TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE 13S)

EBC 2208: STRENGTH OF MATERIALS II

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions of the **FIVE** questions
Maximum marks for each part of a question are as shown
Use neat, large and well labeled diagrams where required

This paper consists of **FOUR** printed pages

Question One

a) State the assumptions in the Theory of Simple Bending **(9 marks)**

b) Determine the moment of which can be resisted for the section of beam in figure 1 if the maximum bending stresses are limited to 100N/mm2 and 130N/mm2 at top and bottom respectively **(11 marks)**

25mm

Question Two

Sketch the shear stress distribution for the section of beam for the section of beam in figure is subjected to a maximum shear force of 30KN **(20 marks)**

20mm

Question Three

Determine the extreme fibre bending stresses for the flitched beam shown in figure 3 and loaded as shown:

Esteel = 210KN/mm^2

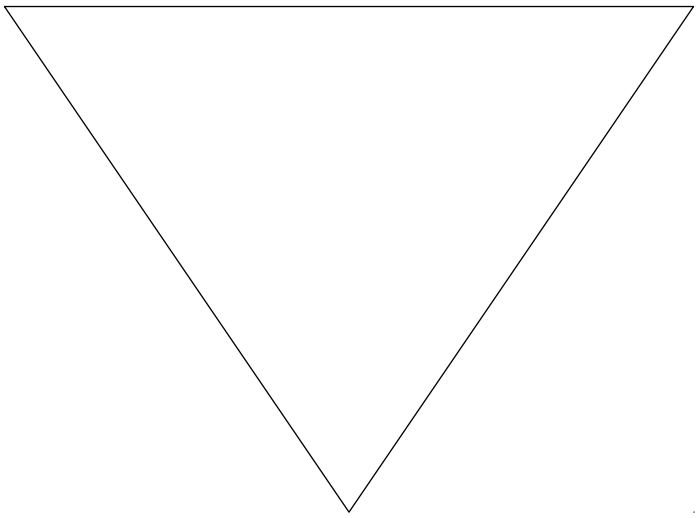
Etimber = 8.5KN/mm^2 **(20 marks)**

1.2m

Question Four

Determine the stability of the wall in figure 4 retaining water against:

(i) Overturning
(ii) Sliding
(iii) Tension cracks
(iv) Sinking **(20 marks)**



Data:

- Density of concrete = 24KN/m^3
- Density of water = 10KN/m^3
- Coefficient of friction = 0.3
- Bearing capacity of soil = 250KN/mm^2 **(20 marks)**

Question Five

Sketch the distribution of bending stress across a T-section and loaded as shown in figures 5(a) and 5(b) **(20 marks)**

20mm

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