

# **B.E DEGREE EXAMINATION**

**NOVEMBER - 2014**

**EIGHTH SEMESTER**

**CLEC - 801. PRE-STRESSED CONCRETE**

## **UNIT – I**

1. Explain the principle of pre-stressing and system of pre-stressing.  
(OR)
2. A concrete beam, 120 mm wide and 300 mm deep, is pre-stressed by a straight cable carrying an effective force of 180 KN at an eccentricity of 50 mm. The beam spanning over 6 m, supports a total uniformly distributed load of 4 KN/m which includes the self weight of the beam. The initial stress in the tendons is  $1000 \text{ N/mm}^2$ . Determine the percentage increase of stress in the tendons due to the loading of the beam.  $E_s = 210 \text{ KN/mm}^2$  and  $E_c = 35 \text{ KN/mm}^2$ .

## **UNIT - II**

3. A post-tensioned pre-stressed concrete Tee section having a flange width of 1200 mm and flange thickness of 200 mm, thickness of web being 300 mm is pre-stressed by  $2000 \text{ mm}^2$  of High tensile steel located at an effective depth of 1600 mm. If  $f_{ck} = 40 \text{ N/mm}^2$ ,  $f_p = 1600 \text{ N/mm}^2$ , estimate the ultimate moment capacity of the unbounded tee section, assuming (L/d) ratio as 20 and  $f_{pc} = 1000 \text{ N/mm}^2$ .  
(OR)
4. The support section of a pre-stressed concrete beam 10 mm wide by 250 mm deep is required to support an ultimate shear force of 60 KN. The compressive pre-stress at centroid is  $5 \text{ N/mm}^2$ ,  $f_{ck} = 40 \text{ N/mm}^2$ , effective cover to reinforcement 50 mm. If  $f_y = 415 \text{ N/mm}^2$ , design suitable shear reinforcement in the section using IS-1343 code recommendations.

## **UNIT - III**

5. Design a simply supported slab for a bridge deck using the following data :  
Span = 10 m.  
Permissible compressive strength in concrete at transfer  $f_{ct} = 16.5 \text{ N/mm}^2$ .  
Type-I member (no tensile stress at any stage)  
Safe stress in steel is  $950 \text{ N/mm}^2$ ; Live load on slab is  $10 \text{ KN/m}^2$ .  
Loss of stress is 18%.  
Design a pre-stressing force and eccentricity.  
(OR)
6. A composite bridge deck is made up of an in-situ cast slab 120 mm thick and symmetrical I-section of pre-cast pre-tensioned beams having a flange width and thickness of 200 mm and 110 mm respectively. The thickness of web is 75 mm. Overall depth of I-section is 500 mm, spacing of I beam is 750 mm centers. The modulus of elasticity of in-situ slab concrete is  $30 \text{ kN/mm}^2$ . Estimate stresses developed in the composite member due to a differential shrinkage of  $100 \times 10^{-6}$  between the pre-cast and cast in-situ elements.

## UNIT – IV

7. A two-span continuous pre-stressed concrete beam ABC ( $AB=BC=15$  m) has a uniform cross section with a width of 250 mm and a depth of 600 mm. The cable carrying an effective pre-stressing force of 500 kN is parallel to the axis of the beam and located at an eccentricity of 200 mm.

(a) Determine the secondary and resultant moment developed at mid support section-B.

(b) If the beam supports an imposed load of 2.4 kN/m, calculate the resultant stresses developed at the top and bottom of the beam at B. Also, calculate the resultant line of thrust through the beam AB.

(OR)

8. A continuous beam ABC ( $AB=BC=20$  m) with an overall depth of 1 m is pre-stressed by a cable carrying effective force of 300 kN. The cable profile is parabolic between the supports with zero eccentricity of 100 mm towards the soffit at centre of spans and 300 mm towards the top at mid support B.

(a) Calculate the secondary moment at B and show that the cable is concordant.

(b) Locate the pressure line when the beam supports a load udl of 3 kN/m which includes the self weight.

