TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

EBC 2307: STRUCTURAL STEEL AND TIMBER DESIGN

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES
You should have the following for this examination
- Answer booklet
- BS for steel and timber

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

QUESTION ONE

a) A timber beam with a clear span of 2.85m supports a udl of 10KN including self-weight of the beam determine a suitable section for the beam using timber of strength class C16 under service class 1. Assume the bearing length is 150mm and that the member will be exposed to dry condition under long term loading.

(20marks)

QUESTION TWO

i) Explain the factors effecting timber strength. (**6marks**)

ii) Determine the value of permissible bending stress parallel no grain and magnitude of maximum B.M for a main beam of 50mm of 200mm deep Canadian Douglass fir-larch grade ss under service glass 1 and short duration loading. **(14 marks)**

QUESTION THREE

i) Briefly explain various structural Steel sections **(4marks)**

ii) Design a simple supported beam carrying concrete floor slab ones a span of 5m in grade 5 27s steel the unfactored dead loads which include is 14KN/M and the unfactored impoced loads which is 19KN/m. **(16 marks)**

QUESTION FOUR

Design a suitable grade s275uc to support an axial load of 1400KN over unsupported height of 5m the column is restrained in positon at both ends but not restrained in direction.

(**20marks**)

QUESTION FIVE

Design a timber column in strength class c 18 is 4 m in height with a rectangular cross section 97mm by 145mm the column is restrained at both end in position but not in direction and subjected to service class2 conditions determine the maximum axial long term load that the column can support. **(20 marks)**