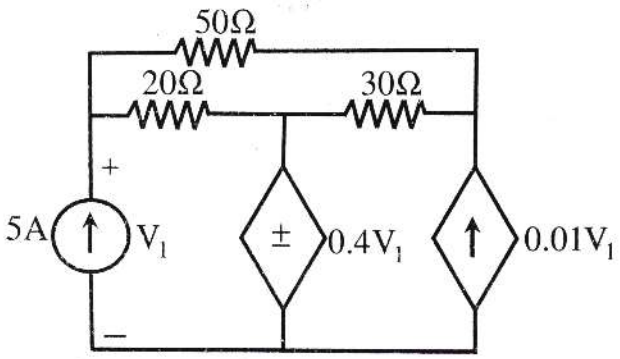


Fig 1.2

Q.2 (a) State and explain Maximum Power Transfer theorem and prove the theorem. [8]

(b) Find the maximum power transfer through Z_L of the circuit shown in fig 2.1– [12]

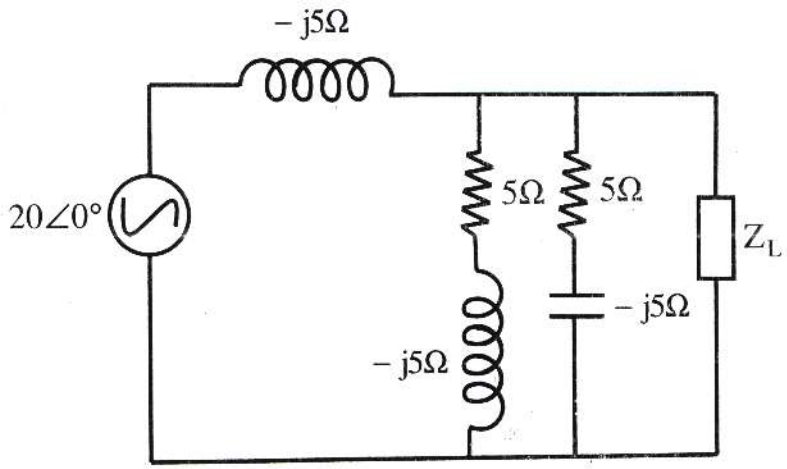


Fig 2.1

Q.3 (a) Determine the Fourier series of the repetitive waveform of Fig 3.1 [14]

(i) Up to the 7th harmonic when the repetition time T = 25π ms.

(ii) Determine the fundamental frequency current in the circuit of fig 3.1 (b) where, R = 15Ω & L = 0.0438 H with voltage transform as in fig 3.1 (a) -

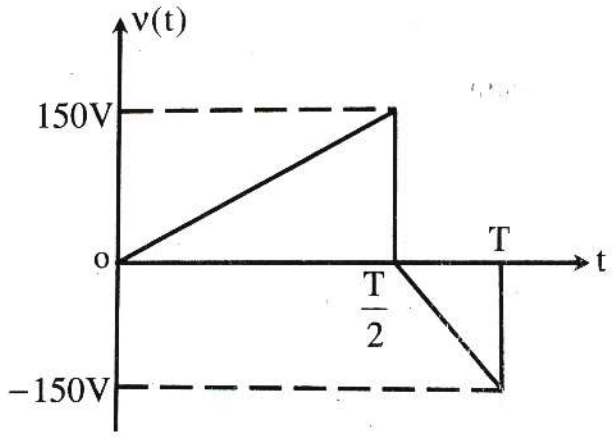


Fig 3.1 (a)

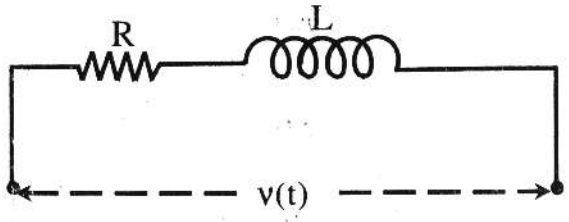


Fig 3.1 (b)

