F 6799 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Seventh Semester

Branch—Civil Engineering

CE 010 704—ARCHITECTURE AND TOWN PLANNING (CE)

[New Scheme—2010 Admission onwards]

(Regular/Supplementary)

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Explain the concept of activity space.
2. Explain general requirement of site.
3. Explain moving walk.
4. Explain objectives of town planning
5. Explain land acquisitions.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Explain factors influencing architectural development.
7. Functional planning of institutional building.
8. Sketch the layout details of metal stair.
9. Explain the requirement of new towns.
10. Explain master plan.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*

Each question carries 12 *marks.*

11. Explain the theory of architectural design.

Or

12. Explain the characteristics of form and form expressive of function.

13. Explain the functional planning of a commercial building with circulation diagram.

Or

14. Write a note on :

    (i) Building codes and rules.

    (ii) Linkages.

15. Explain summer and winter air conditioning systems.

Or

16. (a) What are the design constraints of a passenger elevator ?

    (b) Explain the design constraints of elevators.

17. Explain land use planning and theories.

Or

18. Write a note on following :

    (i) Transport Planning.

    (ii) Comprehensive Planning.

19. Explain slum clearance schemes and their causes.

Or

20. Explain planning standards for industries and commerce building.

(5 × 12 = 60 marks)

F 6812 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Seventh Semester

Branch : Civil Engineering

CE 010 705—TRANSPORTATION ENGINEERING—II (CE)

(New Scheme—2010 Admission onwards)

(Regular/Supplementary)

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Discuss the classification of Highways.
2. Explain Compound Curve and its application in Highway Alignment.
3. Explain Traffic Signs.
4. Explain different types of failures in Flexible Pavement.
5. Explain Zoning Laws.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Sketch and explain the Typical Cross Section of roads in Urban area.
7. Explain Valley Curve and its Alignment.
8. Write short note on Road Markings.
9. Explain Bituminous Surface Dressing.
10. Write short note on Navigational Aids.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 12 *marks.*

11. Explain the procedure for Alignment of Roads. State the factors controlling Alignment of Roads.

Or

12. Explain overtaking Zone requirements. Calculate the overtaking sight distance and minimum length of overtaking Zone if the speed of the overtaking and overtaken Vehicle are 100 and 70 kmph respectively on a two way traffic road. The acceleration of the overtaking Vehicle is 1.2 m/sec^2.

13. Define Super Elevation. Discuss the necessity of Super Elevation in Road Curves. Derive an equation for Super Elevation on Horizontal Curves.

Or

14. Explain Gradient and Grade Compensation in Alignment of Curves. Fine the Gradient to be provided on a curve of radius 16M when ruling Gradient is 3%.

15. Explain the necessity of Traffic Studies and their applications.

Or

16. Explain different types of Road Intersections.

17. Explain CBR method of design of Flexible Pavements.

Or

18. Explain the Necessity, Importance, DesignProcedure and Alignment of Highway Drainage.

19. Explain Aircraft characteristics and Air Port Planning.

Or

20. Explain Air Port Lighting. Discuss the specifications for Runway approaches, Taxiways and Apron lighting.

(5 × 12 = 60 marks)

F 6832 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Seventh Semester

Branch : Civil Engineering

CE 010 706 L02—GROUND IMPROVEMENT TECHNIQUES (Elective II) [CE]

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 *marks.*

1. Enlist and briefly explain the classification of ground improvement techniques.
2. Write a note on "Thermal Stabilization".
3. Differentiate between "suspension grout and Solution grout".
4. List the applications of "Grouting".
5. Write a short note on application of "Filters" in ground modification.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*

Each question carries 5 *marks.*

6. Write a note on Dynamic compaction. On which type of soil can this method be adopted ?
7. Explain the principle behind Bituminous stabilization over lime stabilization.
8. What do you mean by "grouting" ? Write the importance of grout hole pattern.
9. What do you mean by Soil Reinforcement ? Explain its mechanism.
10. Write a note geotextiles in landfills.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*

Each full question carries 12 *marks.*

11. Explain with a help of neat sketches Vibro-compaction method. Also mention the benefits.

Or

12. With the help of diagram describe "stone column methods" of densifying soil layer. For which type of soil is this method suitable?

13. Explain the chemistry of lime stabilization. How is the optimum lime content decided ? Write the application of lime stabilization.

Or

14. Describe the various steps involved in cement stabilization.

15. Describe the process involved in "injection method".

Or

16. Explain "Compaction grouting" and "Jet grouting".

17. With neat sketches explain in detail the various applications of reinforced earth for ground improvement.

Or

18. Write a note on "Tie back analysis" and " Coherent gravity analysis".

19. What is the role of geosynthetics in protecting soil from contamination ? Describe in detail.

Or

20. Explain the use of geo-synthetics in landfills.

(5 × 12 = 60 marks)

F 6770 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Seventh Semester

Branch : Civil Engineering

CE 010 702—ENVIRONMENTAL ENGINEERING–I (CE)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Mention the factors that influence percapita demand.
2. What are the different materials which are commonly used for water supply pipes ?
3. Enlist the chemicals which are used for coagulation.
4. Explain breakpoint chlorination and super chlorination.
5. What are the objectives of a distributor reservoirs.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. The water demand changes from season to season and hour to hour. Give reasons.
7. What are the ways in which storage affect the quality of water.
8. How is the optimum dose of coagulant determined.
9. What are the major requirements of a disinfectant.
10. How will you estimate the quantity of water to be stored in the distribution reservoir.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each full question carries 12 *marks.*

11. What are B-Coli ? Why is their presence tested in water that is supplied for domestic consumption.

Or

12. Population of a locality as obtained from census report is as follows :

Year	1991	2001	2011	2021	2031
Population (Thousands)	350	466	994	1560	1620

Estimate the population in 2041 by using incremental method, and geometrical increase method.

