

Register Number :

Name of the Candidate :

0 4 5 8

B.E. DEGREE EXAMINATION, 2013

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-801. PRE-STRESSED CONCRETE

May]

[Time : 3 Hours

Maximum : 60 Marks.

Answer any ONE FULL question from each unit.

Use of IS 1343-1980 is permitted.

ALL questions carry EQUAL marks.

UNIT - I

1. A pre-stressed concrete beam 300 mm wide and 350 mm deep is pre-stressed by 12 wires each 7 mm diameter initially stressed to 1,500 MPa with their centroid located 120 mm above the soffit of the beam. Estimate the final percentage loss of prestresses due to elastic deformation, creep, shrinkage and relaxation.

Turn Over

2

Take $E_s = 210 \text{ kN/mm}^2$.

$E_c = 35 \text{ kN/mm}^2$

$\theta = 1.60$.

$E_r = 3 \times 10^{-4}$

and relaxation of steel stress = 90 MPa.

(12)

(OR)

2. A PSC beam of breadth 240 mm and depth 300 mm is simply supported on effective span of 6 m. It is pre-stressed by a parabolic cable with an eccentricity of 75 mm below the centroid at the midspan section and 45 mm above centroid at the support section pre-stressing force is 480 kN. Calculate the initial midspan deflection. Assume the unit weight of concrete as 25 kN/m^3 and modulus of elasticity concrete as $2.5 \times 10^4 \text{ N/mm}^2$.

(12)

3

UNIT - II

3. The end block of a pre-stressed concrete beam, rectangular in section, is 100 mm wide and 200 mm deep. The pre-stressing force of 100 kN is transmitted to concrete by distribution plate, 100 mm wide and 50 mm deep, concentrically located at the ends. Calculate the position and magnitude of the maximum tensile stress on the horizontal section through the centre and edge of the anchor plate. Compute the bursting tension on these horizontal planes. (12)

(OR)

4. A post tensioned, pre-stressed concrete girder is of T-section with an effective flange width and depth at 1,500 mm and 250 mm respectively. Thickness of the web is 200 mm. The area of pre-stressing steel is $5,000 \text{ mm}^2$, located at an effective depth of 1,600 mm. Given :

$$f_{pu} = 1,600 \text{ N/mm}^2$$

$$f_{cu} = 40 \text{ N/mm}^2$$

$$\text{and } f_{pc} = 960 \text{ N/mm}^2$$

Turn Over

Estimate the ultimate moment of resistance of the T-section. Assume effective span at the girder as 32 m. (12)

UNIT - III

5. (a) How the shear capacity of the composite section is computed? Explain in detail. (6)
- (b) Explain the procedure of designing a composite flexural section. (6)

(OR)

6. A composite T-girder of span 5 m is made up of a pre-tensioned rib, 10 mm wide by 200 mm deep with an *in-situ* cast slab 400 mm wide and 400 mm deep. The rib is pre-stressed by a straight cable having an eccentricity of 33.33 mm and carrying an initial force of 150 kN. The loss of pre-stress may be assumed to be 15 percent. Check the composite T-beam for the limit state of deflection if it supports an imposed load of 3.2 kN/m for :

- (a) Unpropped construction
and (b) Propped construction.

Assume a modulus of elasticity of 35 N/mm^2 for both pre-cast and *in-situ* cast elements. (12)

UNIT - IV

7. A two span continuous beam ABC ($AB = BC = 10 \text{ m}$) is of rectangular section, 200 mm wide and 500 mm deep. The beam is pre-stressed by a parabolic cable concentric at and supports and having an eccentricity of 100 mm towards the soffit of the beam at centre of the spans and 200 mm towards the top of beam at mid support B. The effective force in the cable is 500 kN.

- (a) Show that the cable is concordant.
(b) Locate the pressure line in the beam when in addition to its self weight, it supports an imposed loads of 5.6 kN/m. (12)

(OR)

8. A continuous pre-stressed concrete beam ABC ($AB = BC = 10 \text{ cm}$) has a uniform rectangular cross section with a width of 100 mm and depth of 300 mm. The cable carrying an effective pre-stressing force of 360 kN is parallel to the axis of the beam and located at 100 mm from the soffit.

