Sai Nath University

Assignment For B.Tech Civil 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:

- **17 June**

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
BTCE-401	SOCIETY ENVIRONMENT
BTCE-402	BUILDING CONSTRUCTION
BTCE-403	STRUCTURE ANALYSIS
BTCE-404	ADVANCED SURVEYING
BTCE-405	SOLID MECHNICS
BTCE-406	PRACTICAL

SAI NATH UNIVERSITY

Cover page of Assignment

ID NUMBER	……
NAME	…… ……
COURSE	B.TECH…….
STREAM	Civil Engineering……
SEM	4Th……
SUBJECT CODE	……
SUBJECT NAME	……

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

SOCIETY ENVIRONMENT

BTCE-401

PART-A

1. Describe the various methods of forecasting population. Which method will be considered most appropriate for forecasting the population of cities like Delhi, Mumbai, etc? Why?
2. What is meant by hardness? Differentiate between temporary and permanent hardness.
3. What points should be considered in deciding the location of a pumping station?
4. What are the different materials which are commonly used for water supply pipes? Discuss their comparative merits and demerit.
5. What are the common impurities found in natural sources of water? Explain their effects upon its quality.

PART-B

1. Discuss the various appurtenances used in the distribution system.
2. What is coagulation? What are its purposes? Explain the working of clariflocculator with a neat sketch.
3. Compare in detail the slow sand filter with Rapid sand filter.
   (a) Explain the various techniques used to remove taste and odour from water.
4. State the necessity and requirements of a good disinfectant.
   (a) Explain in detail the purification processes in natural systems.

Building construction

BTCE-402

PART-A

1. What is the purpose of dressing stone? Discuss the different types of surface finishes employed in stone masonry construction.
2. Define bond. Distinguish between a wall in English bond and a wall in Flemish bond with the help of sketches.
3. What are the characteristics of good timber? Explain the terms : Decay of timber, Seasoning of timber and Preservation of timber.
4. What do you understand by the term "Curing"? Why is it essential to cure concrete ? What are the various methods commonly adopted in curing? 1
5. Write short notes on the following :
   (a)Normal Setting Cement (b) High Alumina Cement

PART-B

1. What are plastics and how are they classified? What are the general properties of plastics?
2. Draw neat sketches to explain the following types of foundations :
   (a) Grillage foundations (b) Raft foundations
3. What do you understand by the terms, arches and lintels? Describe in brief the various types of arches used in modern construction
4. What are the advantages of using Asbestos-cement sheets as a roof covering for pitched roof? Describe the methods of fixing A.C. sheets to timber purlins.

STRUCTURE ANALYSIS

BTCE-403

PART-A

1. Relation between slope, deflection and radius of curvature?
2. Ahollow circular column having and internal diameter of 300mm and 250 mm respectively a vertical load of 100 kn at outer edge of the column . calculate the maximum and minimum intensities of stress in the section.
3. Do you know about column with eccentric loading?
4. Define the retaining walls.?
5. Define the active earth pressure and passive earth pressure?

Part-B

1. A water tank contains 1.3 m deep water .find the pressure exerted by the water per meter length of the tank . take specific weight of water as 9.8 kn/m3 write the sign convention?
2. Determine the moment of inertia of a semicircular section of 100mm diameter about its centre of gravity and parallel to x x and y y axes?
3. A simply supported beam of span 3 m is subjected to a central load of 10 KN . find the maximum slop and deflection. I=12*106 mm4 and E= 200 GPa.
4. A wooden beam 140 mm wide and 240 mm deep has a span of 4 m. Determine the load that can be placed at its centre of cause the beam of 10 mm. E =6 GPa.

Advanced Surveying

BTCE-404

PART-A

1. Write the differences between prismatic and surveyor's compasses.
2. Convert the following quadrantal bearings into whole circle bearings and find their back bearings: N 67 E,S 31 E,N 26 WandS 43 W.

3. Enumerate the methods for Plane Table Surveying. Explain any one method in detail with a suitable line diagram.
4. Differentiate between Magnetic Bearing and True Bearing. 2 BICE-002 2
5. Explain the temporary adjustment of transit theodolite.

PART-B

1. Define the following terms associated with theodolite survey :
    a. Vertical axis
    b. Horizontal axis
2. Short note
    a. Trunnion axis
    b. Face left observations
    c. Axis of plate level tube
3. Write short notes on any two of the following :
    i. Direct and Indirect Ranging
    ii. Reciprocal Leveling

