Sai Nath University

Assignment For B.TECH in Mechanical Engineering 3st 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:

≻ Nov-17

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 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
BTME 301	Mathematics-3
BTME -302	Thermodynamics
BTME-303	Fluid Mechanics
BTME -304	Workshop Processes
BTME 305	Electrical Machine
BTME 306	Practical Electrical Machine
BTME 307	Practical Workshop Processes



SAI NATH UNIVERSITY

Cover page of Assignment

ID NUMBER	
NAME	
COURSE	B.Tech
STREAM	Mechanical
SEM	3 ST
SUBJECT CODE	
SUBJECT NAME	

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

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BTEE 301 Mathematics-3 Part A

1. Find the local maximum and local minimum, if any, for the function

 $F(x)=sinx+cosx, 0 < x < \pi/2.$

2. Find points at which the tangent to the curve $y=x^3-3x^2-9x+7$ is parallel to x-axis. 3.Derive the derivative :-

(a)
$$y = sin(logx^2+9x+1)$$

(b) $y = sinx^{cosx}+cosx^{sinx}$
4. Differentiate $\frac{(3x2+2x+5)}{\sqrt{x}}$

5. Find the first and second partial derivative od $z=x^3+y^3-3axy$.

Part B

 $1. \int_0^a \frac{x^7}{\sqrt{a-x^2}} \mathrm{d}x$

2.Form the differential equation of the family of curves represented by the equation $(2x+a)^2+y^2=a^2$.

BTEE 302 Thermodynamics

Part A

<u>1.</u> : Find the area moment of inertia about the centroidal axes for a given area shown in the



2. State and prove the parallel axis theorem.

- <u>3.</u> Distinguish between area moment of inertia, polar moment of inertia and mass moment of inertia.
- 4. State any two important laws of friction?

Part B

- 1. : What is centroid of a (a) rectangle (b) triangle with respect to base (c) triangle with respect to apex?
- 2. : Define the terms: coplanar parallel forces, like parallel forces and unlike parallel forces.

BTEE-303 Fluid Mechanics

Part A

- 1. What is the importance of kinematic viscosity?
- 2. Define- Incompressible fluid.
- 3. State the assumptions used in the derivation of the Bernoulli's equation.
- 4. Differentiate between hydraulic grade line and energy grade line.
- 5. Brief on Intuitive method. Give some examples.

Part B

- 1. Define- Mach number and state its application.
- 2. List the losses in centrifugal pump.

Workshop Processes * Part A

- 1. What do you understand by 'milling Machine'. Write its classification and types.
- 2. Draw a neat sketch of 'Universal Milling Machine.'
- 3. Draw a labeled diagram of 'Lathe Machine'?
- 4. Explain Grinding wheel elements (Abrasive-its types, Grain sizes, Gade, structure, bonding material etc.
- 5. What are the different methods of gear manufacturing?

Part B

- 1. Write a short introduction about 'Broaching Machine'.
- 2. What is 'Honing'? What are the applications of honing process?

BTEE-305 Electrical Machine Part A

- 1) Explain energy band diagram of insulator, semiconductor and conductor.
- 2) Explain the inverting amplifier application of operational amplifier.
- 3) Give different types of flip fops. Explain any one flip flop in detail.
- 4) Explain Intrinsic and Extrinsic semiconductors.
- 5) Explain the operation of a P-N junction diode in the forward biased condition and draw the forward characteristics.

Part B

- 1. Draw the circuit diagram of full wave bridge rectifier and draw its input and output waveforms.
- 2. Draw the block diagram of a regulated D.C. power supply and explain the function of each block in it with relevant waveforms.

BTEE-306 Practical Electrical Part A

- 1. Wiring and connection of wattmeter and its use
- 2. Study of logic gate with the help of logic gate kits.
- 3. Making of Extension Board.
- 4. Connection of switches fuse and socket on the extension Board.
- 5. Speed Regulation of fan connection.

Part B

- 1. Norton's & Thevenin's theorem proof with the help of kit.
- 2. Solies and parallel connection with the kit present in lab

Practical Workshop * Part A

- 1. Introduction & demonstration of tools used in Fitting Shop.
- 2. Hacksawing practice on mild steel flat.
- 3. Filing and squaring of M.S. job.
- 4. Make a square knotch in M.S. job.
- 5. Make a male part for square knotch, and prepare fitting.

Part B

- 1. Introduction and Types of sheets, measuring of sheets.
- 2. Study and sketch of various types of stakes/anvil.