13. What is an intake ? Enlist the various types of intakes and discuss in details any two of them.

Or

14. Explain the various methods of testing water mains for pressure and leakage.

15. Draw a neat sketch of a sedimented tank in which coagulation is used. Compute the dimension of continuous flow rectangular settling tank for a population of 20,000 persons with a daily percapita water allowance of 120 litres. Assume detention period to be 6 hours.

Or

16. Determine the quantity of alum required in order to treat 13 million litres of water per day at a treatment plant, where 12 ppm, of alum dose is required. Also determine the amount of carbon dioxide gas which will be released per litre of water treated.

17. Discuss the use of chlorine as disinfecting agent with references to :
    (1) Its doses.
    (2) Testing its residuals.
    (3) Its disinfecting action.
    (4) Its forms.

Or

18. Describe with a neat sketch the working of a pressure filter what are the relative advantages and disadvantages of this type over those of gravity filter.

19. Explain the Hardy Cross method used for pipe network analysis in water distribution network.

Or

20. Explain the various layout of a water distribution system, Also mention its advantages and disadvantages.

(5 × 12 = 60 marks)

F 6833 (Pages : 3) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2017

Seventh Semester

Branch : Civil Engineering

CE 010 706 L03—PRESTRESSED CONCRETE (Elective II) (CE)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours Maximum : 100 Marks

Use of IS code 1343 *is permitted.*

Part A

Answer **all** *questions.*
Each question carries 3 *marks.*

1. Explain basic concept of prestressing.
2. Define internal resisting couple.
3. Explain loss due to elastic shortening in prestressed concrete.
4. Define ultimate moment of resistance.
5. Explain concordant cable profile.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 *marks.*

6. Explain systems of prestressing.
7. Explain load deflection curve.
8. Explain shrinkage in concrete. Discuss losses due to shrinkage in prestressed concrete.
9. Discuss the action of torsion on prestressed concrete beams.
10. Explain secondary moment and evaluation of secondary moment.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 12 *marks.*

11. List the materials required for prestressed concrete. Explain the properties of materials used for prestressed concrete.

Or

12. Briefly explain the modes of failure of prestressed concrete.

13. Explain the concept of load balancing. A simply supported beam of pre-stressed concrete spanning over 10 m is rectangular in section 500 mm wide and 800 mm deep. The beam is prestresses by a parabolic cable having an eccentricity of 210 mm at the centre of the span and zero at end supports. The effective force on the cable is 1800 kN. If the beam supports a total uniformly distributed load of 50 kN/m including the self weight of the beam, calculate the force required in the cable having the same eccentricity to balance a total load 50 kN/m.

Or

14. Define creep ratio and loss ratio. A concrete girder of unsymmetrical-section for a bridge spans over 36 m and its self weight is 10 kN/m. The girder is prestressed by a parabolic cable having an eccentricity of 600 mm at centre of span and 200 mm at supports towards the soffit of the girder. The initial force in the cable is 3000 kN. If the loss ratio is 0.85 and the creep coefficient is 1.6, modulus of elasticity of concrete is 32 kN/sqmm. estimate the long term deflection of the bridge girder. Assume second moment of inertia as 72×10^9 mm^4 and live load is 12 kN/m.

15. Design a suitable section for the tie member of a truss to support a maximum design tensile force 250 kN. The permissible compressive stress in concrete at transfer is 16 N/mm^2 and no tensile stresses are permitted under working loads. Loss ratio is 0.8. High tensile wires of 7 mm. diameter tensioned to 1000 N/mm^2 is used. Fp = 1600 N/mm^2. The direct tensile strength of concrete is 3 N/mm^2. Load factor against collapse = 1.5 and load factor against cracking = 1.25.

Or

16. A straight pretensioned member 16 meters long with a cross-section of 400 mm × 400 mm is concentrically prestressed with 900 mm^2 of steel wires which are anchored to the bulkheads with a stress of 105kN/cm^2. Taking the modular ratio as 6, determine the loss of prestress due to elastic shortening of concrete at the transfer of prestress.

17. A prestressed concrete beam of uniform rectangular cross-section and span 15 metres supports a total distributed load of 272 kN excluding the weight of the beam. Determine the suitable dimensions of the beam and calculate the area of the tendons and their position. The permissible stresses are 1400 kN/cm^2 for concrete and 105 kN/cm^2 for the tendons.

Or

18. A prestressed concrete T beam is to be designed to support an imposed load of 4.5 kN/m over an effective span of 5 M. The T beam is made up of a flange 400 mm. wide and 400 mm. thick. The rib is 100 mm wide and 200 mm. deep. The stress in concrete must not exceed 15 N/sqmm. in compression and zero in tension at any stage. Check for the adequacy of the section provided, and calculate the minimum prestressing force necessary and corresponding eccentricity. Assume loss of prestress equal 20 %.

19. A pre stressed concrete beam 250 mm wide and 600 mm deep is subjected to an axial compressive force of 1500 kN. Design the and block.

Or

20. A continuous two equal-span prestressed concrete beam, ABC (AB = BC = 12 M) has a uniform rectangular cross-section with a width of 120 mm and depth 320 mm. The cable carrying an effective prestressing for of 400 kN parallel to the axis of the beam and located at 100 mm. from the soffit. Locate the resultant line of thrust through the beam AB.

(5 × 12 = 60 marks)