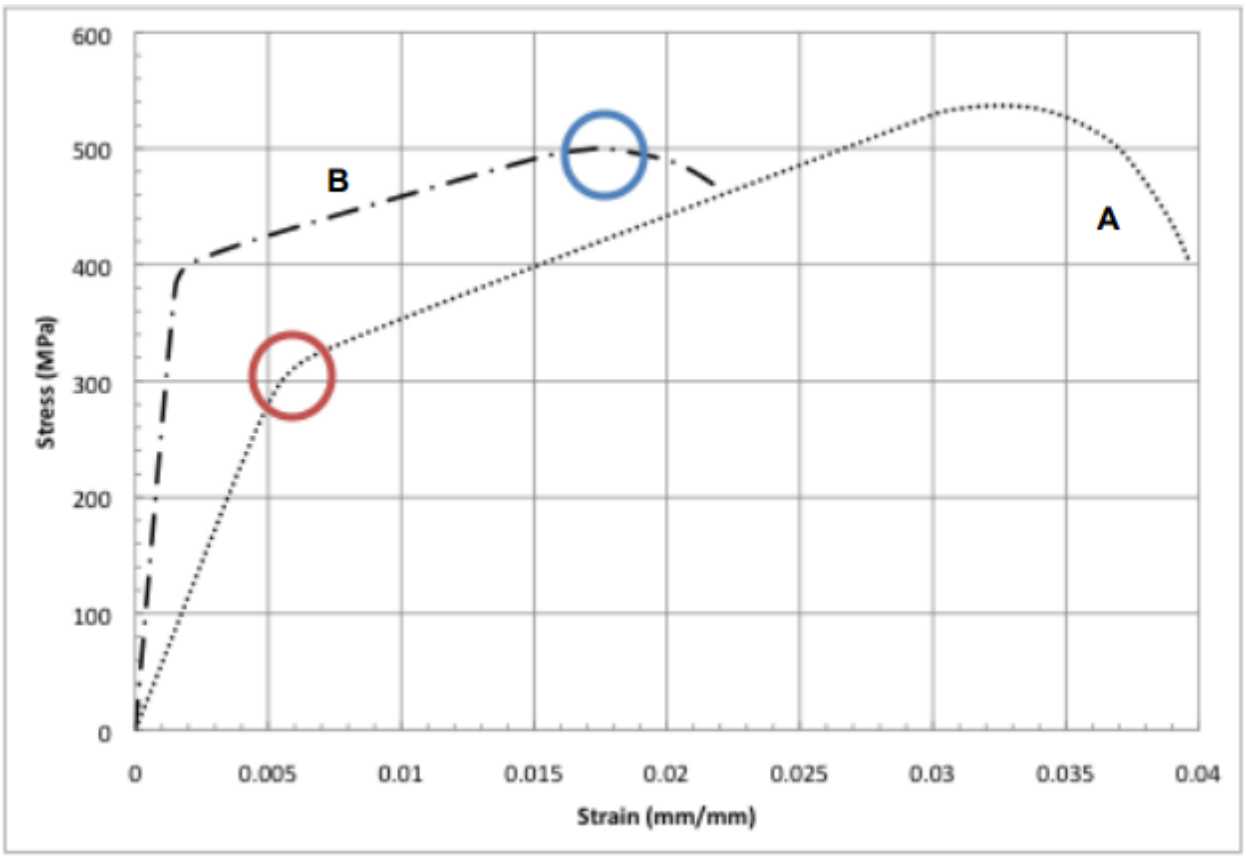
4. Write short notes of the following :
    (a)Fast Needle Method (b) Accessories for Compass Survey
    (c)Local Attraction (d) Field Book
    (e) Offsets (f) Correction for Temperature and Pull

SOLID MECHNICS

BTCE-405

PART-A

1. The yield stress of steel is 250 MPa (250,000,000 Pa). A steel rod used for an implant in a femur needs to withstand 29 kN (29,000 N). What should the diameter of the rod be to not deform?
2. Compare the rods from problems 1 and 2. Which rod can be smaller? What is the ratio between the steel rod diameter to the titanium rod diameter?
3. The yield stress of steel is 250 MPa (250,000,000 Pa). A steel rod has a diameter of 13 mm (0.013 m). What is the maximum force that the rod can withstand?.
4. Compare the rods from problems 4 and 5. Which rod can withstand more force? What is the ratio between the titanium rod maximum force to the steel rod maximum force?
5. Use the engineering stress-strain diagram for tensile tests of metals A and B to answer the following questions. Each test sample is 10 mm in diameter with a gage length of 50mm.



a. Which material has the lowest yield stress? What is the value? Label the yield point for this material on the graph.
b. Which material has the lowest ultimate tensile strength? What is the value? Label the ultimate tensile strength for this material on the graph.
c. Which material has a larger modulus of elasticity?

PART-B

1. A square aluminum bar should not stretch more than 1.4 mm when it is subjected to a tensile load. Knowing that E = 70 GPa (70,000,000,000 Pa) and that the allowable tensile strength is 120 MPa (120,000,000 Pa), determine (a) the maximum allowable length of the pipe, (b) the required dimensions of the cross section if the tensile load is 28 kN (28,000 N).
2. A control rod made of yellow brass must not stretch more than 0.125 in when the tension in the wire is 800 lbs. Knowing that E = 15,000,000 psi and that the maximum allowable stress is 32 ksi (32,000 psi), determine (a) the smallest diameter that can be selected for the rod, (b) the corresponding maximum length of the rod.
3. A 60-m-long steel wire is subjected to 6 kN (6,000 N) tensile force. Knowing that E = 200 GPa (200,000,000,000 Pa) and that the length of the rod increases by 48 mm (0.048 m), determine (a) the smallest diameter that may be selected for the wire, (b) the corresponding stress.

4. A steel rod that is 5.5 ft long stretched 0.04 in when a 2-kip (2,000 lb) tensile load is applied to it. Knowing that E = 29,000,000 psi, determine (a) the smallest diameter rod that should be used, (b) the corresponding stress caused by the load.

PRACTICALS

BTCE-406

1. Plane table -Radiation, Intersection & amp; Traversing
2. Study of dumpy, tilting and auto level
3. Differential leveling practice, reduction of level by HI and Rise and Fall method, Fly leveling.
4. Study of Theodolite – measurement of horizontal angle
5. Measurement of horizontal angle by method of repetition
6. Measurement of vertical angle.