Sai Nath University

Assignment For Diploma in E&C 4th Sem.

The Assignment will consist of two parts, A and B. Part A will have 5 short answer questions(40-60 words) of 4 marks each. Part B will have 4 long answer questions of 5 marks each.

All questions are compulsory.

These Assignments should be completed and submitted in written form by the student to his/her respective Faculty/ Examiners. Assignment Submission Dates are:

> ➢ **June-18**

List Of Suggested Questions

The list of suggested questions is for students to practice. Although optional, we recommend that students solve these questions, as they will help them in preparing for exams as well as in clearing the important concepts of the subject.

List of Practical and suggested practical's

The list of practical's should be done by the students in their Lab Sessions. These are the basic practical's, which each student should be able to do himself independently. While the list of suggested practicals are optional, but it is recommended that students should perform those practical so as to have a thorough knowledge of the subject

Education Delivery Schedule (EDS)

As per University Semester scheme, the minimum contact hours of each paper has been

Divided into two hours theory and practical class.

The faculty will maintain this attendance paper wise for his/her batch.

Subject Code	Subject Name
DECE401	DIGITAL TECHNIQUE &APPLICATION
DECE402	ELECTRONICS MATERIALS &COMPONENT
DECE403	ELECTRONIC MEASUREMENT &INSTRUMENTS
DECE404	COMMUNICATION TECHNIQUE
DECE405	LINEAR INTEGRATED CIRCUIT

04

SAI NATH UNIVERSITY

Cover page of Assignment

ID NUMBER ………………………………

NAME ……………………………… ……

COURSE DIPLOMA………

STREAM E&C…………………

SEM 4TH …………………………………

SUBJECT CODE …………………………………

SUBJECT NAME …………………………………

Assignments will be completed by the Student in his/her own handwriting.

DECE-401

SUB-DIGITAL TECHNIQUE &APPLICATION

PART A

Q1. Write a short note on PAL and PLA.

Q2. Explain the concept of parity generator and checker and their applications.

Q3.Represent $(-17)_{10}$ in sign magnitude, one's complement and two's complement representation.

Q4. Explain the operation of ALU.

Q5. Explain Schmitt trigger with its characteristics.

PART B

Q6.What do you mean by universal register ? List the applications of shift register.

Q7. Explain Master-Slave concept and discuss the complete functioning of MS-JK flip-flop.

Q8.Design a 3-bit binary UP/Down counter with a direction control M using JK flip-flops.

Q9.List and explain the specifications of D/A converters.

DECE-402

SUB-ELECTRONICS MATERIALS &COMPONENT

PART A

Q1. Explain the operation of n-p-n transistor as a switch with the help of a suitable diagram.

Q2.Explain the operation of a Bistable Multivibrator with the help of a neat diagram. Write down its applications.

Q3.Explain the operation of an exponential base generator with the help of a suitable diagram.

Q4.Explain the operation of a suitable time base generator which is used in CRO.

Q5. xplain the operation of a Wien Bridge oscillator with the help of a neat diagram.

PART B

Q6. What is the fundamental difference between Audio . amplifier and Tuned amplifier ? Also explain the operation of Class A transformer coupled resistive load amplifier.

Q7.Explain the operation of Class AB Push-Pull amplifier with the help of a neat diagram. (b)

Q8.Explain the operation of P-channel Enhancement Type MOSFET with the help of a suitable diagram. Also draw its drain characteristics. Explain the threshold voltage.

Q9.Write down the Barkhausen criterion for sustained oscillations. In a phase shift oscillator, R1= R2 = R3 = 800 KΩ and C1= C2 = C3 = 100 pF. Determine the frequency of oscillations.

DECE-403

SUB-ELECTRONIC MEASUREMENT &INSTRUMENTS

PART A

Q1.Describe the various types of errors in instruments.

Q2. Is it necessary that every digital voltmeter should have a high input impedance ? Give reasons.

Q3. Why is calibration of all instruments important ? Explain the calibration procedure.

Q4. Define Average and RMS values. Draw the block diagram of an Analog Multimeter.

Q5. Explain the working principle of Q-meter.

PART B

Q6. Draw the block diagram of a Digital frequency meter and explain its operation.

Q7.What is the need for inserting isolation between the signal generator output and oscillator in a simple signal generator ? What are the different ways in which this can be achieved ?

Q8.Explain the working of a pulse generator with the help of a block diagram.

Q9.Explain clearly, with the help of an example, how frequency and phase angle is measured using CRO.

DECE-404

SUB-COMMUNICATION TECHNIQUE

PART A

Q1.Describe the working of FM slope detector.

Q2.Differentiate between single and double impedance matching stubs.

Q3. Define the terms critical frequency and skip distance in detail.

Q4. Explain the phenomena of duct propagation.

Q5. What is ground wave propagation ?

PART B

Q6.Draw the block diagram of a communication system and explain the functions of each block.

Q7.What do you understand by electromagnetic spectrum and its various bands.

Q8. hat is fading and how does it affect the performance of a communication system ?

Q9. What do you understand by space wave propagation ?

DECE-405

SUB-LINEAR INTEGRATED CIRCUIT

PART A

Q1. Draw the circuit diagram of a modified BJT current source and derive an expression for its current gain and output resistance.

Q2. Give the schematic symbol of an op-amp specifying the functions of each pin. Also draw the block diagram of an op-amp and briefly describe the function of each block.

Q3. Define the terms — SVRR and CMRR. Briefly explain the procedure for determining the CMRR value of an op-amp.

Q4. Draw the high frequency equivalent circuit of an op-amp. Derive an expression for the open-loop voltage gain as a function of frequency.

Q5. Derive an expression for the output voltage of a non-inverting adder amplifier using op-amp having three inputs. Also draw its circuit diagram.

PART B

Q6. Draw the circuit diagram of a circuit voltage-to-current converter with grounded load and floating load. Also derive an expression for the output voltage of the two circuits.

Q7.Give the circuit diagram of a second-order Butterworth low-pass filter. Derive an expression for its transfer function and hence determine the value of various filter parameters.

Q8.Give the circuit diagram of a square wave generator using an op-amp. Also derive an expression for the frequency of output waveform.

Q9. Explain the operation of a sample and hold circuit with the help of a neatly labelled diagram.

DECE-406

LIST OF EXPERIMENTS

1. Gate Pulse Generation using R, RC and UJT.

2. Characteristics of SCR and Triac

3. Step down and step up MOSFET based choppers

4. Satellite communication setup

5. Frequency hoping spread spectrum setup

6. Plot the frequency response of two stages RC coupled amplifier and calculate the bandwidth and compare it with single stage amplifier

7. To measure the voltage gain of emitter follower circuit and plot its frequency response

8. To observe the output for clamping circuits.