(a) Determine the secondary and resultant moment at the central support B.

(b) Locate the resultant line of the thrust through beam AB. (12)

UNIT - V

9. Explain in detail the analysis and design procedure of PSC electric poles. (12)

(OR)

10. (a) What is meant by circular pre-stressing? Explain briefly. (6)

(b) How will you design a PSC circular water tank? Explain briefly. (6)

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B.E. DEGREE EXAMINATION, 2013

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

**CLEC-802. MAINTENANCE AND
REHABILITATION OF STRUCTURES**

May]

[Time : 3 Hours

Maximum : 60 Marks.

Answer any ONE FULL question from each unit.

ALL questions carry EQUAL marks.

UNIT - I

1. Discuss the various causes of deterioration.

(12)

(OR)

Turn Over

2. Explain :

- (a) Repair and rehabilitation with its types. (6)
- (b) Factors governing the maintenance of structures. (6)

UNIT - II

- 3. (a) Elaborate clearly various stages and effects of corrosion. (6)
- (b) Write down the thermal properties of concrete. (6)

(OR)

- 4. (a) Write a note on serviceability and durability of concrete. (6)
- (b) What are the design and construction errors? Explain. (6)

UNIT - III

5. Write a detailed note on :

- (a) Expansive cement and concrete chemicals. (6)
- (b) Polymer concrete and vacuum concrete. (6)

(OR)

6. Discuss in detail :

- (a) Methods of corrosion protection. (6)
- (b) Methods of corrosion inhibitors. (6)

UNIT - IV

7. Write a critical note on :

- (a) Weathering corrosion. (6)
- (b) Chemical disruption. (6)

(OR)

- 8. Explain the various methods of repair of concrete structures. (12)

Turn Over

UNIT - V

9. List the demolition techniques used for structures. Explain any one with neat sketch. (12)

(OR)

10. Write any one case studies for demolition techniques. (12)

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B.E. DEGREE EXAMINATION, 2013

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-804. ETHICS IN ENGINEERING

(Common to all branches)

May] [Time : 3 Hours

Maximum : 60 Marks

Answer any ONE FULL question from each unit.

Each FULL question carries 12 marks.

UNIT - I

1. Explain the variety of moral issues related with Engineering Ethics. (12)

(OR)

2. Explain Gilligan's theory in detail. (12)

Turn Over

2

UNIT – II

3. Explain the contracts associated with standard experiments. (12)

(OR)

4. What is meant by code of ethics? Explain in detail. (12)

UNIT – III

5. Explain the various responsibilities of employers. (12)

(OR)

6. Explain in brief the conflict of interest and management policies. (12)

UNIT – IV

7. Briefly explain the concept of whistle blowing. (12)

(OR)

8. Explain computer ethics in detail. (12)

3

UNIT – V

9. Explain the roles and responsibilities of engineers as a manager, consultant and leader. (12)

(OR)

10. Differentiate between moral leadership and morally creative leadership. (12)

Register Number:

0463

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B.E. DEGREE EXAMINATION, 2013

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEE-806.INDUSTRIAL WASTE WATER TREATMENT AND DISPOSAL

May)

(Time: 3 Hours

Maximum: 60 Marks

Answer any ONE FULL question from each unit

All questions carry equal marks

Answer any other data, if necessary

UNIT-I

1. List and describe at least 11 contaminants originating from industrial waste. (12)
(OR)
2. a) What do we mean by strength reduction? Give an example. (6)
- b) Give an example of how a process change can reduce the strength of waste water. (6)

UNIT-II

3. Describe the waste water characteristics of paper and pulp mill effluent. (12)
(OR)
4. Explain the characteristics of wastes from the tannery industry. (12)

UNIT-III

5. Write short notes on the following terms used in industrial waste water treatment.
a) Separation of solids.
b) Sedimentation (6+6)
(OR)
6. Sketch and explain the working of belt filter press sludge dewatering device. (12)

UNIT-IV

7. Describe the anaerobic biological treatment methods of waste water treatment. (12)
(OR)
8. Write a short notes on the following treatment methods.
a) Stabilization of ponds. (6)
b) Oxidation ditch (6)

UNIT-V

9. Explain in detail about the major differences in characteristics between municipal sewage effluent and industrial effluent. (12)
(OR)
10. Write short notes on the following Physico-chemical treatment methods.
a) Neutralization b) Absorption (6+6)

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B.E. DEGREE EXAMINATION, 2013

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEE-805. HYDRO POWER ENGINEERING

May]

[Time : 3 Hours

Maximum : 60 Marks.

