

Roll No.

3303

**B. Tech. 6th Semester (Civil)
Examination – May, 2026**

IRRIGATION ENGINEERING

Paper : PCC-CE-302-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is **compulsory**. All questions carry equal marks.

1. Describe the following :

15

- (a) Energy dissipator
- (b) Stilling basin
- (c) APM outlet
- (d) Duty and delta
- (e) Bank protection

3303-1450-(P-3)(Q-9)(26)

P. T. O.

SECTION - A

2. What do you mean by irrigation and what are the various method of irrigation ? Define crop period and base period. 15
3. (a) Explain soil moisture relationship with neat diagram. 7.5
- (b) Explain the different crop seasons in India. 7.5

SECTION - B

4. Define canal fall. Also explain its type with neat sketch. 15
5. Design a suitable cross drainage work, given the following data at the crossing of a canal and a drainage. 15

For Canal : Full supply discharge = 32 cumec

Full supply level = R.L 213.5

Canal bed level = R.L 212 m

Trapezoidal canal section with 1.5H : 1v slopes

Canal water depth = 1.5 m

For Drainage : High flood discharge = 300 cumecs

High flood level = 210 m

High flood depth = 2.5 m

Ground level = 212.5m

SECTION - C

6. What do you mean good module ? What are the essential requirement of good module ? Also explain the type of outlets. 15
7. Define spillway. Enumerate the various types of spillways and how are they selected for individual condition. 15

SECTION - D

8. What is meant by water logging ? What are the causes, effect and prevention of water logging ? 15
9. Define water reclamation. What are the process and method of land reclamation ? 15

Roll No.

3304

B. Tech. 6th Semester (Civil)

Examination – May - 2026

FOUNDATION ENGG.

Paper : PCC-CE-304-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all. Question no. 1 is *compulsory*. Attempt *one* question from each Section. All questions carry equal marks.

1. Answer the following : $2.5 \times 6 = 15$
- (a) What is scope of soil investigation ?
 - (b) What are the advantages of SCPT over SPT ?
 - (c) In what local shear failure is different from general shear failure ?
 - (d) Differentiate between shallow and deep foundations.

3304-1556(P-3)(Q-9)(26)

P. T. O.

- (e) What are the recommended tolerances for tilts and shifts of well foundations according to IS: 3955 ?
- (f) Define secondary compression settlement.

SECTION - A

- 2. (a) Discuss various parameters which affect sampling of soil samples. 5
- (b) Explain Standard Penetration test in detail. Discuss the corrections applied to SPT N Value. 10
- 3. (a) Discuss in detail advantages and disadvantages of open sump and ditches. 8
- (b) Write short note on Electro Osmosis. 7

SECTION - B

- 4. (a) What are different types of shallow foundations ? Explain with the help of sketches. 8
- (b) What is the effect of rise of water table on the bearing capacity and the settlement of a footing on sand ? Explain in detail. 7
- 5. (a) Discuss various causes of Settlement of Foundation. 8
- (b) What are the key factors influencing the bearing capacity of foundations ? 7

3304- (P-3)(Q-9)(26) (2)

SECTION - C

- 6. (a) A strip footing 2m wide and founded at a depth of 2m in a soil of unit weight 20 kN/m^3 and a cohesion of 10 kN/m^3 . Determine the increase in the bearing capacity when ϕ is increased from 20 to 25 degree. Use Terzaghi's equation. Assume local shear failure. 10
- (b) Can you discuss the principles and applications of floating foundations in engineering projects ? 5
- 7. (a) What is negative skin friction ? Why negative skin friction is developed in the pile ? 8
- (b) When tension and laterally loaded piles are used ? Mention the type of structures where these piles are used. 7

SECTION - D

- 8. (a) What are the factors affecting the settlement of structures supported by drilled piers ? 10
- (b) What equipment and materials are typically used during the construction of drilled piers ? 5
- 9. (a) What methods are used for sinking well foundations into the ground ? 8
- (b) What are the key factors considered in the design of well foundations ? 7

3304- (P-3)(Q-9)(26) (3)

Roll No.

