Hall Ticket Number :										

R11

Code: 1G682

IV B.Tech. II Semester Supplementary Examinations Nov/Dec 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 an interior panel of a flat slab for a live load of 6 kN/m^2. Provide two way reinforcements. Use M_{20} grade concrete.

2. Design a circular cylindrical bunker of capacity 400 kN to store coal using M_{20} concrete and Fe_{415} steel. Angle of repose 25^0, unit weight of coal 8 kN/m^3.Coefficient of friction between coal and concrete is 0.444.

3. Design a RC chimney shell, with the following data: Height above ground level=60m, outside diameter throughout , thickness of brick lining = 100mm up to 40 m from ground, wind pressure 2 KN / m^2.

4. Design an Intze type water tank of capacity 8,00,000 liters supported by symmetrically placed 8 columns. Use M_{25} concrete & Fe_{415} steel.

5. A rectangular water tank of size deep is to be designed using M_{25} concrete and Fe_{415} Steel.

6. Design a cantilever retaining wall to retain an earth embankment with a horizontal top 3.2 m above ground level. Density of earth = 19 kN/m^3. Angle of $\varphi = 30^0$, SBC of soil is 190 kN/m^2. Take coefficient of friction between soil and concrete = 0.5, adopt M_{20} & Fe_{415} steel.

7. A RC grid floor is to be designed for a hall of size 16 m × 20 m. The ribs are placed at 2 m c/c both ways. The floor carries a live load of 5 kN/m^2. Use any approximate method for analysis and design the slab and ribs.

8. A stair case 1.25 m width for an office building consists of each step built into the wall with a bearing of 120 mm along the flight with the thread 250 mm and rise 200 mm. Design the stair case. Use M_{25} grade concrete and Fe_{415} steel.

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Hall Ticket Number :										

R11

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IV B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Design and Drawing of Irrigation Structures

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any* **One** question

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1. Design a siphon aqueduct with the data given below:
   Full supply discharge of canal = 30 cumecs
   Bed width of canal = 24 m
   Full supply depth = 1.25 m
   Side slope of canal section = 1.5:1 (H:V)
   Bed level of the canal = 100.00 m
   Max flood discharge of drain = 500 cumecs
   High flood level = 100.50 m
   Bed level of drainage = 98.00 m
   Normal ground level = 100.00 m
   Lacey's soil factor = 1.0
   Rugosity coefficient M = 0.016
   Assume any suitable data.
   Draw: (i) Plan.
   (ii) Longitudinal section at aqueduct.

2. Design a sluice taking off from a tank irrigating 200 hectares at 1000 duty. The tank bund through which the sluice is taking off has a top width of 2 m with 2:1 side slopes. The top level of bank is +40.00 and the ground level at site is +34.50. Good hard soil for foundation is available at +33.50. The sill of the sluice at off-take is +34.00. The maximum water level in tank is 38.00. The full tank level is +37.00. Average low water level of the tank is +35.00. The details of the channel below the sluice are as under:
   Bed level = +34.00
   F.S.L = +34.50
   Bed width = 1.25 m
   Side slopes to 1 with top of bank at +35.50
   Draw the plan, longitudinal section and cross section.

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Hall Ticket Number :										

R11

Code: 1G689

IV B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Prestressed Concrete

(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. Define prestressed concrete. Write its advantages and disadvantages.

2. Write short note on:
   a) Hoyer system.
   b) Gifford-Udall system.
   c) Difference between pretension and post tension.

3. a) Mention the various losses of prestressing.
   b) A prestressed concrete beam 300 mm wide and 500 mm deep is prestressed with tendons of area 300 mm^2 at a constant eccentricity of 75 mm carrying an initial stress of 1000 N/mm^2. The span of the beam is 10.0 m calculate the percentage loss of stress in tendons if the beam is pre tensioned.
   Use the following data.
   Modular ratio = 6.
   Relation of stress = 2.5%
   Shrinkage of concrete = 300×10^{-6}

4. A rectangular concrete beam deep spanning over a span of 8.0 m, is pressed by straight cable carrying an effective prestressing force of 250 KN located at an eccentricity of 40 mm. The beam supports a live load of 1.5 KN/m. Calculate the extreme stresses at mid span of the beam.

5. a) Discuss the effect of Tendon profile on deflection of PSC beam.
   b) Explain the design procedure of rectangular section according to IS code.

6. A prestressed concrete beam of section 300 mm x 600 mm deep is prestressed, by 2 post tension cables of area 600 mm^2 each initially Stressed to 1600 N/mm^2. The span of the beam is 10 m. if f_{ck} =40 $N//mm^2$ .Estimate the shear resistance of support section. Use IS 1343 code.

7. Explain the procedure for computing the ultimate flexural and shear strength of composite sections.

8. Write short note on:
   a) Load- balancing concept.
   b) Short-term defection.
   c) Long-term deflection.

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Hall Ticket Number :										

R-11

Code: 1G683

IV B.Tech. II Semester Supplementary Examinations Nov 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) Explain the procedure in measurement of parallax for height.
   b) Discuss the advantages and disadvantages of Remote sensing.

2. a) Describe Electro Magnetic Spectrum with supporting diagram. Explain the significance of Electro Magnetic bands in Remote Sensing.
   b) Write about the elements of Remote Sensing with necessary diagrams.

3. a) Explain the Energy interactions in the atmosphere
   b) Explain in detail about the concept of Sensor resolution and its importance in Remote Sensing.

4. a) Explain the components of Geographic Information System?
   b) Discuss the advantages and merits of GIS over conventional maps.

5. a) Tabulate the advantages and disadvantages of Vector and Raster data.
   b) Describe the
      (i) Layer based GIS mapping
      (ii) Feature based GIS mapping.

6. What is a Spatial Data & Non Spatial Data? Compare them both.

7. a) Briefly explain the importance of Land use/Land cover changes in civil engineering applications.
   b) Explain how Remote Sensing & GIS techniques are used in mapping of flood prone areas.

8. a) Explain the identification of sites for artificial recharge structures for ground water developing using Remote Sensing & GIS techniques
   b) Explain how Remote Sensing & GIS can be helpful in estimating the loss of reservoir capacity due to sedimentation.

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