8. A continuous concrete beam ABC (AB= BC = 10 mm) has a uniform rectangular section 100 mm wide and 300 mm deep. A cable carrying an effective pre-stressing force of 360 KN varies linearly with an eccentricity of 50 mm towards the soffit at the end supports to 50 mm towards the top of beam at mid support B.

(a) Determine the resultant moment at B due to pre-stressing only.

(b) If the eccentricity of the cable at B is +25 mm. Show that the cable is concordant. (12)

UNIT - V

9. Explain with neat sketches the various types of pre-stressed concrete pipes. (12)

(OR)

10. Explain with sketches the distribution of ring tension and bending moment in circular tanks with fixed, sliding and hinged base. (12)

Register Number :

Name of the Candidate :

3549

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-801. PRE-STRESSED CONCRETE

(New Regulations)

(For the students joined during 2007-08 and after)

November]   [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 rectangular beam 250 mm wide by 300 mm deep is prestressed by a force of 540 KN at a constant eccentricity of 60 mm. The beam supports a concentrated load of 68 KN at the centre of span of 3 m. Determine the location

Turn Over

of the pressure line at the centre, quater span and support sections of the beam. Neglect self-weight of the beam. (12)

(OR)

2. A pre-stressed concrete piles 250 mm square, contains 60 pre-tensioned wires, each at 2 mm diameter, uniformly distributed over the section. The wires are initially tensioned on the pre-stressing bed with a total force of 300 KN. Calculate the inital stress in concrete and the percentage loss of stress in steel after all losses, given the following data :

E_s = 210 KN/mm^2.

E_c = 32 KN/mm^2.

Shortening due to creep = 30×10^{-6} N/mm^2.

Total shrinkage = 200×10^{-6} per unit length.

Relaxation of steel stress =

5 percent of initial stress. (12)

UNIT - II

3. A pretensioned T-section has a flange 1,200 mm wide and 150 mm thick. The width and depth of the rib are 300 and 1,500 mm respectively. The high tensile steel has an area of 4,700 mm^2 and is located at an effective depth of 1,600 mm. If the characteristics cube strength of the concrete and tensile strength of steel are 40 and 1,600 N/mm^2 respectively, calculate the flexural strength of the T-section. (12)

(OR)

4. A pre-tensioned beam of rectangular section 200 mm wide and 450 mm deep, is pre-stressed by 10 wires of 5 mm diameter located at an effective eccentricity of 150 mm. The maximum shear force at a particular section is 120 KN. If the modular ratio is 6, calculate the flexural bond stress developed assuming,

(a) The section is uncracked.

(b) The section is cracked. (12)

Turn Over

UNIT - III

5. A pre-cast pre-tensioned beam of rectangular section has a breadth of 100 mm and a depth of 200 mm. The beam with an effective span of 5 m is pre-stessed by tendons with their centroids coinciding with the bottom kern. The initial force in the tendon is 150 KN. The loss of pre-stress may be assumed to be 15 percent. The beam is incorporated in a composite T-beam by casting a top flange of breadth 400 mm and thickness 40 mm. If the composite beam supports a live load of 8 KN/m^2, calculate the resultant stresses developed in the precast and in situ cast concrete assuming the pre-tensioned beam as :

   (a) Unpropped

   and (b) propped during the casting of the slab.

   Assume the same modulus of elasticity for concrete in precast beam and insitu cast slab.

   (12)

   (OR)

6. A composite T-beam is made up of pre-tensioned rib 100 mm wide and 200 mm deep, and a cast insitu slab 400 mm wide and 40 mm thick having a modulus of elasticity of 28 KN/mm^2. If the differential shrinkage is 100×10^{-6} units, determine the shrinkage stresses developed in the pre-cast and cast insitu units.   (12)

UNIT - IV

7. Design a pre-stressed concrete beam continuous over two equal spans of 9 m to support live loads of 30 KN each at the centre of span. The loads may be applied independently or jointly. Permissible stress being zero in tension and 15 N/mm^2 in compression. Loss ratio = 0·85. Determine a concordant profile and show it on an elevation of the beam. Allowing for minimum cover of 100 mm, sketch a suitable transformed profile to reduce the slope of the tendons at the central support to a minimum. Check for the limit states of serviceability and collapse.   (12)

   (OR)

Turn Over

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-801. CONSTRUCTION TECHNIQUES AND MANAGEMENT
(Old Regulation)
(For the students joined during 2006-07 and before)

Nov.)

