8 cm

10 cm

A   B

OR

Deduce an expression for centroidal moment of inertia of x-x and y-y axes of a circular plane lamina.

****

Roll No ....

BE - 204

B.E. I & II Semester

Examination, December 2015

Basic Civil Engineering & Engineering Mechanics

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What do you understand by building materials? Give examples.

   b) What is the mean of "curing"? Also state the principle behind the curing.

   c) List out various methods of seasoning of Timber?

   d) What is Slump? Also explain different types of Foundation.

OR

List out various types of Doors and Windows with suitable sketch.

2. a) List out of various surveying Instruments. Also show their application.

   b) What is Local Attraction? And how it is detected at a station?

   c) Define

      i) Bearing of a line

      ii) Reciprocal leveling.

   d) What is "Theodolite"? And where is it used? Also give its full sketch with various parts?

OR

The following readings were observed successively with a level, the instrument having been moved after third, sixth and eight readings:

2.220; 1.616; 0.978; 2.090; 2.764; 1.622; 0.602; 1.983; 1.045; 2.654; meters.

Enter the above reading in a page of a level book and calculate the R.L. of points if the first reading was taken with a staff held on a bench mark of 400 m.

3. a) What do you understand by the term "Mapping" and "Sensing"?

   b) What is Contour and Contour Interval?

   c) Briefly discuss the properties of Contour.

   d) List out with details of various methods to calculate Area and volume in surveying?

OR

What is Remote Sensing? Give its application to Civil Engineering.

4. a) What are different statically equilibrium conditions? Explain.

   b) Define:

      i) Coplanar Forces

      ii) Concurrent Forces

   c) Define concept of Free body Diagram. Also show its applications.

   d) What are different methods to analysis a Plane Truss? Also explain their limitations.

OR

State and Prove Lame's theorem of three forces.

5. a) What do you understand by Center of Gravity?

   b) What is product of inertia?

   c) Define and explain Parallel Axis theorem.

   d) Given a triangular plane lamina as shown in figure in which a small triangular part can be cut at the exact middle of each arm. Calculate Moment of Inertia around the Axis AB of given plane hollow lamina as shown in figure below.