

Registration No:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages :2

M.TECH

M.TECH 2ND SEMESTER (AR 18) REGULAR EXAMINATIONS, APRIL/MAY 2019
 ADVANCED REINFORCED CONCRETE DESIGN

Branch: SE, Subject Code:MSEPC2010

Time: 3 Hours

Max Marks : 70

PART-A

(10 X 2=20 MARKS)

1. Answer the following questions.

- Write down the classification of seismic waves.
- Explain how tension steel ratio and shape of cross section affects ductility?
- Discuss the differences between limit state method and working stress method.
- Differentiate between stress-strain and moment curvature relationship.
- Estimate crack width at salient points in a beam where it is known as priority.
- Define centre of rigidity stiffness in a shear wall. In what condition, torsion is avoided in a building with shear wall.
- How the thickness is proportioned in a deep beam to avoid possible buckling?
- Find ductility in (250 x 400 mm) singly reinforced RC beam with M₃₀ concrete, Fe500 steel and three members of 20 mm HYSD tensile steel bars.
- State the assumptions of yield line analysis.
- Define equilibrium method.

PART-B

(5 X 10=50 MARKS)

Answer any five questions from the following.

Q2.

- What do you mean by the term 'shear span'? Explain its effect on strength of RC members? [5]
- Design a corbel to carry a factored load of 630 kN at a distance of 250 mm from the face of a 300 x 300 mm column. Use M35 concrete and Fe 415 grade steel. [5]

Q3.

- Explain whether moment redistribution can be applied to reduce bending moments in columns. [5]
- Determine the ordinates of the bending moment diagram at every one-tenth point of beam AB of span 20 m with a uniformly distributed load 35 kN/m if the fixed moments at A is 1200 kNm and that at B is 700 kNm. [5]

Q4.

- How many limit states are there? Should a structure be designed following all the limit states? Explain. [5]
- A reinforced concrete deep girder is continuous over spans of 8 m apart, from center to center. It is 4.5 m deep, 300 mm thick and the supports are columns 800 mm in width. If the girder supports udl of 250 kN/m including its self weight, design the necessary reinforcement. Use M25 concrete and Fe 415 grade steel. [5]

Q5.

- (a) Justify the need to do the redistribution of moments in statically indeterminate structures. [5]
- (b) Design a ribbed slab 6 x 6 m continuous over two adjacent sides simply supported on the other two sides if it is beams so that beams are spaced at 1.5 x 1.5m. Assume factored udl of 12 kN/m². Use M30 concrete and Fe415 steel. [5]

Q6

- (a) Using yield line theory, design the floor slab of a classroom of multi-storeyed structure for the given data. Size of class room is 4m x 4m. The panel is continuous on all edges. Use M20 grade concrete and Fe400 steel. Sketch the reinforcement details. [5]
- (b) Discuss the general theory of wind effects of structures. [5]

Q7.

- (a) A reinforced concrete building on beams and columns has its slabs in panel of 6x5 m. The thickness of the roof and floor slabs are 150mm. Estimate the design load for the roof slab and the floor slab. [5]
- (b) What are the assumptions stated for portal method? [5]

Q8. Write short notes on:

- (a) Basic action of two way slab [5]
- (b) Contra flexure [5]

==0==