Sr.No. 160601 Roll No. _____

B.TECH.(ECE) – 3rd SEMESTER EXAMINATIONS; DECEMBER - 2017
(SUB:-ANALOG ELECTRONICS CIRCUIT; PAPER CODE:-13040307)

TIME: 03:00 Hrs. **Max Marks:50**

Instructions:-

1. Write your Roll No. on the Question Paper.
2. Candidates should ensure that they have been provided with correct question paper. Complaints in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt **five (05)** questions in all and **Q1.** is compulsory. Students are required to attempt **(04)** questions selecting **one (01)** question from each unit. Marks are indicated against each question.
4. Draw the diagram wherever required.

Q.1. All questions are compulsory:- (2X5=10)

a) Describe effect of emitter by pass capacitor on low frequencies.
b) Push pull amplifier.
c) Effect of voltage shunt on input, output resistance & gain.
d) How can you use an amplifier as an oscillator?
e) Explain why a Wein bridge oscillator requires negative feedback.

UNIT-I

Q.2. a) Describe Hybrid analysis model in detail. (4)
b) Describe the working of a Hartley oscillator. Determine the frequency of oscillations from a Hartley oscillator whose LC network uses C = 20nF and $L_1 = L_2 = 40\mu H$. (6)

OR

Q.3. a) Differentiate between series and parallel resonance RLC circuits. Also describe the significance of resonance frequency. (4)
b) Describe the working of a single stage tuned amplifier. (6)

UNIT-II

Q.4. a) Explain the working of Class B push pull amplifier with suitable diagram. (4)
b) Describe the working of complementary symmetry push-pull amplifier. (6)

OR

Q.5. a) Draw the fully labelled h-parameter equivalent circuit of a CE amplifier. (4)
b) Determine (i) input impedance, (ii) current gain, and (iii) voltage gain of an amplifier whose h-parameters are $H_{ib} = 150\ \Omega$, $H_{ob} = 10^{-5}\ \Omega^{-1}$, $H_{rb} = 10^{-3}$ and $H_{fb} = -0.98$. Use $R_L = 1500\ \Omega$. (6)

UNIT-III

Q.6. a) Discuss crossover distortion? How can you remove it? (4)
b) Describe the working of a common gate & common drain amplifier. (6)

OR

Q.7. a) Briefly describe the conductance in the high frequency hybrid-π model of BJTs. (5)
b) Sketch and explain the output characteristics of a Class-A power amplifier. (5)

UNIT-IV

Q.8. a) Using suitable block diagram, differentiate between double tuned & stagger tuned amplifier. (5)
b) List effects of negative feedback in amplifiers. Calculate the gain of an amplifier after negative feedback (β=0.84) if the open loop gain of the amplifier is 140. (5)

OR

Q.9. a) Describe the working of a colpits oscillator. (6)
b) In a JFET, I_D drops from 16mA to 10mA when V_{GS} is changed from 0 V to -3 V. Calculate the pinch-off voltage. (4)

****

30

Sr.No. 100402 Roll No. _____

B.TECH.(ECE) – 3rd SEMESTER EXAMINATIONS; DECEMBER - 2017
(SUB:-SIGNAL AND SYSTEM ANALYSIS ; PAPER CODE:-13040308)

TIME: 03:00 Hrs. **Max Marks:50**

Instructions:-

1. Write your Roll No. on the Question Paper.
2. Candidates should ensure that they have been provided with correct question paper. Complaints in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt **five (05)** questions in all and **Q1.** is compulsory. Students are required to attempt **(04)** questions from Q2. To Q6. Marks are indicated against each question.
4. Draw the diagram wherever required.

Q.1. All questions are compulsory:- (2X5=10)

a) Test for linearity and time variance of signal: $y(t) = ax^2(t) + b$
b) Define any two properties of Laplace Transform.
c) State Parseval's theorem.
d) Define LTI system. Write conditions for it.
e) What is the frequency response of LTI system?

Q.2. a) Define signal. Explain various types of signal with diagram. (5)

b) Given that: $x(t) = \frac{1}{2}(t^2 + 2)$; $-3 \leq t \leq 3$
$= 0$; otherwise

Sketch (i) x(t) (ii) x(-t) (iii) x(t+1) (iv) x(t-1) (v) $x(t^2)$ (5)

Q.3. a) Find Laplace transform of : $x(t) = e^{-at}u(t)$ and indicate its ROC. (5)

b) Find inverse Z-transform of following: (5)

$$H(z) = \frac{z^2}{(z-1)(z-2)}$$

Q.4. a) Find Laplace transform of: $x(t) = e^{at}u(t)$ (5)

b) Explain comparison between CTFT and DTFT with example. (5)

Q.5. a) Derive the relation between PSD of input and output for an LTI system. (5)

b) Explain the convolution integral for the continuous time LTI system. (5)

Q.6. A stable LTI system is characterized by differential equation: (10)

$$\frac{d^2y}{dt^2} + 4\frac{dy}{dt} + 3y(t) = \frac{dx(t)}{dt} + 2x(t)$$

Find frequency response and impulse response using Fourier transform.