(b) The voltage $V_i(t) = 5e^{-5t}\, u(t)$ volt is applied to the input of RC circuit shown in fig 3.1 (c). Determine the 1 - Ω energy available at the filter output – [6]

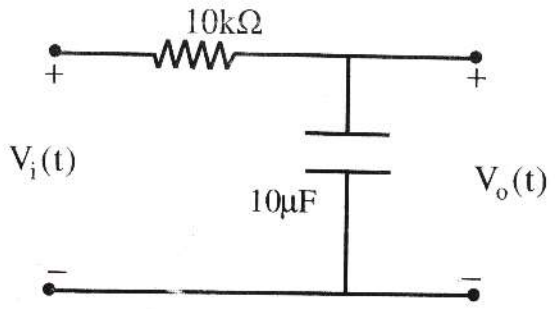


Fig 3.1(c)

Q.4 (a) Determine the current i(t) in a series RLC circuit consisting of R = 5Ω, L = 1H and $C = \frac{1}{4}$ F. When the source voltage is given as – [12]

(a) Ramp voltage 12r (t -2) and

(b) Step voltage 3u (t – 3). Assume that the circuit is initially relaxed.

(b) The response of a network to an impulse is $h(t) = 0.18(e^{-0.32t} - e^{-2.1t})$. Find the response of the network to a step function using the convolution theorem. [8]

Q.5 (a) Write a short note on types of Filters. [10]

(b) Determine Z – parameter & Y – parameter of the following circuit shown in fig 5.1 – [10]

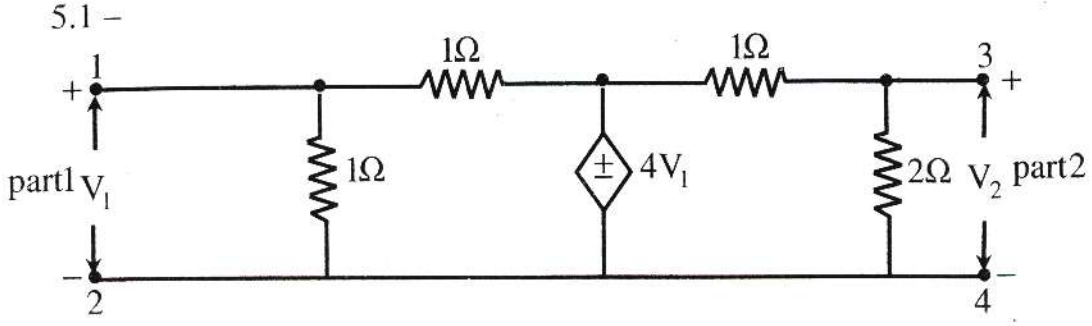


Fig 5.1

3E1150

Roll No. _____ Total No of Pages: 4

3E1150

B. Tech. III - Sem. (Main) Exam., Dec. - 2018
PCC Electronics & Communication Engineering
3EC4 – 07 Electronics Devices
EC, EI

Time: 3 Hours **Maximum Marks: 160**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and four questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART – A

(Answer should be given up to 25 words only) **[10×3=30]**

All questions are compulsory

Q.1 Show Bandgap order of GaAs, GaP and SiC in increasing order.

Q.2 Write one difference between Degenerate and non-degenerate semiconductors.

Q.3 Draw Energy band diagram of a semiconductor in thermal equilibrium condition when it's doping level is shown in fig. 3(A)

$NA = 10^{16}$ cm^{-3}	$N_D = 10^{13}$ cm^{-3}
(*Si*)	(*Si*)

fig – 3 (*A*)

Q.4 Draw characteristic curve of photo diode and solar cell.

Q.5 How many steps are included in one mask during IC fabrication?

Q.6 Write continuity equation under thermal equilibrium conduction and open circuit condition but exposed with photon.

Q.7 Write one difference between LED and LASER diode.