(Time: 3 Hours

Maximum: 60 Marks

Answer any ONE FULL question from each unit
All questions carry equal marks

UNIT-I

1. Briefly explain the modern methods of off site construction.

(12)

2. Briefly explain the prefabricated techniques. (12)

UNIT-II

3. Write the construction modern techniques in industrial building. (12)

4. Explain any three machinery used in construction site. (12)

UNIT-III

5. What are the various objective and functioning of construction management?

(12)

6. Briefly explain the types of organization. (12)

UNIT-IV

7. Write short notes on bar charts and Gantt charts. (12)

8. Briefly explain the principle of PERT network. (12)

UNIT-V

9. Write short notes on critical activity and critical path. (12)

10. Explain briefly direct and indirect cost analysis. (12)

*****

10. (a) Explain mortar and dry pack for filling holes. (6)

(b) Explain coating systems adpoted in concrete repairs. (6)

Register Number :

Name of the Candidate :

3550

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-802. MAINTENACE AND REHABILITATION OF STRUCTURES

(New Regulations)

(For the students joined during 2007-08 and after)

November]   [Time : 3 Hours

Maximum : 60 Marks.

Answer any ONE FULL question from each Unit.
ALL questions carry equal marks.

UNIT - I

1 (a) Explain assessment procedure for evaluation of damages in concrete structures and name the various testing system of concrete structures. (6)

Turn Over

(b) Explain the importance and classification of maintenance with various inspection periods. (6)

(OR)

2. Explain the various causes of permeability in concrete and how permeability can bring in damage to a concrete structures. (12)

UNIT - II

3. (a) Explain the influenced factors on serviceability and durability of concrete structures due to environment. (6)

(b) Discuss the various factors affecting permeability of concrete structures. (6)

(OR)

4. Explain the effect of the following on concrete:

(a) Climate.

(b) Chemicals and

and (c) wear. (12)

UNIT - III

5. Explain various techniques used for repair. (12)

(OR)

6. Discuss the complete procedure of epoxy injection to structural crack repair in RC structural elements. (12)

UNIT - IV

7. Explain with neat sketches, repair of chemical disruption damaged RC members by polymer based concrete. (12)

(OR)

8. Explain the types of cracks and how the cracks can be measured and reported. (12)

UNIT- V

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

(OR)

Turn Over

3551

B.E. DEGREE EXAMINATION, 2011

(CIVIL & STRUCTURAL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-803. INTERIOR DECORATION AND PLANNING

(New Regulations)

(For the students joined during 2007-08 and after)

(Common with Part-Time Seventh Semester)

November]   [Time : 3 Hours

Maximum : 60 Marks.

Answer any ONE FULL question from each Unit.
ALL questions carry equal marks.

UNIT - I

1. Explain the history of architecture with neat sketches.   (12)

(OR)

Turn Over

2. Differentiate between the terms working drawing from approval drawings with neat sketches. (12)

UNIT - II

3. Write short notes on : (12)

    (a) Nature.

    (b) Climate.

    (c) Topography.

(OR)

4. What are the principles of anthropometrics and ergonomics theory ? (12)

UNIT - III

5. What are the procedure for design of auditorium ? (12)

(OR)

6. Explain the principles of modular kitchen and its advantages. (12)

UNIT - IV

7. Explain briefly the influential factors of naure in interior planning of buildings. (12)

(OR)

8. How will you enforce the town planning schemes ? (12)

UNIT - V

9. Why ventilation is necessary in buildings ? How is it taken care in building ? (12)

(OR)

10. How organization of space influences the aesthetics and architecture of landscape design? (12)

B.E. DEGREE EXAMINATION, 2011

(CIVIL, CIVIL AND STRUCTURAL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-803.ARCHITECTURE

