<u>Sai Nath University</u>

Assignment For B.TECH in Electrical Engineering 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 2 long answer questions of 10 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-2018

List Of Suggested Questions

The list of suggested questions are 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 practical's 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
BTEE- 401	Society Environment Engg.
BTEE -402	Electronic device & Circuit
BTEE-403	Analog Electronic Circuit
BTEE -404	Electromagnetic Theory & App.
BTEE- 405	Electrical Measurement-1

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Cover page of Assignment

ID NUMBER …………………………………

NAME …………………………………

COURSE B. Tech ………

STREAM Electrical………………………………

SEM 4th…………………………………

SUBJECT CODE …………………………………

SUBJECT NAME …………………………………

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

BTEE-401

[Society Environment Engineering]
Part A

1. How can public awareness help in conservation of environment ? Explain with the help of suitable examples.

2. Discuss the environmental impacts of river valley projects.

3. Discuss the global nuclear energy scenario. Explain its environmental impact.

4. What do you understand by productivity of the ecosystem ? Discuss its types.

5. Explain in detail any two of the following with detailed sketches :

   (a) Nitrogen Cycle (b) Ecological Pyramid

Part B

1. What are the Government of India's policies related to the conservation, protection and recycling of natural resources and reserves ? Describe any one such policy/act in detail.

2. What are the effects of environmental pollution on urban areas ? Discuss some necessary actions required to overcome and tackle this issue.

BTEE-402
[Electronic Devices & Circuit]

Part A

(a) Explain the existence of various electron energy bands in solids. Based on these bands distinguish between insulators, conductors and semiconductors.

(b) Explain drift and diffusion of charge carriers in semiconductors. Derive an expression for the electron current due to drift and diffusion.

(c) Draw the characteristics of a silicon p-n junction diode with proper voltage and current levels and show the forward and reverse bias region. Give the diode current equation for both the regions.

Part B

(a) Describe with the help of a diagram, the principle and working of a zener diode. Why is zener diode used in voltage regulator circuit ?

(b) Explain base width modulation (early effect) with the aid of plots of potential and minority carrier concentration

throughout the base region.

(c)With a neat circuit diagram, explain the working principle of a regulated power supply.

(d) Draw the circuit diagram of a centre tape full wave rectifier and explain its working.

BTEE-403
[Analog Electronic Circuit]

Part A

(a) Differentiate between power amplifier and voltage amplifier.

(b) Explain Class A, B and AB power amplifiers. Which one has better efficiency ?

(c) Define Q-factor of tuned circuit and discuss the merits and demerits of tuned circuit.

(d) Compare single tuned and double tuned amplifiers. Also discuss the frequency response of single tuned amplifier.

(e) Define the feedback concept and explain the characteristics of positive and negative feedback.

(f) Draw various feedback topologies. Mention the applications of feedback. 8. Explain RC phase shift oscillator and derive the expression for frequency of oscillations.

Part B

(g)Draw the block diagram of IC 555 timer and explain its any one mode of operation with suitable waveforms.
(h)Draw and explain the hybrid model of NPN BJT for each configuration.
(i) Compare DSB-SC, SSB and VSB modulation schemes.

BTEE-404
[Electromagnetic Theory & Application]

1Prove that the electric field strength at any point outside a spherical charge distribution is the same as though the whole charge were concentrated at the centre.

2. What do you mean by the capacitance of a capacitor ? On what factors does it depend ?

3. Define the Green's function with reference to electrostatic potential problems.

4. A long horizontal rigidly supported wire carries a current is of 100 A. Directly above it and parallel to it is a fine wire that carries a current i bof 20 A and weighs 0.03 N/m. How far above the lower wire should the second wire be kept, if we wish to support it by magnetic repulsion ? Given permeability constant = 47E x 10-7Wb/m.

5. Establish Maxwell's equations for the electromagnetic fields and obtain an expression for Poynting vector.

6. Explain the theory of propagation of electromagnetic waves in a conducting medium and also explain why in high frequency circuits current flows only on surface of conductors.

7. Give briefly the general methods for the solution of potential problems in electrostatics and compare their merits and limitations.

8. A charge 1 ta,C is placed at the centre of a hollow cube. Calculate the electric flux diverging 5+5=10 (i) through the centre. (ii) through each face.

9. The rails of a railway track are 1.5 m apart and assumed to be insulated from one another. Calculate the emf in volts that exists between the rails, if a train is passing at 100 km/hour. Assume that the horizontal component of Earth's magnetic field is 0.36 oersted and tan 0 = F036, where 0 is the angle of dip.

10. Write short notes on any two of the following :

(a) Snell's Law of Refraction (b) Transmission Line Parameters (c) Generalized form of Gauss's Theorem

BTEE-405
[Electrical Measurement-1]
Part A

(a) Distinguish between the Direct and Indirect methods of measurement. Cite examples to support your answer.

(b) Define the terms : (i) Repeatability (ii) Accuracy (iii) Precision (iv) Resolution (v) Linearity

(c). Explain the working of electro-resonance type power factor meter. Draw the phasor diagram under different power factor conditions.

(d) Explain the Digital Voltmeter (DVM). Classify the various types and explain the Ramp type digital voltmeter, with the help of a neat diagram.

(e) Describe the working of strip-chart recorder. What are the different types of tracing systems used in it ? Explain with the help of a suitable diagram.