Q.8 Show diode static and dynamic resistance on its I-V characteristic.

Q.9 Define sheet resistance and write its unit.

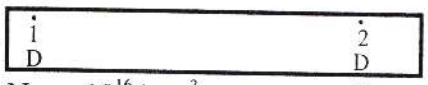
Q.10 Write the name of two recombination center in a lattice.

PART – B

(Analytical/Problem solving questions) **[5×10=50]**

Attempt any five questions

Q.1 Calculate the contact Potential between point 1 & 2 in a semiconductor, shown in fig 1(B) at room temperature.



$N_{D_1} = 10^{16}/cm^3$ $N_{D_2} = 10^{18}/cm^3$

fig $-1(B)$

Assume ni = $1.5 \times 10^{10}/cm^3$

Q.2 How Zener diode is used for voltage regulation. Design such regulator in which input voltage vary in (10 – 12) volt and across load we need constant 6 volt, even the load is changed between 10 – 12 kΩ range.

Q.3 Draw input and O/P characteristics of common base (CB) configuration and show all h – parameter on it.

Q.4 Define the following fabrication process:

(i) Oxidation and

(ii) Ion implementation

Q.5 In NPN transistor the concentration of electron in base region change as shown in fig 5 (B).

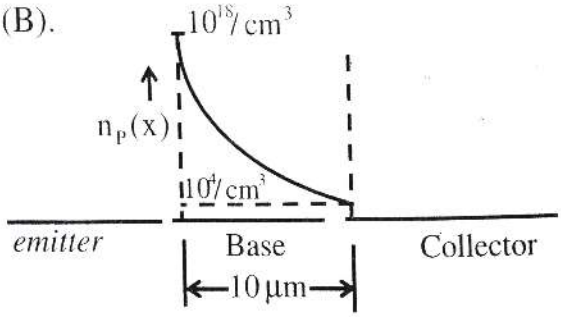
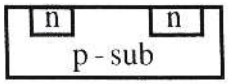


fig.–5 B

Then calculate the diffusion current density in base region. Assume the mobility constant of electron is $fe_n = 1400 \frac{cm^2-volt}{sec}$ at room – temperature.

Q.6 Draw MOSFET VI characteristic at different gate – source (V_{GS}) voltage and show the atomic and saturation region on it.

Q.7 Show all fabrication step to achieve following structure:



PART – C

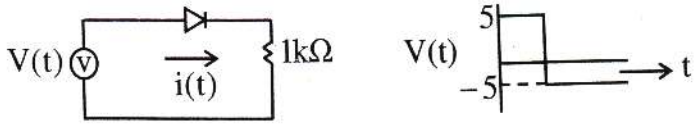
(Descriptive/Analytical/Problem Solving/Design Question) **[4×20=80]**

Attempt any four questions

Q.1 How compound semiconductor are superior than element semiconductor? Design a $Ga_{1-x}As_x$ semiconductor whose sensitivity is maximum for a photon in infrared region when it is used as photodiode.

Q.2 Draw characteristic of a solar cell and define open circuit voltage and short circuit current on it. How solar cell is used in solar panel for increase in current and voltage rating?

Q.3 Draw the current in following diode circuit (fig. 3C) for the given voltage. Also define storage time, reverse recovery time on it.



(fig–3C)

Q.4 Develop small signal MOSFET Model and draw its electrical equivalent circuit. Also define all model parameters.

Q.5 Write the use of the following:

(i) Schottky diode in TTL

(ii) Etching process in IC fabrication

(iii) Direct bandgap material in LED

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3E1615

Roll No. _____ Total No of Pages: 3

3E1615

B. Tech. III - Sem. (Mercy Back) Exam., Dec. - 2018
Electronics & Communication Engineering
3EC5 Electromagnetic Properties of Materials

Time: 3 Hours **Maximum Marks: 80**
Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) Explain "Ferroelectricity and piezoelectricity". [8]

(b) What is meant by polarization? What mechanism contribute to the polarization of a dielectric material under an electric field. [8]

