Total No. of Questions : 10] [Total No. of Printed Pages :

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BE–204

B. E. (First Semester) EXAMINATION, Dec., 2010

(Grading System)

(Common for all Branches)

BASIC CIVIL ENGINEERING AND ENGINEERING MECHANICS

Time : Three Hours

Maximum Marks : 70

Minimum Pass Marks : 22 (D Grade)

Note : Attempt any *five* questions. Assume any missing data suitably and mention it. All questions carry equal marks.

1. (a) What are various sources of error in chain surveying ? 4

   (b) A 20 m chain was found to be 0·10 m too long after chaining 1600 m. It was found to be 0·15 m too long after chaining 2700 m. If the chain was correct before commencement of the work, find the true distance. 10

Or

2. (a) Describe in brief any *two* of the following equipments along with their use : 2 each

   (i) Level (ii) Theodolite

   (iii) Plane table (iv) Compass

   (b) The following staff readings were taken with a level which was shifted after 4th , 7th and 10th readings : 10

   1·235, 2·005, 1·875, 0·960, 0·380, 1·640, 2·840, 1·750, 1·930, 2·150, 2·370, 2·460.

   Assuming the R. L. of starting point as 300·00 m enter the readings in the form of a level book page and determine reduced level of all the points.

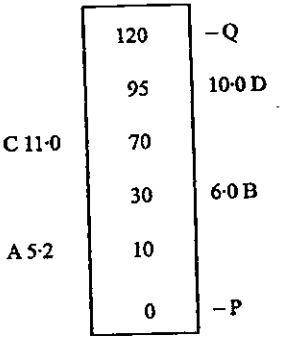
P. T. O

3. (a) Describe any *two* of the following along with sketches wherever necessary : 3 each

(i) Contouring (ii) Profile levelling

(iii) Cross-sectioning (iv) Remote sensing

(b) The following notes refer to a cross staff survey : 8



Calculate the area of the plot PACQDB.

Or

4. (a) Discuss various methods used for calculation of area. 6

(b) A road has a width of 6·0 m at the formation level with a side slope of 2 : 1. The road is to have a constant R. L. of 200 m. The ground is level across the centre line of the road. The following observations were made : 8

Chainage (m)	Surface levels along centre line of road (m)
0	206·4
20	203·0
40	201·8
60	200·6
80	202·2
100	200·0

Calculate the volume of earth work.

5. (a) What is R. C. C. ? Describe in detail along with its preparation and uses. 6

(b) Compare stone with brick, as building materials. 8

Or

6. Write short notes of the following : $3\frac{1}{2}$ each

   (i) Prestressed concrete
   (ii) Ferrocement
   (iii) Curing of concrete
   (iv) Proportioning of concrete

7. (a) State and explain conditions of equilibrium of forces. 4

   (b) Determine the magnitude of a horizontal force P applied at the centre C of a roller of weight $w = 80$ kN and radius $r = 300$ mm which will be necessary to pull it over a block of height $h = 80$ mm. Refer Fig. 1. 10

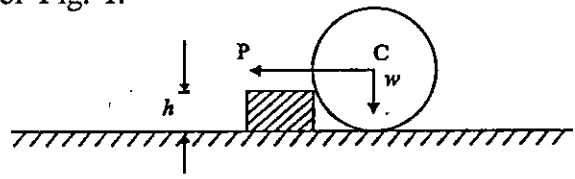


Fig. 1

Or

8. (a) Discuss the following : 4

   (i) Perfect frame (ii) Imperfect frame

   (b) Find the magnitude and nature of forces in all the members of the truss shown in Fig. 2 below by applying method of joints or any other method. 10

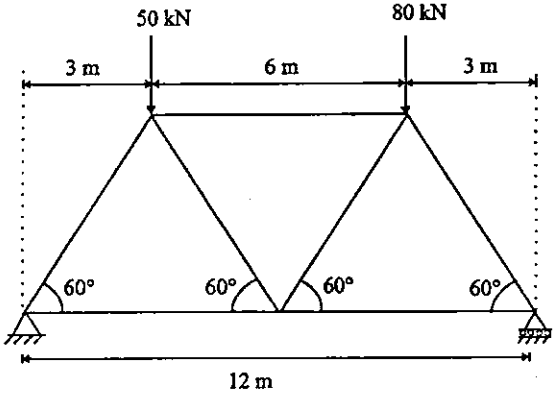


Fig. 2

P. T. O.

9. (a) Discuss the following : 4

(i) Moment of inertia (ii) Product of inertia

(b) Determine the centroidal axes XX and YY of the section shown in Fig. 3. Find the moment of inertia of the section about the centroidal axes. All the dimensions are in mm. 10

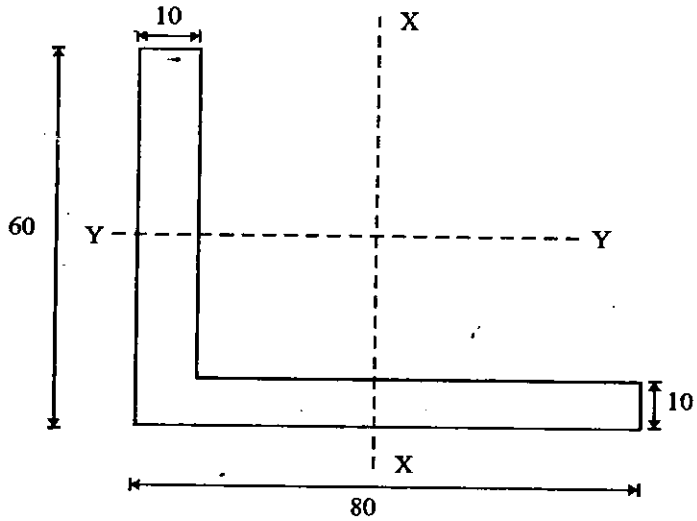


Fig. 3

Or

10. (a) Explain the following : 4

(i) Shear force (ii) Bending moment

(b) Draw shear force and bending moment diagrams for the beam shown in Fig. 4. 10

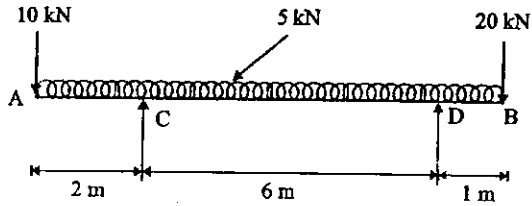


Fig. 4