****

25

Sr.No. 10603 Roll No. _____

B.TECH.(ECE) – 3rd SEMESTER EXAMINATIONS; DECEMBER - 2017
(SUB:- NETWORK ANALYSIS AND SYNTHESIS; PAPER CODE:-13040309)

TIME: 03:00 Hrs. **Max Marks:50**

Instructions:-

1. Write your Roll No. on the Question Paper.
2. Candidates should ensure that they have been provided with correct question paper. Complaints in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt **five (05)** questions in all, **Q1.** is compulsory. Students are required to attempt **(04)** questions, selecting **one (01)** question form each unit. Marks are indicated against each question.
4. Draw the diagram wherever required.

Q.1. Attempt all questions:- (2X5=10)

a) Define graph, twig and link with reference to graph theory?
b) Explain, how to find Norton's equivalent of a network.
c) Define transient response. Differentiate between transient state & steady state.
d) Define filters and discuss importance of filters in electronic circuit.
e) What is the condition of reciprocity and symmetry in two port networks?

UNIT-I

Q.2. State and explain Theremins theorem with a suitable Example. (10)

Q.3. Describe the applications of Tie-set matrix. Also write down the fundamental Tie-set matrix with a suitable example? (10)

UNIT-II

Q.4. What will be the expression of current, if a sinusoidal input is given to a series RL circuit? (10)

Q.5. What is the significance of poles and zeroes? Write the restrictions on location of poles and zeroes in driving point function. (10)

UNIT-III

Q.6. Define two port networks. Drive an expression for Z – paramcters Y – parameters of a two port network. (10)

Q.7. Discuss the T and Π network representation. Express the elements of T and Π network in terms of Z and Y parameters. (10)

UNIT-IV

Q.8. Drive an expression for characteristic impedance of T & Π filter networks. (10)

Q.9. Check for the following equations, whether the polynomials are Hurwitz or not:- (10)

a) $T(s) = s^4 + s^3 + 5s^2 + 3s + 4$
b) $T(s) = s^4 + s^3 + 2s^2 + 4s + 1$

****

25

Sr. No 100404 Roll No. _____

B.TECH. (ECE) – 3rd SEMESTER EXAMINATION, DECEMBER.-2017
(SUBJECT- DATA STRUCTURE : PAPER CODE- 13040310)

Time : 03:00 Hours **Maximum Marks – 50**

Instruction :

1. Write your Roll No. on the question paper.
2. Candidate should ensure that they have been provided with correct question paper. Complaints in this regard, if any, should be reported to the invigilator on duty in the examination hall within 15 minutes of the commencement of the exams. No complaints shall be entertained thereafter.
3. Attempt five (06) questions in all Q.No.1. is compulsory. Students are required to attempt FIVE questions selecting one from each unit in addition to Q.No.1. Marks are indicated against each
4. Draw diagram whenever required.

Q1 . Write short notes on following: (5x2=10)

a) Time Complexity
b) Stack
c) Queue
d) 1-D array
e) Preorder Traversal

UNIT-I

Q2 . a) What is data structure? Explain various types of data structure. (4)
b) Write a program to find sum of all elements of an array. (4)

OR

Q3 . a) Explain Asymptotic notations used to represent time complexity of an algorithm. (4)
b) Write an algorithm to traverse elements of a linked list. (4)

UNIT-II

Q4 . a) What is Stack? Explain push and pop algorithm used in stack. (4)
b) Evaluate the postfix expression using stack: (5,6,2,+,*,12,4,/,-) (4)

OR

Q5 . a) Write an algorithm to insert an element in a queue? (4)
b) Explain double ended queue and priority queue. (4)

UNIT-III

Q6 . a) Design the binary tree for the following traversals of the tree: (4)
Inorder : D B F E A G C L J H K
Preorder : A B D E F C G H J L K

b) Explain array representation of a binary tree using an example. (4)

OR

Q7. a) What do you understand by preorder, inorder, postorder traversal of a binary tree. (4)
b) Explain dynamic representation of a binary tree with an example. (4)

****

25