

Sai Nath University

Assignment For BTECH in E&C 6th 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
BTEC601	POWER ELECTRONICS
BTEC 602	DIGITAL SIGNAL PROCESSING
BTEC 603	MICRO- PROCESSOR
BTEC 604	TELECOMMUNICATION SWITCHING AND SIGNAL
BTEC 605	INDUSTRIAL ECONOMICS AND MANAGEMENT

SAI NATH UNIVERSITY

Cover page of Assignment

ID NUMBER
NAME
COURSE	BTECH.....
STREAM	E&C.....
SEM	6 TH
SUBJECT CODE
SUBJECT NAME

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

BTEC601

SUB-POWER ELECTRONICS

Part A

- Q1.** Explain the construction and characteristics of DIAC.
- Q2.** briefly explain the Three-phase Delta-Wye Bridge Rectifier
- Q3.** briefly explain the working principle of GTO
- Q4.** explain about Resistance Capacitance (RC) Firing Circuit
- Q5.** Explain the forward voltage triggering and gate triggering methods for turning on a thyristor.

Part B

- Q6.** Explain the V - I characteristic curve of UJT. Why is it called current-controlled negative-resistance device?
- Q7.** Explain the construction and draw the volt - ampere characteristic of an Insulated Gate Bipolar Transistor (IGBT).
- Q8.** Draw a two-transistor representation of a silicon-controlled rectifier (SCR) and describe the method and condition for its conduction.
- Q9.** Give the schematic representation of the basic structure of a power transistor and explain its working.

SUB-DIGITAL SIGNAL PROCESSING

SUB.CODE-BTEC602

Part A

Q1. Explain cascade compensation by continuous data controllers using bilinear transformation.

Q2. What are the degrees of freedom compensation ?

Q3. for an open-loop transfer function with zero at b and poles at ' a_1 ' and ' a_2 ', write down the circle equation for the root locus. Thus, write down the centre radius of the root locus.

Q4. Explain mapping of the primary strip in the left half of the s -plane into the z -plane by the Z -transform.

Q5. Draw the block diagram of a digitally controlled plant-with proper labelling.

Part B

Q6. Determine the Z -transform of the unit step function $u(t)$.

Q7. Define state space model (vector) of discrete data system. Use the similarity transformation to derive an equivalent model.

Q8. Write short notes on any two of the following

(a) Mathematical model of ZOH (b) Routh stability criterion on r -plane (c) Jordan canonical form

SUB-MICRO- PROCESSOR

SUB.CODE-BTEC603

Part A

- Q1.**What is the major difference between an 8086 operating in minimum mode and an 8086 operating in maximum mode ?
- Q2.** Why are buffers often needed on the address, data, and control buses in a microcomputer system.
- Q3.**Draw the internal architecture of the 8086 microprocessor. Explain BIU and Execution unit.
- Q4.** What are the different addressing modes and instruction set for 8086 ?
- Q5.** Describe the main advantages of multi-programming system over uni-programming system.

Part B

- Q6.** What do you mean by bus de-multiplexing and buffering in 8086 ?
- Q7.** Describe the series of actions that a DMA controller will perform after it receives a request from a peripheral device to transfer data from the peripheral device to memory with the help of a timing diagram.
- Q8.** Discuss the software and hardware features of 80486 microprocessor.
- Q9.** What is software interrupt and hardware interrupt ? How many hardware and software interrupts can 8086 support ? Describe in detail.

SUB-TELECOMMUNICATION SWITCHING AND SIGNAL

SUB.CODE-BTEC604

Part A

- Q1.** Differentiate between low-impedance and high-impedance pre-amplifiers used in optical fiber systems.
- Q2.** Explain the operation of Raman amplifier in the amplification of optical signals.
- Q3.** Derive the expression for the following terms for an avalanche photodiode
(a) Responsivity (b) Sensitivity (c) Quantum Efficiency
- Q4.** Classify optical fibers on the basis of fiber mode and refractive index variation.
- Q5.** Differentiate Essential hazards with suitable examples.

Part B

- Q6.** Differentiate between Mealy and Moore model with a suitable diagram.
- Q7.** What do you mean by GLITCH and propagation delay in asynchronous counter.
- Q8.** Differentiate among Dynamic, Static and Essential hazards with suitable examples.
- Q9.** Write short notes on any two of the following:
(a) Kerr Non-linearity (b) Trans-impedance Receivers (c) Graded Index Fibers

SUB- INDUSTRIAL ECONOMICS AND MANAGEMENT

SUB.CODE-BTEC605

Part A

Q1.What are the objectives of communication ?

Q2. Describe the communication flow in an organisation.

Q3.What are the characteristics of controlling ? Why is controlling important ?

Q4. What is the difference between closed system and open system ? Explain with the help of an example.

Q5. Define organisational structure. In what way are organisation chart and manual useful to understand the organisation and its functioning ?

Part B

Q6.What is the difference between closed system and open system? Explain with the help of an example.

Q7.Define organisational structure. In what way are organisation chart and manual useful to understand the organisation and its functioning?

Q8. Define Co-ordination. Describe in brief, in what way it is different from departmentation.

Q9. What is span of control ? List out the major factors influencing the span of control in an organisation.

SUB-POWER ELECTRONICS &DEVICES

SUB.CODE-BTEC606

LIST OF EXPERIMENTS:

1. Gate Pulse Generation using R, RC and UJT.
2. Characteristics of SCR and Triac
3. Characteristics of MOSFET and IGBT
4. AC to DC half controlled converter
5. AC to DC fully controlled Converter
6. Step down and step up MOSFET based choppers
7. IGBT based single phase PWM inverter
8. IGBT based three phase PWM inverter