OR

Q.1 (a) The polarizability of neon gas is 0.35×10^{-46} F-m^2. If the gas contains 2.7×10^{25} atoms per m^3 at 0 and 1 atmosphere pressure, calculate its dielectric constant. [8]

(b) Derive the relationship between $\vec{E}$, D and $\vec{P}$ vectors. What is the significance of each of these vectors? [8]

UNIT- II

Q.2 (a) Discuss the difference between soft and hard magnetic materials. [8]

(b) Differentiate between diamagnetic, paramagnetic, ferromagnetic and ferrimagnetic materials. [8]

OR

Q.2 (a) Write a short note on: [8]

(i) Magnetic Anisotropy

(ii) Magnetostriction

(b) Define magnetic susceptibility χ_m and permeability. Also prove that $\mu_r = 1 + \chi_m$ and hence show that $B = \mu_o (1 + \chi_m)\mu$. [8]

UNIT- III

Q.3 (a) Explain electronic properties of semiconductor – (Any two) [8]

(i) Si

(ii) Ge

(iii) SiC

(b) Write a short note on – [8]

(i) Thermistors

(ii) Sensitors

OR

Q.3 Explain crystal growth and zone refining. [16]

205

UNIT- IV

Q.4 (a) Differentiate in between type I and II superconductor. [8]

(b) Explain superconductivity and its practical application. [8]

OR

Q.4 (a) Give properties, compositions and applications of two conductivity and two resistance materials. [12]

(b) Derive an expression for resistivity of impure metals. [4]

UNIT- V

Q.5 (a) Write potential applications of nano materials. [8]

(b) Describe the electronic and optical properties at nano stage. [8]

OR

Q.5 (a) Describe the structure of Quantum dots (nano dots) and Quantum wires. [8]

(b) Explain the fabrication & characterization of nano materials. [8]

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3E1616

Roll No. _____ Total No of Pages: 4

3E1616

B. Tech. III - Sem. (Main / Back) Exam., Dec. - 2018
Electronics & Communication Engineering
3EC6A Advanced Engineering Mathematics - I

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks: 26

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT- I

Q.1 (a) Find the Laplace transforms of the following functions – [8]

(i) $f(t) = t^2e^t \sin 4t$

(ii) $f(t) = \int_0^{t/2} \frac{1-e^{-2x}}{x} dx$

(b) Using Laplace Transform, solve the differential equation [8]

$y'' + 2ty' - y = t$, when $y(0) = 0$ and $y'(0) = 1$.

OR

Q.1 (a) State Second Shifting property and hence evaluate Laplace transform of – [8]

$$f(t) = \begin{cases} 0, & 0 \le t < 3 \\ (t-3)^2, & t \ge 3 \end{cases}$$

(b) A function f (t) obeys the equation $f(t) + 2\int_0^t f(t)dt = \cos h(2t)$, find the Laplace transform of f(t). [8]

UNIT- II

Q.2 (a) Obtain a half range cosine series for $f(x) = \begin{cases} kx; & 0 < x < l/2 \\ k(l-x); & \frac{l}{2} \le x \le l \end{cases}$ and deduce the sum of the series $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \cdots$ [8]

(b) Solve the difference equation- [8]

$u_{n+2} - 4u_{n+1} + 3u_n = 5^n, n \ge 2; u_0 = 5, u_1 = 12.$

OR

Q.2 (a) Find Fourier series representation of $f(x) = x^2 - 2$, when $-2 \le x \le 2$. [8]

(b) Find Fourier Z transform of $\frac{4z^2-2z}{z^3-5z^2+8z-4}$ [8]

UNIT- III

Q.3 (a) Find Fourier Sine and Cosine transform of $f(t) = e^{-\alpha t}, t \ge 0; \alpha > 0$. [8]

(b) Using Fourier Integral Transforms, solve the following initial boundary value problem – [8]

