http://www.ktuonline.com

No. of Pages:2

D

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2017

Branch: Civil Engineering

Stream: Structural Engineering

01CE6107 ADVANCED THEORY AND DESIGN OF RC STRUCTURES

Answer *any two full* questions from *each* part

Limit answers to the required points.

Use of IS 456:2000 and SP 16:1980 permitted.

Max. Marks: 60 Duration: 3 hours

http://www.ktuonline.com

http://www.ktuonline.com

PART A

1.		The portico of a building consists of cantilever beams of effective span 3m, spaced at 2.5m centre to centre. The beams support 120mm thick slab. LL on slab is 1.5 kN/m^2. Using M20 concrete and Fe415 grade steel design an intermediate beam, if slab is flush with top of beams.	9
2.		Design a rectangular beam section with following data. Size 300mmx 550mm subject to an ultimate twisting moment 25kNm combined with an ultimate bending Moment of 60 kNm and ultimate shear force of 50 kN. Assume M20 concrete and Fe415 grade steel.	9
3.		Design the reinforcement of a column with lex=ley=3.5m and size 300mmx 500mm subjected to factored axial load of 1250 kN and factored biaxial moments M_{ux}=180 kNm, M_{uy}= 100 kNm. Assume M20 concrete, moderate exposure conditions and Fe415 grade steel.	9

PART B

4.	a.	Distinguish between short term deflection and long term deflection in reinforced concrete flexural members	3
	b.	A rectangular simply supported beam of span 4m is 300mm x 550mm in cross section and is reinforced with 3 bars of 16 mm diameter on tension side at an effective cover of 50 mm. Determine the short term deflection due to an imposed working load of 15 kN/m (excluding self weight). Assume M20 concrete and Fe 415 steel.	6
5.		Design an interior beam column joint (Type 1) for the following data. Column with 600mmx600mm with 8 numbers of 25 mm diameter. Column factored load 1300 kN. Storey height 3m. Beams on either side 300mm x 500mm with 3 bars of 28mm diameter on the top and 3 bars of 20mm dia at bottom. Assume fck- 30N/mm^2 and fy 415 N/mm^2.	9
6.	a.	Explain the principle of shear wall analysis.	3

http://www.ktuonline.com

http://www.ktuonline.com

b. Explain the importance of serviceability limit states in the structural design of RC flexural members 3

c. What are the different options available to a designer with regard to control of cracking in flexural members? 3

PART C

7. A single span deep beam has an overall depth of 4m and effective span of 6m. The width of beam is 400mm. The beam supports uniformly distributed live load of 300 kN/m over the entire span. Using M20 concrete and Fe415 grade steel design suitable reinforcement for the beam and sketch the details. 12

8. Design a corbel to support a gantry girder reaction of 300kN at service condition acting at a distance of 220mm from the face of the column 300mmx300mm. Assume concrete grade M25 and Fe415 grade steel. Take bearing strength of concrete as 0.45 fck. 12

9. a. Enumerate the limitations of yield line theory. 3

b. What are the design considerations of Pile caps? 3

c. Explain Equilibrium method and Virtual work method of Yield line analysis of slabs. 6

http://www.ktuonline.com

Whatsapp @ 9300930012
Your old paper & get 10/-
पुराने पेपर्स भेजे और 10 रुपये पायें,
Paytm or Google Pay से

http://www.ktuonline.com

http://www.ktuonline.com

http://www.ktuonline.com