Total No. of Questions : 5 ] [ Total No. of Printed Pages : 4

Roll No. .....

# BE–204(GS)

## B. E. (First/Second Semester) EXAMINATION, June, 2011

**(Common for all Branches)**

BASIC CIVIL ENGINEERING AND ENGINEERING MECHANICS

*Time : Three Hours*

*Maximum Marks : 70*

*Minimum Pass Marks : 22 (D Grade)*

**Note :** Answer all questions. Assume suitable data if needed. All questions carry equal marks.

1. (a) Describe briefly the characteristics of good brick and stone. Also give the test recommended. 7

   (b) Name various types of portland cement and explain the laboratory procedure for determining initial setting time of cement. 7

*Or*

   (a) What is the importance of seasoning of timber ? Describe any *one* method of seasoning of timber. 7

   (b) What are the functions of foundation in building ? What types of foundation would you suggest for black cotton soil ? Explain with the help of sketch. 7

2. (a) Write the names of important part of a level and a theodolite. 7

   (b) The following bearings were observed in running a closed traverse. Draw the traverse first and at what

P. T. O.

station do you suspect the local attraction. Determine the correct bearings if the inclination was 5° 10′ E. What are the bearings ? 7

| Line | F. B. | B. B. |
|---|---|---|
| AB | 75° 05′ | 254° 20′ |
| BC | 115° 20′ | 296° 35′ |
| CD | 165° 35′ | 345° 35′ |
| DE | 224° 50′ | 44° 05′ |
| EA | 304° 50′ | 125° 5′ |

*Or*

(a) What do you mean by reciprocal levelling ? Explain. 7

(b) The distance between two stations was measured with a 20 m chain and found to be 1500 m. The same was measured with a 30 m chain and found to be 1476 m. If the 20 m chain was 5 cm too short, what was the error in 30 m chain ? 7

3. (a) Explain the term contour interval. Discuss the consideration in making a choice of proper contour interval. 7

(b) The area within the contour line at the site of reservoir and the face of the dam are as under :

| Contour | Area ($m^2$) |
|---|---|
| 201 | 1000 |
| 202 | 12800 |
| 203 | 95300 |
| 204 | 147600 |
| 205 | 872500 |
| 206 | 1350000 |
| 207 | 1985000 |

Taking 201 m the bottom level of reservoir and 207 m the top level, calculate the capacity of the reservoir by (i) Trapezoidal formula (ii) Prismoidal formula. 7

*Or*

(a) What is cross sectioning ? Explain in detail. 7

(b) What are the various applications of remote sensing in Civil Engineering ? Explain briefly. 7

4. (a) Explain the following : 2 each

(i) Condition of equilibrium

(ii) Free body diagramme

(iii) Varignon's theorem

(b) A string ABCD attached to point A and D with an inclination 30° and 60° with the vertical and is having two equal weights of 1000 N attached to 'B' and 'C'. The weight rests on the 'B' making an angle 120° with vertical. Find the tension in each part of the string. 8

*Or*

(a) What is a truss ? Explain the different types of truss. Also give assumption made in the analysis of truss. 7

(b) Find the force in all members of the truss as shown. 7

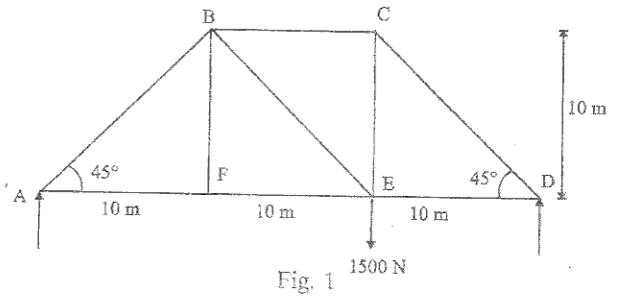


Fig. 1

P. T. O.

5. Calculate the moment of inertia of the section shown in fig about $x-y$ axis. 14

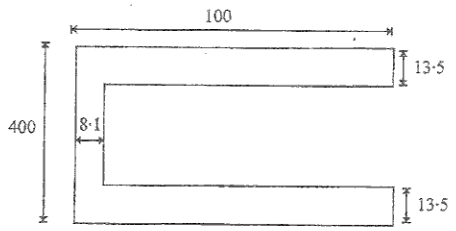


Fig. 2

*Or*

Draw the shear force, bending moment diagram for the beam loaded and supported as shown in figure. 14

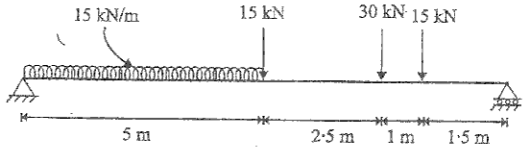


Fig. 3