$\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2}; 0 < x < \infty; t > 0;$ $u(x, 0) = \begin{cases} 1; & 0 < x \le 1 \\ 0; & x > 1 \end{cases}$ $u(0, t) = 0, t > 0$

OR

Q.3 (a) Find Inverse Fourier transform of $f(\omega) = \frac{\sqrt{\pi}\,\omega e^{-\omega^2/8}}{4\sqrt{2}i}$ [8]

(b) Using Fourier Integral Transforms, solve the following initial boundary value problem – [8]

$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0;\ -\infty < x < \infty; 0 < y < 1;\ \frac{\partial u}{\partial y}(x, 0) = 0,$

$u(x, 1) = e^{-2|x|}, -\infty < x < \infty$

UNIT- IV

Q.4 (a) Prove that an analytic function with constant modulus is a constant function. [8]

(b) Evaluate $\oint_C \frac{z^2+1}{z^2-1} dz$ where C is a circle. [8]

(i) $|z| = \frac{3}{2}$

(ii) $|z - 1| = 1$

(iii) $|z| = 1/2$

OR

Q.4 (a) Prove that the function $f(z) = \frac{x^3(1+i)-y^3(1-i)}{x^2+y^2}; z \neq 0$ and $f(0) = 0$ is continuous and the Cauchy Riemann equation are satisfied at the origin. Yet $y'(0)$ does not exist. [8]

(b) Evaluate $\oint_C (5z^4 - z^3 + 3)\, dz$ around [8]

(i) unit circle $|z| = 1$

(ii) square with vertices (0, 0), (1, 0), (0, 1) and (1, 1).

UNIT- V

Q.5 (a) Expand $\frac{1}{z^2-3z+2}$ in the region [8]

(i) $1 < |z| < 2$

(ii) $|z| > 2$

(iii) $0 < |z - 1| < 1$

(b) Using Residue theorem, evaluate $\frac{1}{2\pi i}\oint_C \frac{e^{zt}}{z^2(z^2+2z+2)}dz$ where C is the circle $|z| = 3$. [8]

OR

Q.5 (a) Define Singularity. Find the singularity in the function $f(z) = e^{-1/z^2}$ [8]

(b) Evaluate $\int_0^{2\pi} \frac{\cos 3\theta}{5+4\cos\theta}d\theta$ [8]

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3E1494

Total No. of Questions: Total No. of Pages: 02

Roll No. _____

B.Tech. III-Sem (Back) Dec. 2018
Electronics & Communication
3EC4 Electronic Measurment & Instrumentation
3E1494
Common With BM

Time: 3Hours **Maximum Marks: 80**
Min Passing Marks: 26

Attempt any **five questions,** selecting **one question** from **each unit**. All Questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No.205)

1_____ 2. _____

UNIT -I

Q. 1 a) What do you mean by accruing and precision
b) Explain limits of errors and Repeatability

16

OR

Q.1 a) What do you mean by probable error & standard derivation.
b) Briefly explain Gaussian error analysis

16

UNIT -II

Q. 2 a) Explain condition and working of Digital Voltmeter.
b) What do you mean by shielding?

16

OR

Q.2 a) Explain the process of RF factor and voltage measurement
b) Define Grounding

16

UNIT -III

Q. 3 Explain the block diagram o CRT and its construction where we use CRO probes.

16

OR

Q.3 Write short notes on:-
a) Phase angle and time delay
b) Storage and sampling oscilloscopes.

8+8=16

UNIT -IV

Q. 4 a) Explain the working of Synthesized signal generators. Give necessary diagram & relations.
b) Draw the diagram of Heterodyne wave analyzer.

10+6=16

OR

Q.4 a) Explain the working of harmonia distortion analyzer with suitable diagrams.
b) Define the term signal Analysis.

16

UNIT -V

Q. 5 Explain selection criteria, characteristics, construction working principle and application of LVDT.

16

OR

Q.5 Explain selection criteria, characteristics, construction working principle and application of Diaphragms.

16