## UNIT – V

9. The column of an industrial building is supported on pre-stressed concrete piles of 8 m length. Each pile is subjected to an axial load of 4000 kN. The permissible effective Pre-stress is not to exceed  $5 \text{ N/mm}^2$ . Design a suitable pile of square cross section. Also, design the number of strands of (7-15.2 mm) required for the piles if the ultimate tensile strength of the strand is 260 kN. Assume cylinder compressive strength of concrete as  $40 \text{ N/mm}^2$ .

(OR)

10. Explain the step by step procedure for designing a PSC circular water tank.

**B.E DEGREE EXAMINATION**

**NOVEMBER - 2014**

**EIGHTH SEMESTER**

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

**UNIT – I**

1. (a) Describe in detail about the prevention aspects of maintenance.  
(c) List down the main objectives of maintenance of buildings.  
(OR)
2. Explain the various causes for deterioration of concrete structures.

**UNIT - II**

3. Discuss in detail about the strength and thermal properties of concrete.  
(OR)
4. Explain in detail the effects on durability and strength of concrete, due to climate and chemicals.

**UNIT – III**

5. Explain the procedure of preparation of sulphur infiltrated concrete stating their advantages.  
(OR)
6. Describe the corrosion mechanism and the methods of the corrosion protection.

**UNIT – IV**

7. With sketches, explain how do you improve the load carrying capacity of columns and beams?  
(OR)
8.
  - a) What type of the repair techniques involved for the structure which is distressed due to chloride disruption?
  - b) Explain how to rectify the leakage in the terrace slab due to weathering?

**UNIT – V**

9. (a) Write short notes on hydro demolition.  
(b) Write short notes on controlled demolition by blasting

**(OR)**

10. How do you demolish a deteriorated building with soundless demolition technique? Explain.

**B.E DEGREE EXAMINATION**

**NOVEMBER - 2014**

**EIGHTH SEMESTER**

**CLEC - 803. INTERIOR DECORATION AND PLANNING**

**UNIT – I**

1. Explain in detail the universal design awareness.

(OR)

2. Differentiate between presentation and working drawings.

**UNIT - II**

3. Explain in detail the theory of ergonomics.

(OR)

4. Briefly outline the basic terminology and maintenance of furniture.

**UNIT – III**

5. Describe the design guidelines of a dream room and classify bathroom.

(OR)

6. Explain the design guidelines of a residential kitchen and explain the change in the use of kitchen over the last ten years.

**UNIT - IV**

7. Summarize the paneling materials and state the reason for using.

(OR)

8. Explain in detail the requirements of a good stair and state the need for hand rails.

**UNIT – V**

9. Explain in detail the process of landscape design.

(OR)

10. Discuss in detail the interior and exterior landscaping.

Register Number :

Name of the Candidate :

**3 3 2 7**

**B.E. DEGREE EXAMINATION, 2014**

( COMMON TO ALL BRANCHES )

( EIGHTH SEMESTER )

**CLEC-804. ETHICS IN ENGINEERING**

November ]

[ Time : 3 Hours

Maximum : 60 Marks

*( For the candidates of 2007-08 batch and later )*

*Answer any ONE FULL question from each unit.*

*ALL questions carry EQUAL marks.*

**UNIT - I**

1. Discuss the conscientious commitment of an engineer to live by moral values. (12)

(OR)

2. Explain the types of inquires associated with engineering ethics. (12)

**UNIT - II**

3. Explain how safety and risk is assessed in detail. (12)

(OR)

4. What do you mean by "code of ethics"? Provide discipline among the engineers. (12)

**UNIT - III**

5. What is the role of trade unions in 'collective bargaining'? How far are they useful? (12)

(OR)

6. What are the terms associated with confidential information in industry? Explain. (12)

**UNIT - IV**

7. What is meant by professional rights? Explain recognition and conscientious right in detail.(12)

(OR)

8. How are the computer ethics problems classified? Explain. (12)

**UNIT - V**

9. How do ethicists argue for the social responsibilities of a manager - engineers? (12)

(OR)

