

Roll No .....

**BE - 204**

**B.E. I & II Semester Examination, December 2013**

**Basic Civil Engineering & Engineering Mechanics**

*Time : Three Hours*

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**Maximum Marks : 70**

**Note :** i) Attempt all questions.

ii) Internal choice is given within each question.

iii) All questions carry equal marks.

iv) Any data missing but essential may be assumed suitably and should be stated.

1. a) What is concrete and how is it made? Also mention factors affecting strength of concrete.  
b) Describe briefly the tests to which bricks may be put before using them for engineering purposes.

OR

2. a) What are the requirements of a good stair? Discuss them in detail.  
b) Give a list of materials which are commonly used as floorings and give a brief description of each material.
3. The following consecutive staff readings were taken with a level and 3m leveling staff on a continuously slopping ground at a common interval of 20m: 0.605, 1.235, 1.860, 2.575, 0.240, 0.915, 1.935, 2.875, 1.825, 2.725. The R.L of the first point was 192.120. Rule a page of a level field book and enter the above readings. Calculate the reduced levels of the points and also the gradient of the line joining the first and last points.

OR

4. a) What is the basic difference between temporary and permanent adjustments of a theodolite?  
b) What are the different methods of 'plane tabling'? Describe the one of them fully with neat sketches.
5. a) With reference to civil engineering practice explain what is meant by the following:  
i) Trapezoidal and Prismoidal rules.  
ii) Prismoidal corrections.  
b) Describe briefly the remote sensing and its applications.

OR

6. The following perpendicular offsets in  $m$  are measured from a straight line to an irregular boundary at regular intervals of 10m.  
 $h_1=8.25$ ,  $h_2=13.85$ ,  $h_3=12.25$ ,  $h_4=10.85$ ,  $h_5=12.25$ ,  $h_6=13.60$ ,  $h_7=15.25$ ,  $h_8=16.85$ ,  $h_9=14.95$ ,  $h_{10}=17.35$ ,  $h_{11}=20.05$ ,  $h_{12}=15.90$ ,  $h_{13}=12.25$ ,  $h_{14}=12.00$ . Compute the area included between the straight line, the irregular boundary by  
i) Trapezoidal rule,  
ii) Simpson's one-third rule (a) using  $h_1$  as the first offset, (b) using  $h_{14}$  as the first offset.

7. a) Obtain an expression for minimum force required to move a body on a horizontal plane.

[2]

- b) A block of 300N weight is resting on a plane inclined at  $30^\circ$  to the horizontal, the coefficient of friction between the block and the plane is 0.4. A force, inclined at an angle of  $30^\circ$  is acting on the block. Find the minimum force to move the block upwards.

OR

8. The length of each member of the truss shown in Fig.1 is 4m. Loads of 2kN and 4kN are applied at joints B and C of the truss. Determine the magnitudes and nature of forces in all members of the truss. Both ends are simply supported. [www.rgpvonline.com](http://www.rgpvonline.com)

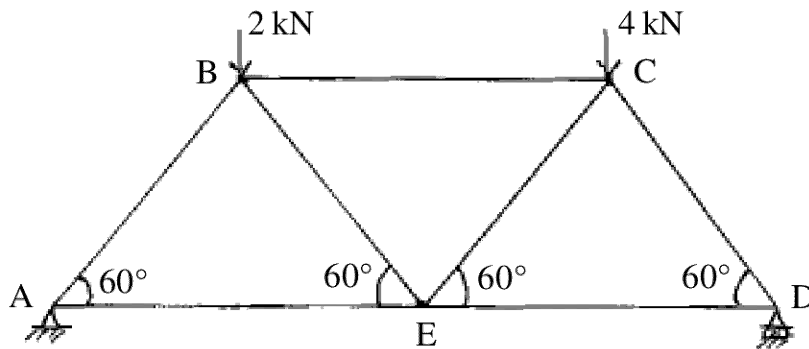


Fig.1

9. For a circular pipe of 150 mm external diameter and 120 mm internal diameter, determine (i) moment of inertia about its diameter (ii) the radius of gyration and (iii) the polar moment of inertia.

OR

10. Draw the shear force and bending moment diagrams for the beams shown in Fig.2.

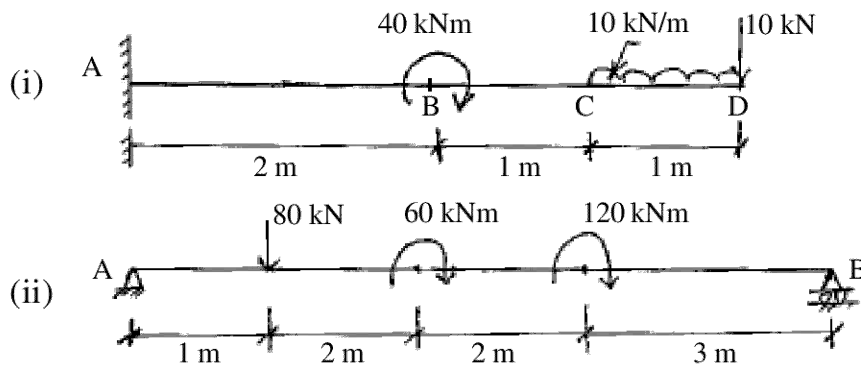


Fig.2

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