Hall Ticket Number :										

R-11 / R-13

Code: 1G655

III B.Tech. I Semester Supplementary Examinations May 2018

Design and Drawing of Reinforced Concrete Structures

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

PART-A

Answer any one question (1 x 28 = 28 Marks)

1. Design a T-Beam section with a flange width of 1250mm, flange depth of 100mm, a web width of 250mm and an effective depth of 500mm, which is subjected to a factored moment of 560kNm. The concrete mix to be used is of M20 and steel is of grade Fe415
   a. Draw the reinforcement details in cross section
   b. Draw the reinforcement details in longitudinal direction

OR

2. Design a interior panel two way R.C. Slab for a room 4m wide and 4m long. The slab is supported on R.C.C Beams. The width of beam is kept as 230 mm. The superimposed load is 3.2 kN/m^2 and finishing load expected is 1.8 kN/m^2
   Use M 20 concrete and Fe 415 steel.
   (a) Draw the reinforcement of the slab in plan view.
   (b) Draw cross section of the slab including beams with reinforcement details.

PART-B

Answer any Three questions (3 x 14 = 42 Marks)

3. A rectangular simply supported beam 300mm wide and 400 mm deep upto the center of reinforcement, has to resist a load of 20kN/m and having effective span of 6m. Design the section. Use M20 grade concrete and Fe 415 steel.

4. Design a simply supported RC beam for shear subjecting load a UDL of 30kn/m and having span of 4m. width of the beam is 230mm and depth of the beam is 450mm.

5. Design a simply supported one way slab with dimensions 3x7m. Width of the supports on four edges are 230mm. Live load on the slab is 4kn/m2 and dead load including self-weight is 3.5kN/m^2. Use M20 grade concrete and Fe415 steel.

6. Design a column of size 300x450mm subject to a axial load of 800kN moments are Mx = 50knM and My = 60kNm at top and bottom of the column. Effective length of the column is 3m.

7. Explain in detail about limit state of serviceability with codal provisions.

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Hall Ticket Number :										

R-11 / R-13

Code: 1G653

III B.Tech. I Semester Supplementary Examinations May 2018

Engineering Hydrology-I

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **Five** questions
All Questions carry equal marks (**14 Marks** each)

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1.	a)	Describe various methods of computing average rainfall over a basin	7M
	b)	What do you understand by precipitation? Explain various types of precipitation.	7M
2.	a)	Explain briefly infiltration capacity, ø-index and w-index.	7M
	b)	What are the factors affecting Evaporation?	7M
3.		How do you separate base flow from direct runoff?	14M
4.	a)	What are the limitations of applications of Unit hydrograph?	7M
	b)	Explain about rational method.	7M
5.	a)	What are the assumptions and limitations of dupuit's theory?	4M
	b)	A tube well having a diameter of 15cm fully penetrates a confined aquifer of thickness 10m.The discharge from the well at a drawdown of 8m is 80 lps. Determine the coefficient of permeability and the transmissibility of the aquifer. Take the radius of influence as 300m.	10M
6.	a)	Describe quality of Irrigation water and also Standards for irrigation water.	7M
	b)	Describe briefly the various soil groups of India.	7M
7.		What is consumptive use of water? Describe any two methods for determining the consumptive use of water.	14M
8.	a)	Design the irrigation canal to carry a discharge of 1.4 cumec. Assume N=0.0225,m=1 and B/D=5.7	10M
	b)	What are the drawbacks of kennedy's theory?	4M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G651

III B.Tech. I Semester Supplementary Examinations May 2018

Structural Analysis II

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **Five** questions
All Questions carry equal marks (**14 Marks** each)

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1. a) A three hinged parabolic arch of span 20m and a central rise of 4m carries two point loads of 20KN and 30KN at 5m and 15m from the left hinge A respectively. Determine the reactions at the support hinges and BM under the load points. 8M

   b) Also find the normal thrust and radial shear at 4m from A. Draw the BM diagram, 6M

2. A two hinged parabolic arch has a span of 30m and a central rise of 5m.Calculate the maximum positive and negative bending moment at a section 10 m from the left support, due to a single point load of 12KN acting at 8m from left support A. The second moment of the area varies as the secant of the slope of the rib. 14M

3. a) Determine the support moments and sketch the BMD for the portal frame ABCD with both supports A & D fixed. Length AB=CD= 4m and beam BC=6m. $I_{AB}=I_{CD}=I$ and $I_{BC}=2I$. Beam BC carries udl of 10KN/m over its entire span in addition to a point load of 15KN at 2.5m from B . Use Slope – Deflection method. 11M

   b) Sketch the bending moment diagram. 3M

4. Using moment distribution method, calculate the final moments for a portal frame ABCD whose ends A& D are hinged. Spans AB= 3m, BC= 4m and CD=5m. Span BC carries a udl of 8KN/m over the entire span. Sketch the BMD for the above frame. 14M

5. Analyze the continuous beam ABCD using Kani's method. Span AB=5m and span BC=4m and span CD= 6m. AB carries a point load of 8KN and BC carries a udl of 4KN/m and CD carries an eccentric point load of 12KN at 2.5m from C. Sketch the bending moment diagram. 14M

6. A two span continuous beam ABC is fixed at A & C and rests on a simple support at B which sinks by 5mm. The span AB = 4m and BC = 6m. Span AB carries a uniformly varying load from 0 at A to 14 KN/m at B and span BC carries a point load of 40 KN at the centre. Take EI = 6000 KN $m^{2.}$ Analyse the beam using stiffness method. Sketch the BM diagram. 14M

7. A continuous beam ABC, 10m long is fixed at A & C. The length of span AB is 6m and it is loaded with an eccentric point load of 15KN at 2m from A. Span BC = 4m and carries a udl of 10 KN/m. Considering EI as constant, analyze the beam using by flexibility matrix method. Draw the bending moment diagram. 14M

8. a) Define plastic moment.
   b) Derive the moment curvature relationship in plastic analysis.
   c) Explain briefly the lower and upper bound theorems.
   d) Derive the shape factor for a rectangular section. 14M

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