Hall Ticket Number :										

R11

Code: 1G681

IV B.Tech. II Semester Advanced Supplementary Examinations June 2016

Design & Drawing of Irrigation Structures

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any one* question

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1. Design and draw of a canal regulator cum road bridge with the following data. The right bank is 5 m wide and left bank is 2 m wide on both sides. Good foundations are available at +19.00. Assume the ground level at the site as +22.00

Description	**Up-stream**	**Down-stream**
Full supply discharge	40 Cumec	35 cumec
Bed width	18 m	18 m
Bed level	+20.00	+20.00
Full supply depth	4 m	3.5 m
Full supply level	+24.00	+23.50
Top level of bank	+25.00	+24.50

2. Design and draw Surplus weir with the following hydraulic particulars.

Combined catchment area of group of tanks	40 km^2
Area of catchment intercepted by upper tanks	20 km^2
Full tank level	+12.00
Maximum water level	+12.75
General ground level at site	+11.00

The ground level below the proposed surplus slopes off till it reaches 10 m in about 8 m distance. The tank bund has a top width of 2 m at level +14.50 with 2:1 side slopes on either side. Foundations are of hard gravel at a level of +9.50 m near the site of work.

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Hall Ticket Number :										

R11

Code: 1G682

IV B.Tech. II Semester Advanced Supplementary Examinations June 2016

Advanced Structural Engineering

(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. Design the interior panel of the flat slab of size 6.6m x 6.6mm with drop panels over column capitals. Size of the column is 550mm x 550mm and the live-load on the panel is 3KN/m^2. Use M20 concrete and Fe 415 steel. Sketch the details of reinforcement. 14M

2. a) Distinguish between bunkers and silos. 4M

   b) Derive the expression for finding horizontal and vertical pressure exerted by stored material of height 'h' in a silo. Use Janssen's theory. 10M

3. Derive the expression for calculating the stresses at critical depth 'h' from the top in a typical chimney for the following cases:

   a) The stresses in steel due to temperature difference on the two faces of chimney and 7M

   b) The average stress in the middle of the shell is due to vertical load and wind pressure. 7M

4. Design the top dome, top ring beam and cylindrical wall of Intz tank of 1,50,000 lts capacity. The height of staging is 14m upto the bottom of the tank. The safe bearing capacity of soil is 250KN/m^2. Use M20 concrete and Fe 415 steel. 14M

5. Design a circular water tank with flexible base to retain water of 2,00,000 lts resting on the ground. The depth of water is to be 4m, excluding a free board of 0.5m. Use M20 concrete and Fe 415 steel. Sketch the details of reinforcement. 14M

6. Design a counterfort retaining wall if the height of the wall above the ground level is 8m, safe bearing capacity of soil is 180KN/m^2 , angle of internal friction is 30^0 and the unit weight of backfill is 20 KN/m^3 . The top of the retained earth is horizontal and the distance between the counterforts may be taken as 3m. Adopt M20 concrete and Fe-415 steel. 14M

7. A RC grid floor of size 8m x 9m is required for a function hall. Assume the rib spacing of 1.2m in both directions and live load of 4KN/m^2 . Design the grid floor adopting M20 grade concrete and Fe415 steel. Sketch the reinforcement details. 14M

8 Design the stairs for a public building, supported wall on one side and stringer beam on the other side. The horizontal span of stairs is 1.5m. The rise and tread may be taken as 120mm x 250mm. Use M20 and Fe-415 steel. 14M

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Hall Ticket Number :										

R11

Code: 1G689

IV B.Tech. II Semester Advanced Supplementary Examinations June 2016

Pre-Stressed Concrete

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
Assume suitable data, if necessary

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1. a) List the advantages and limitations of prestressed concrete. 7M
   b) Explain the principles of pre tensioning and post tensioning. 7M

2. Discuss about the following post tensioning methods with neat sketches
   i) Gifford-Udall system
   ii) Hoyer system 14M

