

G 1048

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Branch : Civil Engineering

CE 010 702—ENVIRONMENTAL ENGINEERING—I (CE)

(New Scheme—2010 Admission onwards)

[Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What are the factors affecting per capita demand ?
2. What is the function of Intake ?
3. Define flocculation.
4. Write down the types of Chlorination.
5. What are the methods of deflouridation.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain in detail about the variations in demand.
7. How testing of pipe lines are done ?
8. Explain briefly about flocculator.
9. Explain the process disinfection and list out the disinfectants used.
10. What are the methods available for detecting leakage in distribution pipes ? Explain any *one* method.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. Explain in detail about the physical characteristics of Water.

Or

Turn over

12. The population of 5 Decades from 1930 to 1970 are given below. Find out the population after one, two and three decades, by using geometric increase method ?

Year	...	1930	1940	1950	1960	1970
Population	...	25000	28000	34000	42000	47000

13. Explain the working principle of centrifugal pump.

Or

14. Explain the factors governing the location of an Intake.

15. Explain sedimentation aided with coagulation and list out the coagulants used.

Or

16. Explain how the dosages of coagulants are determined in laboratory.

17. Briefly explain about operation and cleaning of slow sand filters.

Or

18. Explain Break point chlorination and super chlorination.

19. Explain in detail about the system of distribution of water.

Or

20. Explain the methods of controlling corrosion in metal pipes.

[5 × 12 = 60 marks]

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Reg. No.....

Name.....

B.TECH DEGREE EXAMINATION, MAY 2015

Sixth Semester

Branch : Civil Engineering

CE 010 601—DESIGN OF STEEL STRUCTURES (CE)

(New Scheme—2010 Admission onwards)

[Regular / Improvement / Supplementary]

Time : Three Hours

Maximum : 100 Marks

*Use of IS 800 : 2007, IS 875, IS 805, IS 801, IS 811, IS 6533 Part 2 and Steel Table is permitted.
Assume any missing data suitably.*

Part A

Answer all questions.

Each question carries 3 marks.

I. Write short notes on the following terms :—

- 1 Limit state method.
- 2 Slab base.
- 3 Stay's in a water tank.
- 4 Flat width ratio.
- 5 Use of fire brick lining in a chimney.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

II. Explain briefly about :

- 6 HSFG bolt action in a lap joint.
- 7 Lacing system in a compound column.
- 8 Design steps for a circular girder.
- 9 Design step for a light gauge steel beam with laterally supported system.
- 10 Derive the stress relation for self weight, lining and wind pressure in a chimney.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. Calculate the safe tensile load carrying capacity of a angle section ISA $60 \times 60 \times 6$ mm if 4 bolts are provided at a c/c distance of 50 mm.

Or

12. Design a strut member to carry a load of 70 kN . Length of the member is 1.5 m and is connected to a gusset plate of thickness 6 mm.
13. Design a compound column section using two channel sections placed back to back to carry a load of 900 KN if both ends of the structure is hinged. Length of the member is 3 m. Also design a suitable lacing system.

Or

14. For a column section to carry a load of 1200 KN, design a suitable battening system if the columns are placed toe to toe with an effective length of 3 m.
15. Design a rectangular steel water tank upto the supporting beam for a capacity of 120 m^3 .

Or

16. Design a Circular steel water tank with hemispherical bottom for a capacity of 100 m^3 . Design upto the supporting circular girder.
17. Design a light gauge steel column section to carry a load of 300 Kg. Use *two* channel sections placed back to back without having lips. The effective length of the member is 3 m.

Or

18. Design a light gauge steel beam section laterally supported to carry a load of 50 Kn/m if the effective span is 2.5 m. Assume two channel sections with lips placed back to back.
19. Design a self supporting steel chimney if the total height is 60 m and top diameter is 2.5 m. Wind pressure of 1.5 KN/m^2 is acting uniformly for a height of 20 from bottom and after that it is uniformly varying to 1.7 KN/m^2 at the top.

Or

20. Design the Anchor bolt, breach opening , base plate, and foundation of a self supporting chimney if the total height is 25 m and top diameter is 2 m. Wind pressure of 2 KN/m^2 is acting uniformly through out the structure.