(Elective-I)

(Old Regulation)

(For the students joined during 2006-07 and before)

Nov.)
(Time: 3 Hours

Maximum: 60 Marks

Answer any ONE FULL question from each unit

All questions carry equal marks

UNIT-I

1. Describe the procedure to design a landscape plot with topographical features.

2. How the personality of customer influence the new trends in architectural design.

UNIT-II

3. How the architectural drawings are showing the presentation of plan with illustration of three dimensional space?

4. Explain the principles of composition and contrast proportion.

UNIT-III

5. Describe how the historical development of architecture is still growing and analyse the causes.

6. Why the conventional doors and windows are available even in the modern architectural buildings? What are the advantages? Explain with sketches.

UNIT-IV

7. Describe the primary considerations in planning of the residential building without affecting the family style of life.

8. Explain the detail to design a auditorium with out any acoustic problems.

UNIT-V

9. Explain various aspects of drawings which are exposing relative size, aerial positioning and atmospheric effects.

10. Describe the line sketches of a residential building and list the general idea of perspective drawing.

******

3 5 5 2

B.E. DEGREE EXAMINATION, 2011

(COMMON TO ALL BRANCHES)

(EIGHTH SEMESTER)

CLEC-804. ETHICS IN ENGINEERING

(New Syllabus)

(For the students joined during 2007-08 and after)

November]   [Time : 3 Hours

Maximum : 60 Marks.

Answer any ONE FULL question from each Unit.
ALL questions carry equal marks.

UNIT - I

1. Describe the ethical theories and their applications and discuss about their consensus and controversies.

(OR)

Turn Over

2. Explain the uses of ethical theories and testing of ethical theories, with suitable case studies.

UNIT - II

3. Describe the codes of ethics, roles of codes and limitaitons on codes.

(OR)

4. Explain assessment of safety and risk, knowledge of risk and testing for safety.

UNIT - III

5. Explain the responsibilities of engineers related to professionalism and loyalty.

(OR)

6. Describe the occupational crime by interests in other companies and discuss the gifts and bribes.

UNIT - IV

7. Explain the procedure of whistle-blowing and protecting whistle-blowers and guidelines.

(OR)

8. Describe the employee rights, employee bill of rights and basic right of professional conscience.

UNIT - V

9. Discuss the ethical climate for an engineer as manager, consultant and leader.

(OR)

10. Explain the morality of an engineer as an expert, adviser and an ideal of voluntary service.

3 5 5 5

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEE-806. SOLID WASTE AND HAZARDOUS WASTE MANAGEMENT

(New Regulations)

(Elective - V)

(For the students joined during 2007-08 and after)

November]   [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) Classify the materials comprising the municipal solid waste.   (6)

Turn Over

(b) What are the functional elements of an effective solid waste management systems? (6)

(OR)

2. (a) Discuss the various factors that affect the generation of solid wastes. (6)

(b) How will you estimate quantity of solid waste generation from a community ? (6)

UNIT - II

3. (a) What do you mean by break even point analysis ? Where and why it is adopted in an effective solid waste management system ? (6)

(b) Define the four step process in layout of collection routes of solid waste management. Explain them in detail. (6)

(OR)

4. (a) Differentiate the term incineration from pyrolysis in solid waste management system and explain them in detail. (6)

(b) What do you mean by combustion of waste materials and explain the various fundamental laws behind it ? (6)

UNIT - III

5. (a) Write short notes on hand fill sealants for the control of gas and leachate movement in landfills. (6)

(b) Explain the operations involved in closure of landfills. (6)

(OR)

6. (a) Write the advantages and disadvantages of sanitary landfills. (6)

(b) Explain the important factors that must be considered in the design and operation of landfills. (6)

UNIT - IV

7. (a) What do you mean by EIA ? How will you conduct an EIA with respect to improper handling and disposal of solid waste. (8)

Turn Over

(b) What do you mean by electromechanical seperation in solid waste management ? Explain. (4)

(OR)

8. (a) Draw a neat flow diagram and explain how the recovery of waste components seperated out from solid waste. (6)

(b) Write short notes on land sorting, shredding in solid waste management. (6)

UNIT - V

9. (a) Explain the various design consideration for the anaerobic composting process of solid waste. (6)

(b) Write short notes on : (3×2)

(i) Mechanised composting plants.