Answer any ONE FULL question from each unit.

ALL questions carry EQUAL marks.

UNIT - I

1. Explain water distribution network analysis and design. (12)
2. Determine the difference in the elevations between the water surfaces in the two tanks which are connected by a horizontal pipe of diameter 300 mm and length 400 mm. The rate of flow of water through the pipe is 300 litres / sec. Consider all losses and take the value of $f = 0.008$. (12)

Turn Over

UNIT - II

3. The depth of flow of water at a certain section of a rectangular channel of 5 m wide is 0.6 m. The discharge through the channel is $15 \text{ m}^3/\text{sec}$. If the hydraulic jump takes place on the downstream side, find the depth of flow after the jump. (12)
4. Write down the design procedure of spillways. (12)

UNIT - III

5. Write short notes on chimneys. (12)
6. Write down the planning, analysis and design at any one type of power plant. (12)

UNIT - IV

7. Write short notes on turbo generator foundation. (12)
8. With the neat sketch, explain the intake towers. (12)

UNIT - V

9. Explain the joints in hydro power plants. (12)
10. Explain the various types of power houses. (12)

Register Number:

3342

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2012

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEE-806. SOLIDWASTE AND HAZRDOUS WASTE MANAGEMENT

Nov)

(Time: 3 Hours)

Maximum: 60 Marks

Answer any ONE FULL question from each unit

Assume the necessary data

All questions carry equal marks

UNIT-I

1. a) Describe social aspects and health factors in related to solid waste management. (6)
b) Explain the functional element of solid waste management system. (6)
(OR)
2. a) Describe the physical and chemical characteristics of solid waste. (6)
b) Write a short notes on method of disposal of solid waste. (6)

UNIT-II

3. Discuss the collection services and collection system available in India. (12)
(OR)
4. Write short notes on the following:
i) Grinding of garbage. (6)
ii) Compaction and Boiling. (6+6)

UNIT-III

5. a) What are the environmental factors to be considered for the sanitary land fill method? (6)
b) Write a short note on Machineries involved in sanitary landfill. (6)
(OR)
6. a) How do you control the gas and leachate movement in a secured land fill? (6)
b) What are the benefits and ill- effects of sanitary land fills? (6)

UNIT-IV

7. a) Write a short notes on EIA. (6)
b) Write in detail the various types of sorting techniques. (6)
(OR)
8. a) Write a short notes on recovery and reuse of solid waste. (6)
b) Discuss in brief the ocean disposal method of solid waste. (6)

UNIT-V

9. a) How do we classify the hazardous waste? (6)
b) What are precautions to be followed for the disposal of hazardous waste? (6)
(OR)
10. Explain the various composting methods available for the disposal of solid wastes. (12)

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CSEE-803. TALL BUILDINGS

May] [Time : 3 Hours

Maximum : 60 Marks.

Answer any ONE FULL question from each unit.

ALL questions carry EQUAL marks.

UNIT - I

1. (a) List the factors affecting growth, height and structural forms of tall buildings.
(b) Differentiate between two way flat slab and two way flat plate.
2. (a) Explain the stiffness and drift limitation.
(b) Explain the different types of slab.

Turn Over

UNIT - II

3. What are the types of braced frames? And also, explain its analysis methods.
4. Write the behaviour, analysis and design of infilled frame structures.

UNIT - III

5. Explain the structural behaviour of shear wall structures.
6. Explain the structural behaviour of framed structures.

UNIT - IV

7. Write short notes on :
 - (a) Stability of tall buildings.
 - (b) Effects of foundation rotation.
8. Explain the following effects due :
 - (a) Creep and shrinkage .
 - (b) Temperature .

UNIT - V

9. Explain in detail the Response Spectrum Analysis.
10. Write a detailed note on response to earthquake motions.