

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY  
DEPARTMENT OF CIVIL AND WATER ENGINEERING  
FACULTY OF INDUSTRIAL TECHNOLOGY  
BACHELOR OF ENGINEERING (HONOURS) DEGREE  
PART II SECOND SEMESTER EXAMINATION- MAY 2008  
THEORY OF STRUCTURES– TCW 2203

**INSTRUCTIONS**

Answer 4 Questions

Time: 3 Hours  
Total Marks:100

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**QUESTION ONE**

A simply supported beam of 12m span carrying a uniformly distributed of 2kN/m over the whole span and two concentrated loads 15kN and 25kN at 4m and 7m from the left-hand as shown in Figure 1.0.

Draw the bending moment and shear force diagrams for the beam.

**MARKS 25**

**QUESTION TWO**

For the beam in Question One calculate the deflection at mid-span using the Unit Load method.

**MARKS 25**

**QUESTION THREE**

A Pratt truss, Figure Two, has 6 bays each of 2m long and 2.4m high.

(A) Check if the truss is statically determinate or indeterminate.

**MARKS 5**

(B) Calculate the forces carried by each member stating whether the force is tensile or compressive.

**MARKS 20**

**QUESTION FOUR**

For the truss in Question Three, calculate the deflection at point C.

The sectional areas, in  $\text{cm}^2$ , of the members are shown against members in the figure.

Take Modulus of Elasticity  $200\text{kN/mm}^2$ .

**MARKS 25**