3. a) A post-tensioned concrete beam of rectangular section, 120 mm wide and 350 mm deep, is stressed by a parabolic cable with zero eccentricity at the supports and an eccentricity of 50 mm at the centre of span. The area of the cable is 4200 mm^2 and initial stress in the cable is 20 N/mm^2. If the ultimate creep strain is 30×10^{-6} mm/mm per N/mm^2 of stress and modulus of elasticity of steel is 210 mm^2, compute the loss of stress in steel only due to creep of concrete. 9M
   b) Enumerate the differences between prestressed concrete and reinforced concrete. 5M

4. A prestressed concrete beam of section 120 mm wide by 300 mm deep is used over an effective span of 6 m to support a uniformly distributed load of 4 kN/m, which includes the self-weight of the beam. The beam is prestressed by a straight cable carrying a force of 180 kN and located at an eccentricity of 50 mm. Determine the location of the thrust-line in the beam and plot its position at quarter and central span sections. 14M

5. A beam of symmetrical I-section spanning 8 m has a flange width of 150m m & flange thickness of 80 mm respectively. The overall depth of the beam is 450 mm. Thickness of the web is 80 mm. The beam is prestressed by a parabolic cable with an eccentricity of 150 mm at the centre of the span & zero at the supports. The LL on the beam is 2.5 kN/m.
   a) Determine the effective force in the cable for balancing the DL & LL on the beams.
   b) Sketch the distribution of resultant stress at the centre of span section for the above case.
   c) Calculate the shift of the pressure line from the tendon–centre–line. 14M

6 a) Explain analysis of end blocks by Guyon's method. 7M
   b) Explain about Anchorage Zone Reinforcement? 7M

7 A composite T-beam is made up of a pre-tensioned rib 150 mm wide and 250 mm deep, and a cast in-situ slab 410 mm wide and 50 mm thick having a modulus of elasticity of 28 kN/ mm^2. If the differential shrinkage is 110×10^{-6} units, determine the shrinkage stress developed in the precast and cast in situ units. 14M

8. A prestressed beam of rectangular section, 100 mm wide and 200 mm deep, has a straight duct 25 mm by 40 mm with its centre located at 50 mm from the soffit of the beam which is prestressed by 12 wires of 7 mm diameter stressed to 600 N/ mm^2. The beam supports an imposed load of 4 kN/m over a span of 6m. The modulus of elasticity of concrete is 38 kN/mm^2. Estimate the central deflection of the beam under the action of prestress, self – weight and live load.
   a) Based on net section (beam ungrouted) and
   b) Based on transformed section (beam grouted). 14M

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Hall Ticket Number :										

R11

Code: 1G683

IV B.Tech. II Semester Advanced Supplementary Examinations June 2016

Remote Sensing and GIS Applications

(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)	Define Map and Explain different types of Maps?	7M
	b)	Describe briefly Mosaic and GCP?	7M
2.		Explain briefly processing of Remote sensing with neat sketch?	14M
3.	a)	Define sensor and Explain different types of sensors?	7M
	b)	Give brief note on different types of resolution?	7M
4.	a)	Describe features in GIS coverage with neat sketch and list out the GIS software's?	7M
	b)	Explain GIS categories and fundamental operations of GIS?	7M
5.	a)	Describe how many types of data required for preparation of GIS map?	7M
	b)	Define Spatial data and Explain how can you prepare Layer based GIS map?	7M
6.	a)	Define Attribute data and explain how can you manipulate the data in GIS data Analysis?	7M
	b)	Describe Computational Analysis Methods in GIS data Analysis?	7M
7.		How can you prepare Land use/Land cover map using Remote sensing and GIS Explain with step by step methodology?	14M
8.		How can you utilize Remote sensing and GIS technology for Identification of artificial Recharge structures sites explain with suitable case study?	14M

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