JS 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:

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
BTIS-41	INDUSTRIAL SOCIOLOGY
BTAC-41	CYBER SECURITY
BTOE-41	STRUCTURE ANALYSIS 1
BTOE-42	GEOINFORMATICS
BTOE-44	ENGINEERING GEOLOGY
BTOE-43	HYDRAULIC AND HYDRAULIC MACHINE
BTOE-44	SPACE SCIENCES

INDUSTRIAL SOCIOLOGY

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.

CYBER SECURITY

PART-A

1. Introduction to information systems.
2. explain Application security (Database, E-mail and Internet)
3. explain Developing Secure Information Systems.
4. Why Policies should be developed
5. explain Information Security Standards-ISO.

PART-B

1. what is Security Architecture & Design Security Issues in Hardware, Data Storage & Downloadable Devices,
2. What is Publishing and Notification Requirement ofthe Policies.

STRUCTURE ANALYSIS 1

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?

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GEOINFORMATICS

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.

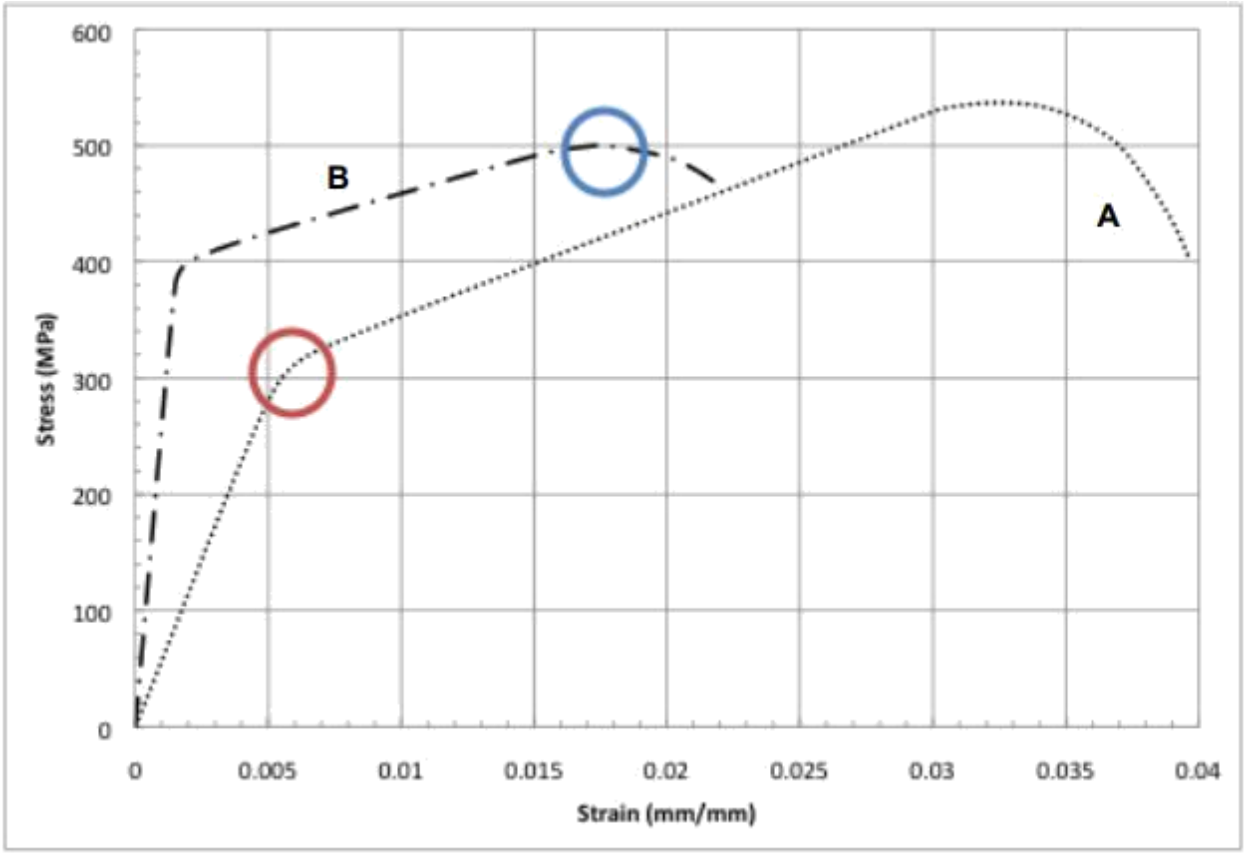
SEC-B

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

ENGINEERING GEOLOGY

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.

HYDRAULIC AND HYDRAULIC MACHINE

PART-A

1. Difference between open channel flow and pipe flow
2. What is Continuity equation for steady and unsteady flow.
3. Explain Chezy's and Manning's equations for uniform flow in open channel

4. What is Equation of gradually varied flow and its limitations
5. What is Evaluation of the jump elements in rectangular and nonrectangular channels

PART-B

1. **explain** celerity of the gravity wave, deep and shallow water waves, Rectangular free overfall.
2. **Explain** Rotodynamic Machines, Pelton Turbine, equations for jet and rotor size, efficiency.

[BTOE-44] SPACE SCIENCES

SEC-A

1. Introduction to space science and applications.
2. Nebular theory of formation of our Solar System.
3. Solar wind and nuclear reaction as the source of energy.
4. Brief description about shape size, period of rotation about axis
5. Kepler's Laws of planetary motion.

SEC-B

1. Galaxies and their evolution and origin, active galaxies and quasars.
2. Harvard classification system, Hertzsprung-Russel diagram, Luminosity of star, variable stars.