Roll No ....

BE - 204

B.E. I & II Semester Examination, December 2014

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.

Unit - I

1. a) How workability of concrete can be increased.

   b) What is white cement? How is it manufactured.

   c) What are the various field tests carried out for bricks.

   d) Describe various defects in timber with help of neat sketches.

   OR

   Explain the method of plastering on wall. Also write the advantages of plastering.

Unit - II

2. a) Stating various types of bench marks, define G.T.S. bench mark.

   b) State various conventional methods of distance measurement. Write two advantages and two disadvantages of conventional methods of measurement.

   c) What are the advantages and disadvantages of plane table surveying?

   d) The following consecutive readings were taken with a level and a 4.0 m staff on a continuously sloping ground at a common interval of 30 m.

   0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.555, 1.960, 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545.

   The reduced level of the first point A was 180.750 m. Rule out a page of level field book and enter the above readings. Calculate the reduced levels of the points by the collimation system. Also calculate the gradient of the line joining the first and the last point.

   OR

   Explain reciprocal levelling in detail.

Unit - III

3. a) What are the selection criteria of survey station?

   b) State various applications of Remote Sensing.

   c) Explain the graphical method of interpolation of contour with example.

d) A road embankment is 8 m wide and 200 m in length at the formation level, with a side slope of 1.5:1. The embankment has a rising gradient of 1 in 10m. The ground levels at every 50 m along the centre line are as follows.

| Distance (m)	0	50	100	150	200
R.L. (m)	164.5	165.2	166.8	167	167.2

The formation level of zero chainage is 166 m. Calculate the volume of earth work by using Trapezoidal rule and Prismoidal rule.

OR

The area of a square of 10 cm side was measured by a planimeter with anchor point out side the figure and the initial and final readings were found to be 6.852 and 8.704 respectively. With the same setting of the tracting arm and the anchor point out side, another irregular figure was traversed clockwise and the initial and final readings were found to be 2.378 and 8.626 respectively. If the plan scale is 1 cm = 10 m. Calculate the area of figure in m^2.

Unit - IV

4. a) What is redundant frame?

   b) What are the various types of forces?

   c) What are the assumptions made while analysing a frame?

   d) Determine the magnitude and nature of various forces in the various members of the triangular turn loaded and supported as shown in the figure below.
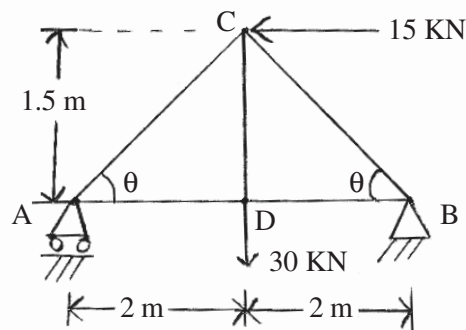

OR

A smooth sphere of radius 15 cm and weight 2 N is supported in contact with a smooth vertical wall by a string whose length equals the radius of sphere. The string joins a point on the wall and a point on the surface of sphere. Workout inclination and the tension in the string and reaction of the wall.
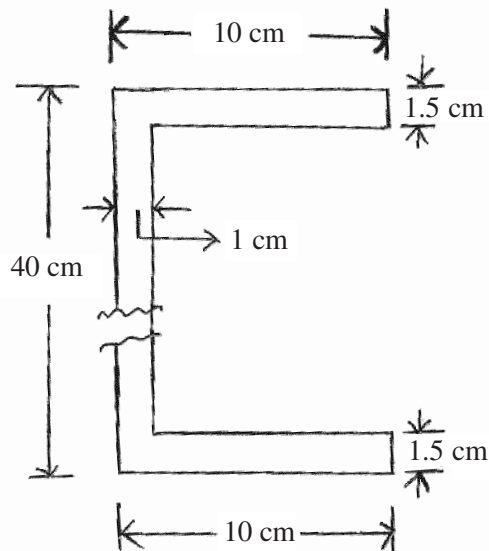
Unit - V

5. a) What remains the position of centroid / C.G. of following laminas? (i) Rectangular section (ii) Triangular section (iii) Circular section (iv) Semi circle (v) Hemi sphere (vi) Uniform rod.

   b) State perpendicular axis theorem.

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c) Defining shear force (S.F.) and Bending moment (B.M.) give the sign convensions for S.F. and B.M.

d) Draw S.F. and B.M. diagram for cantilever beam loaded as shown in figure below. Also locate the position of point of contraflexture

10 KN

4 KN/m

A

C

B

2 m

2 m
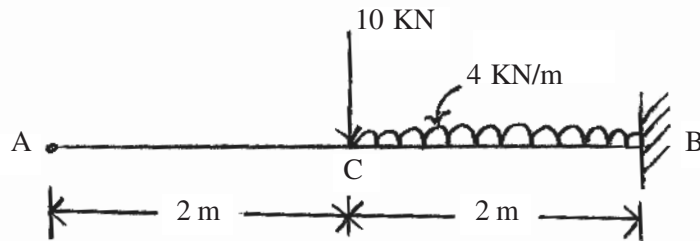
OR

Determine the moment of inertia about centroidal axis x–x and y–y of the channel section as shown in figure below.

10 cm

1.5 cm

1 cm

40 cm

1.5 cm

10 cm

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