(5 × 12 = 60 marks)

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Sixth Semester

Branch : Civil Engineering

CE 010 604—TRANSPORTATION ENGINEERING—I (CE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. List out some characteristics of highways.
2. What is wave theory ?
3. List notes on tunnel surveying.
4. Explain necessity of break waters.
5. List notes on Caissons.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain about super elevation and cant deficiency.
7. List notes on track circuiting.
8. Write a brief note on drainage of tunnels.
9. Explain about some features of design of harbours.
10. List notes on (i) slip ways ; and (ii) dock entrances.

(5 × 5 = 25 marks)

Turn over

Part C

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

11. Explain :

- (i) Wear and creep of rails. (6 marks)
- (ii) Surface and elevated railways. (6 marks)

Or

12. List notes on :

- (i) Compensation of gradients. (6 marks)
- (ii) Functions of rail and sleepers. (6 marks)

13. Explain in detail about signalling and about interlocking of signals and points.

Or

14. A 5° curve diverges from a main curve of 4° in an opposite direction in the layout of a BG yard. If the speed on branch line is restricted to 50 kmph., determine speed restriction in main track. Assume permissible cant deficiency to be 7 cm.

15. List notes on :

- (i) Shield method of tunneling. (6 marks)
- (ii) Lighting of tunnels. (6 marks)

Or

16. (a) Sketch different shapes of tunnel cross-section generally followed. (6 marks)

(b) List notes on tunnel lining and tunnel ventilation. (6 marks)

17. Describe classification, alignment and forces acting on break waters.

Or

18. Write short notes on :

- (a) Channel demarcation. (6 marks)
- (b) Transit sheds and warehouses. (6 marks)

19. Define :

- (a) Lock and lock gates. (6 marks)
- (b) Dry and wet docks. (6 marks)

Or

20. List notes on :

- (a) Dredging and its functions. (6 marks)
- (b) Form and arrangement of basins and docks. (6 marks)

[5 × 12 = 60 marks]

G 1233

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Sixth Semester

Branch : Civil Engineering

CE 010 605—WATER RESOURCES ENGINEERING (CE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What do you mean by base period or base of the crop ?
2. List the methods of estimating runoff.
3. What is meant by coefficient of transmissibility ?
4. Write a note on infiltration gallery.
5. Define balancing depth.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. State the different modes of irrigation.
7. Explain hydrological cycle and its components.
8. State and explain Dupuit's theory of aquifers.
9. Differentiate between Bed load and Suspended load.
10. Which are the factors governing the site selection of a reservoir ?

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. Discuss on the historical development of irrigation in India through ages.

Or

Turn over

12. 800 m^3 of water is applied to a farmer's rice field of 0.6 hectares. When the moisture content in the soil falls to 40 % of the available water between the field capacity (36 %) of soil and permanent wilting point (15 %) of the soil crop combination, determine the field application efficiency. The root zone depth of rice is 60 cm. Assume porosity = 0.4.
13. Define a "Unit hydrograph" and explain how is it used to estimate the flood hydrograph of a stream of a given magnitude and of the same duration.

Or

14. What is meant by "Design flood" and what is its importance ? Enumerate the various methods used for estimating the design flood discharge from a certain catchment.
15. Distinguish between non-equilibrium and equilibrium conditions in an aquifer from which water is drawn through a well. Explain when the above conditions are expected in an aquifer.

Or

16. Discuss briefly the design principles involved in the design of a strainer type of a tube well.
17. Explain in detail the classification of canals and their alignment.

Or

18. What do you mean by a canal outlet ? State the requirements of a good canal outlet. Which are the different types of canal outlets ?
19. Explain in detail the calculation of reservoir capacity and safe yield from mass inflow curve.

Or

20. What do you mean by flood control ? What are its causes ? State the methods of flood control and principles of flood routing.

(5 × 12 = 60 marks)

G 1249

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Sixth Semester

Branch : Civil Engineering

CE 010 606 L05—CONCRETE TECHNOLOGY (Elective I) (CE)

(New Scheme—2010 Admission onwards)

[Regular / Improvement / Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

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

I. Write short notes on the following terms :—

- 1 Grading of aggregate.
- 2 Workability.
- 3 Water-cement ratio.
- 4 Durability.
- 5 Light weight concrete.

