



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF BUILT ENVIRONMENT

DEPARTMENT ARCHITECTURE

STUCTURAL DESIGN II

AAR 2205

Supplementary Paper

July 2016

This examination paper consists of 2 pages

Time Allowed: 3 hours

Total Marks: 100

Special Requirements: GRAPH PAPER

Examiner's Name: Eng. V.V.DESAI

INSTRUCTIONS

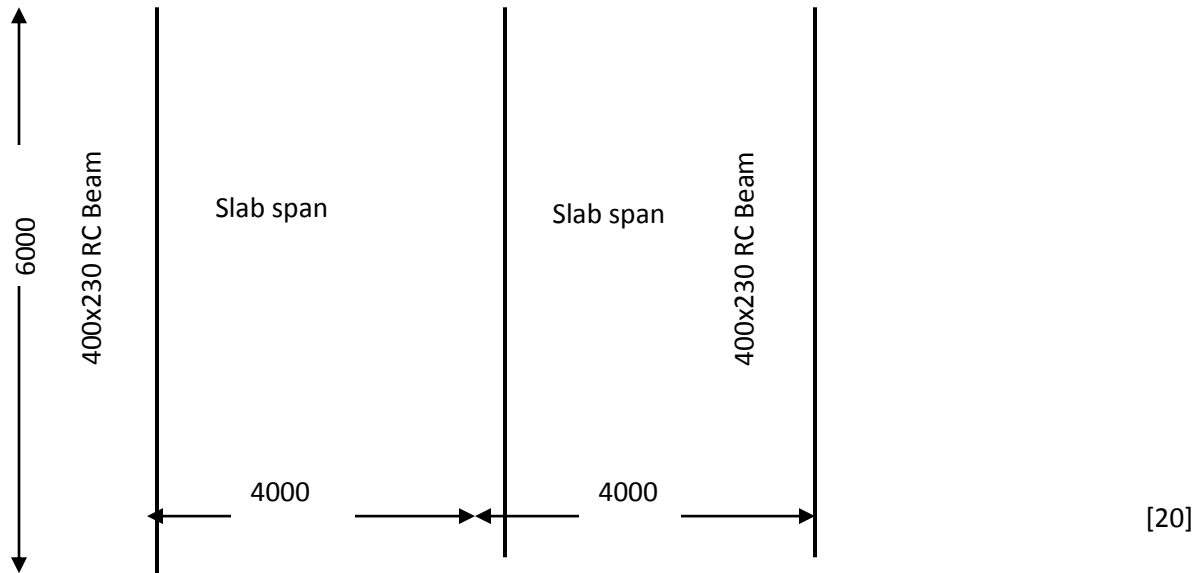
1. Answer all questions
2. Use of calculators is permissible

MARK ALLOCATION

QUESTION	MARKS
1.	20
2.	20
3.	30
4.	30
TOTAL	100

QUESTION 1

A series of 400 x 230 RC Beams spaced at 4.0 m and spanning 6.0m support a 150mm RC Slab as shown in the figure. If the floor has to carry an imposed load of 5.0kN/m². Calculate the design load that each floor beam supports.



QUESTION 2

In the figure in question one design the reinforcement required in one typical beam assuming Grade 25 reinforcement and Grade 460 reinforcement.

[20]

QUESTION 3

Design a short square column to carry the following loads

Characteristic Dead load 750kN

Characteristic Live load 600kN

Sketch the reinforcement details if the column height between floors is 3.2 meters.

Use grade 30 concrete and grade 460 and 250 reinforcement for the main reinforcement and ties respectively

[30]

QUESTION 4

For the column in Question Three design a square base. Assume the soil bearing pressure to be 200kN/m².

Use grade 25 concrete and grade 460 reinforcement.

[30]