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PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Max Marks: 40

Max Time: 120 Mins

Weightage: 40 %

ENDTERM FINAL EXAMINATION

I Semester AY 2017-18

Course: **CIV 211 DESIGN OF RC ELEMENTS**

19 DEC 2017

Instructions:

- i. Write legibly
 - ii. Scientific and non programmable calculators are permitted
 - iii. IS 456: 2000, Plain and Reinforced Concrete - Code of Practice is allowed
 - iv. SP 16: Design Aids for Reinforced Concrete to IS 456 is allowed
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Part A

[1 Q x 10 M= 10 Marks]

1. Design a rectangular slab (supported on it's all the four edges) over a hall of size 5m x 6m. Two adjacent edges of the slab are discontinuous and the remaining two edges are continuous. A finishing surface of cement concrete of 20mm shall be provided over the slab. Consider the intensity of live load as 4kN/m^2 . Assume the grades of materials used as M20 concrete & Fe415 steel bars.

Part B

[2 Q x 10 M= 20 Marks]

2. Design a rectangular reinforced column 4m long, restrained in position & direction at both ends to carry an axial load of 2500kN. Use M25 grade of concrete and Fe415 grade of steel.
3. A 350mm masonry wall supports a dead load of 200kN/m and live load of 150kN/m. The allowable bearing pressure of soil is 150kN/m^2 . Design a reinforced concrete footing under the masonry wall. Use M20 grade of concrete & Fe415 grade steel. The footing shall be 1.5m below the ground surface. The height of the wall is 3.1m.

Part C

[2 Q x 5 M= 10 Marks]

4. a) Distinguish between one-way slab & two-way slab.
b) Explain limit state design philosophy.



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Max Marks: 40

Max Time: 60 Mins

Weightage: 20 %

TEST 2

I Semester 2017-2018

Course: **CIV 211 Design of RC Elements**

26 OCT 2017

Instructions:

- i. Write legibly
 - ii. Scientific and non programmable calculators are permitted
 - iii. Indian standard code of practice, IS 456-2000 is permitted
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Part A

(2Q x 5 M= 10 Marks)

1. Explain the design features of one way slab.
2. Explain the distinct conditions in locating the neutral axis in a Tee beam.

Part B

(1 Q x 15 M= 15 Marks)

3. The actual width of flange of an isolated Tee-beam is 2400mm and the thickness of flange is 120mm. The effective depth and breadth of web are 600mm and 450mm, respectively. The effective cover to steel reinforcement in tension is 50mm. The tension reinforcement consists of eight bars of 22mm diameter provided in two layers 40mm apart. The effective span of simply supported Tee-beam is 3.60m. Determine the depth of neutral axis and the moment of resistance of Tee-beam. The grade of concrete is M20 & of steel is Fe415.

Part C

(1 Q x 15 M= 15 Marks)

4. Design a simply supported slab over a hall of size 5m x 10m. A floor finish of 20mm thick cement concrete is provided over the slab. Assume the grade of concrete as M15 & of steel as Fe250. Take live load intensity as 4kN/m^2 .



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Max Marks: 40

Max Time: 60 Mins

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TEST 1

I Semester 2017-2018

Course: **CIV 211 Design of RC Elements**

18 SEPT 2017

Instructions:

- i. Write legibly
 - ii. Scientific and non-programmable calculators are permitted
 - iii. Indian standard code of practice, IS 456-2000 is permitted
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Part A

(2 Q x 5 M= 10 Marks)

1. Explain limit state design philosophy.
2. Differentiate between under-reinforced & over-reinforced sections.

Part B

(1 Q x 15 M= 15 Marks)

3. Design a singly reinforced rectangular beam, simply supported at its two ends. The clear span of the beam is 4.80m. The intensities of superimposed uniformly distributed dead load and live load are 20kN/m & 28kN/m respectively. Use M20 grade of concrete and HYSD steel, Fe 415.

Part C

(1 Q x 15 M= 15 Marks)

4. Calculate the bending strength of the doubly reinforced beam section having width of beam = 275mm, Depth of beam = 550mm, effective cover = 35mm, area of tension steel = 5 No's – 16mm diameter, area of compression steel = 5 No's – 16mm diameter, grade of concrete = M15 & grade of steel = Fe415.