(5 × 3 = 15 marks)

Part B

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

II. Write short notes on the following terms :—

- 6 Flakiness Index.
- 7 Air entraining agents.
- 8 Factors affecting Modulus of Elasticity.
- 9 Thermal properties of concrete.
- 10 Ferrocement.

(5 × 5 = 25 marks)

Part C

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

11. Describe the various test for finding the properties of cement.

Or

12. Describe the various test for determining the quality of aggregate to be used for concreting work

Turn over

13. Explain the term workability and enumerate the various factors affecting workability.

Or

14. What is meant by curing of concrete ? Explain the various methods to do it.

15. Explain the factors affecting the strength of concrete.

Or

16. Explain the terms Creep and Shrinkage . What are the factors affecting these parameters ?

17. Briefly explain the effect of sea water in concrete work. What is meant by sulphate attack ?

Or

18. Describe briefly the different tests to be conducted in hardened concrete.

19. Explain the term no fine concrete. How is it made in practice ? State the advantages of this type of concrete.

Or

20. Explain Special concreting methods adopted in extreme weather conditions.

(5 × 12 = 60 marks)

G 1201

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2015

Sixth Semester

Branch : Civil Engineering

CE 010 602—GEOTECHNICAL ENGINEERING—II (CE)

(New scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

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

1. Define bore log.
2. What are the uses of sheet pile walls ?
3. Explain sand drains.
4. Explain functions of foundation.
5. What are the uses of piles ?

(5 × 3 = 15 marks)

Part B

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

6. How would you assess the degree of disturbance of a given soil sample.
7. Write a note on pressure bulb.
8. Write a note on vibroflotation.
9. Write down the factors to be considered in selecting the right type of foundation.
10. Write a note on negative skin friction.

(5 × 5 = 25 marks)

Part C

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

11. (a) Explain SPT N-value. Also explain the corrections to be applied. (6 marks)
- (b) Write down the objectives of site investigation. (6 marks)

Or

Turn over

12. (a) Derive the expression for stress at any depth due to live load. (7 marks)
 (b) Write a note on Newmark's Chart. (5 marks)
13. (a) Describe Coulomb's wedge theory. Explain how maximum active pressure is determined. (6 marks)
 (b) Compute the intensity of passive earth pressure at a depth of 8 m in a cohesionless sand with an angle of internal friction of 30° when water rises to the ground level. Saturated unit weight of sand is 21 kN/m^3 , $\gamma_w = 9.81 \text{ kN/m}^3$. (6 marks)

Or

14. (a) Explain common types of sheet piles. (6 marks)
 (b) Write a note on sheeting and bracings in excavations. (6 marks)
15. (a) Write down the methods of reducing differential settlement. (4 marks)
 (b) A strip footing of 2 m width is founded at a depth of 4 m below the ground surface. Determine the let ultimate bearing capacity using Terzaghi's equation. The soil is clay ($\phi = 0$, $c = 10 \text{ kN/m}^2$). The unit weight of soil is 20 kN/m^3 . (8 marks)

Or

16. (a) A circular footing of diameter 3 m is founded at a depth of 1.5 m in medium stiff clay soil having an unconfined compressive strength of 175 kPa. Determine the net page bearing capacity of footing with the water table at G.L by Skempton's bearing capacity analysis. Given that $\gamma = 21 \text{ kN/m}^3$, $N_c = 7$, $F_3 = 3$. (8 marks)
 (b) Write a note on bearing capacity factors. (4 marks)
17. (a) Enumerate the advantages and limitations of various types of foundation. (5 marks)
 (b) A square column $300 \times 300 \text{ mm}$ carries a dead load of 1020 kN and an imposed load of 410 kN. The foundation soil has a safe bearing capacity of 200 kPa. Design square footing. (7 marks)

Or

18. Design a trapezoidal combined footing for two columns $0.2 \times 0.2 \text{ m}$ carrying loads of 0.8 MN and 0.60 MN. If the spacing between column is 4m and allowance soil pressure is 250 kN/m^2 and length of footing is 5 m. (12 marks)

19. (a) Design a fiction pile group to carry a load of 3000 kN in a clay larger of 20 m depth underlain by rock. The unconfined compressive strength of the soil is 80 kN/m^2 . Take factor of safety value as 2.5. (8 marks)
 (b) Write a note on pile load test. (4 marks)
- Or
20. Explain construction details of well foundation. (12 marks)

[5 × 12 = 60 marks]