(ii) Indore method of refuse disposal.

(OR)

10. (a) Estimate the amount of air required to oxide completely one tonne of waste having the chemical equation $C_{50}H_{100}O_{40}N$. (6)

(b) Write short notes on : (3×2)

(i) C/N ratio and its importance.

(ii) Bangalore method of refuse disposal.

B.E. DEGREE EXAMINATION, 2011

(CIVIL ENGINEERING)

(EIGHTH SEMESTER)

CLEC-806/PCLEC-703. PRE STRESSED CONCRETE

(Common with Part-Time Seventh semester)

Nov.]   [Time : 3 Hours

Maximum : 60 Marks

Answer any ONE FULL Question from each unit

UNIT-I

1. a) Enumerate the advantage of pre-stressed concrete with suitable reasons. (6)

    b) Explain the basic concept of pre-stressing. (6)

2. a) Distinguish between pre-stressing and post tensioning. (4)

    b) Explain how to compute the loss of stress due to elastic deformation of concrete. (8)

UNIT-II

3. A pretensioned T section has a flange 1200mm wide and 150mm thick. The width and depth of the rib are 300mm and 1500mm respectively. The high tensile steel has an area of 4700mm^2 and is located at an effective depth of 1600mm. If the characteristic cube strength of concrete and the tensile strength are 40 and 1600 N/mm^2 , Calculate the flexural strength of T-Section. (12)

4. The support section of prestressed concrete beam 100mm wide by 250mm deep is required to support an ultimate shear force of 80kN. The compressive prestress at the centroidal axis is 5N/mm^2. The characteristic cube strength of concrete is 40N/mm^2 and tensile strength of stirrups is 415N/mm^2. Design suitable shear reinforcements in the section using IS code recommendation. (12)

UNIT-III

5. A prestressed I section of minimum overall depth 300mm is required to have an ultimate flexural strength of 90kN-m. Find (a) suitable minimum dimensions of the flange, and (b) the total number of 5 mm wires required in the bottom flange. The cube strength of concrete is $60N/mm^2$ and the tensile strength of steel is $1600N/mm^2$. (12)

6. Design a precast prestressed inverted T section to be used in a composite slab of total depth 600mm and width 300mm. The composite slab is required to support an imposed load of $16kN/m^2$ over a span of 14m. The compressive stress in concrete at transfer and the tensile stress under working loads may be assumed to be 20 and $1N/mm^2$ respectively. The loss ratio is 0.85. Determine the prestressing force required for the section. (12)

UNIT-IV

7. A continuous beam ABC (AB=BC=10m) has a uniform rectangular cross section, 100mm wide and 300mm deep. A cable carrying an effective prestressing force of 360kN varies linearly with an eccentricity of 50mm towards soffit at the end supports to 50mm towards the top of beam at mid support B. Determine the resultant moment at B due to prestressing. (12)

8. a) What are concordant cables? Sketch a typical concordant cable profile in a two span continuous prestressed concrete beam. (4)

   b) Briefly explain the various steps involved in the design of continuous prestressed concrete beams and portal beams. (8)

UNIT-V

9. A prestresed concrete pipe of 1.2m dia and a core thickness of 75mm is required to withstand a service pressure intensity of $1.2N/mm^2$. Estimate the pitch of a 5mm diameter high tensile wire winding if the initial stress is limited to $1000N/mm^2$ Permissible stresses in concrete are $12.5N/mm^2$ in compression and zero in tension. The loss ratio is 0.8. If the direct tensile strength of concrete is $2.5N/mm^2$, estimate the load factor against cracking. (12)

10. A multi-storeyed building is to be supported on concrete pile foundation. The piles have an effective height of 5m and they have to support a total axial service load of 1100kN together with a moment of 37.5 kN-m. Design the suitable pile to support these loads, assuming a uniform load factor of 2 against collapse. (12)