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THIRD SEMESTER

B.Tech. ENE

SUPPLEMANTRY EXAMINATION

(February-2019)

EN 207 ENGINEERING ANALYSIS AND DESIGN

Time: 3 Hours

Max. Marks: 40

**Note:** Answer any five questions, All questions carry equal marks

Use of IS 456:2000 and IS 800:2007 are allowed

Assume suitable missing data, if any

1. (a) Find the safe load to be carried by a RCC beam simply supported over a span of 5 m. The beam is of size 300mm x 500mm and reinforced with 4 bars of 20mm diameter at tension zone and 2 bars of 20mm diameter in compression zone, use M30 concrete and Fe 415 steel, the construction site is situated in DTU, Delhi.  
(b) Enumerate the assumptions of limit state design method.
2. A square column of unsupported height 3 m is effectively held in position and restrained against rotation at both ends. Design the column to carry a factored load of 1500kN; use M30 grade of concrete and Fe 415 steel.
3. Design and draw the reinforcement detailing of **intermediate panel of the slab continuous over all of its edges**. The slabs are supported by column of size 300mm x 300mm at all junctions. The size of panel is 3m x 3m. The building is residential use M30 concrete and Fe 415 steel.
4. A solid footing has to transfer a dead load of 1500kN including imposed load from a square column 300 x 300mm (with 20 mm bars). Use M25 concrete, Fe 415 steel and safe bearing capacity to be 200kN/m<sup>2</sup>, design the footing.
5. What are the advantages and disadvantages of bolted connections? Explain different modes of failure of bolted connections.
6. Write short notes on following:
  - (a) Durability of concrete

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(b) Slump of concrete

(c) Types of welded connection in steel structure

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(d) Limit state of Serviceability

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