10. How do the engineers resolve disputes (or) disagreements in a long term engineering project?  
What is the role of consulting engineers in this aspect? (12)

Register Number :

Name of the Candidate :

3 3 3 1

**B.E. DEGREE EXAMINATION, 2014**

( CIVIL ENGINEERING )

( EIGHTH SEMESTER )

**CLEE-805 / 806. SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT**

November ]

[ Time : 3 Hours

Maximum : 60 Marks

*( For the candidates of 2007-08 batch and later )*

*Answer any ONE FULL question from each unit.*

*ALL questions carry EQUAL marks.*

**UNIT - I**

1. Describe the soil aspects of solid waste management.

(OR)

2. Explain in detail the generation of solid wastes and methods of disposal.

**UNIT - II**

3. Explain the storage system, frequency of collection and mode of transport system.

(OR)

4. Discuss in detail the dust and air pollution problems in solid waste disposal.

**UNIT - III**

5. Explain the site selection machineries involved for a sanitary land fill.

(OR)

6. Describe the impact of environmental effects on groundwater pollution.

**UNIT - IV**

7. Explain about the ocean disposal.

(OR)

8. Enumerate the environmental impact assessment.

**UNIT - V**

9. Explain in detail the cost impact on solid waste.

(OR)

10. Describe in detail the hazardous waste and characteristic.

Register Number :

Name of the Candidate :

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**B.E. DEGREE EXAMINATION, 2014**

( CIVIL ENGINEERING )

( EIGHTH SEMESTER )

**CLEE-805 / 806. HYDRO POWER ENGINEERING**

November ]

[ Time : 3 Hours

Maximum : 60 Marks

*( For the candidates of 2007-08 batch and later )*

*Answer any ONE FULL question from each unit.*

*ALL questions carry EQUAL marks.*

**UNIT – I**

1. What is pump? Explain various appurtenances used in pipeline system. (15)  
(OR)
2. At a sudden enlargement of a water main from 245 mm to 485 mm diameter the hydraulic gradient rises by 10 mm. Estimate the rate of flow. (15)

**UNIT – II**

3. Write the derivation for depth of hydraulic jump. (15)  
(OR)
4. Discuss briefly about dam break analysis. (15)

**UNIT - III**

5. Explain about the planing and analysis of power plants. (15)  
(OR)
6. Explain with neat sketches, the induced draught cooling towers. (15)

**UNIT - IV**

7. Explain the turbo generator foundation. (15)  
(OR)
8. Explain the various intake towers with neat sketches. (15)

**UNIT - V**

9. Define power plant. Explain the layout of hydro power plant. (15)  
(OR)
10. Explain the types of underground power plants. (15)

Register Number:

3330

Name of the Candidate:

**B.E. DEGREE EXAMINATION, 2014**

**(CIVIL ENGINEERING)**

**(EIGHTH SEMESTER)**

**CLEE-806. INDUSTRIAL WASTE-WATER TREATMENT AND DISPOSAL**

**(For the candidates at 2011-12 batch and later)**

November]

[Time : 3 Hours

Maximum : 60 Marks

*Answer any ONE FULL question from each UNIT*

(5 × 12= 60)

**UNIT-I**

1. Explain how industrial house-keeping can be achieved through volume and strength reduction of wastes? (12)
2. Explain the significance of process modification and material changes in the reduction of wastes. (12)

**UNIT-II**

3. Explain the characteristics of waste water from paint industry. (12)
4. Discuss the characteristics of waste water from distillery industry. (12)

**UNIT-III**

5. Explain the various methods adopted for disposal of sludge from the treatment plants. (12)
6. Write short notes on the following methods (a) Sedimentation (b) Ponding. (6+6)

**UNIT-IV**

7. Explain briefly about the aerobic and anaerobic digestion methods. (12)
8. Write short notes on (a) Stabilization ponds (b) Activated sludge process (6+6)

**UNIT-V**

9. What is coagulation? Explain the significance of coagulation in the treatment of industrial waste water. (12)
10. Write short notes on: (6+6)
  - a) Absorption
  - b) Flocculation.