3305

**B. Tech. 6th Semester (civil)
Examination – May, 2026**

HIGHWAY ENGINEERING-II

Paper : PCC-CE-306-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Answer the following question briefly : $2.5 \times 6 = 15$

- (i) Sketch the cross-section of flexible pavement and name all its parts.
- (ii) Define vehicle operating cost.
- (iii) What are the functions of surface dressing ?

3305-1400(P-3)(Q-9)(26)

P. T. O.

- (iv) Discuss the importance of compaction during the construction of highway subgrade.
- (v) How are temperature correction applied in BBD studies ?
- (vi) Define resisting length with reference to design of hill roads.

UNIT - I

- 2. Explain the CBR method of pavement design. How is this method useful in determination of thickness of component layers ? Also mention the advantages and disadvantages of CBR method of flexible pavement design. 15
- 3. (a) What are the objects of providing contraction joints in CC pavements ? Mention the factors to be considered. 8
- (b) What are the factors affecting temperature differential in rigid pavements ? 7

UNIT - II

- 4. Mention the specification of materials and construction steps for laying pre-mix carpet and BM (Bituminous Macadam). 15

3305- (P-3)(Q-9)(26) (2)

- 5. Mention the method of construction and quality control for a granular sub base course. 15

UNIT - III

- 6. Classify different types of highway maintenance works and mention the functions of each. 15
- 7. What is leg correction during BBD studies ? How are the apparent deflection values corrected ? 15

UNIT - IV

- 8. (a) Discuss the importance of highway drainage. 6
- (b) What are the special points to be considered in the alignment of hill road ? Discuss. 9
- 9. What do you understand by Public-Private Partnership in highway development projects ? What are the common types ? 15

3305- (P-3)(Q-9)(26) (3)

Roll No.

3306

B. Tech. 6th Semester (Civil Elective-I)

Examination – May - 2026

WASTE WATER TREATMENT

Paper : PEC-CEEL-302-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all. Question no. 1 is *compulsory*. Attempt *one* question from each Section. All questions carry equal marks.

1. Define :

2.5 × 6 = 15

- (a) Sewerage system
- (b) Oxygen demand
- (c) Skimming tank
- (d) Sewage farming

3306-950-(P-3)(Q-9)(26)

P. T. O.

- (e) Primary sludge
- (f) Aerobic reaction

SECTION – A

2. (a) Describe the terms sewage, sewer and sewerage. Explain the advantages and disadvantages of different types of systems. 8
- (b) What do you mean by variation in flow of sewage? Explain average flow, dry weather flow, and maximum flow? 7
3. (a) Explain the hydraulic characteristics of circular sewer sections running full or partially full. 8
- (b) Write in detail about Laying, jointing and testing process in sewers. 7

SECTION – B

4. (a) Classify the different types of systems of plumbing. Explain single stack plumbing system with neat sketch. 8
- (b) Name and explain with sketches, the different types of traps used in house sewer connections. 7
5. (a) What is BOD? Deduce an expression for the BOD with time? What are the factors on which the Deoxygenation constant (k) depends? 8

- (b) Explain the importance of determination of solids in sewage? How do you determine the suspended solids in a given sample of wastewater? 7

SECTION – C

6. Draw a flowchart of different treatment units employed in sewage treatment. Explain any four units with their functions and their efficiencies? Also, discuss their disposal of residual. 15
7. Write a short note with neat sketches :
 - (a) Trickling filter 8
 - (b) Activated sludge process 7

SECTION – D

8. Write a short note on :
 - (a) Factors affecting sludge digestion 8
 - (b) Sludge digestion tank 7
9. Explain :
 - (a) What is oxygen sag curve? Describe the curve diagram for the reoxygenation and deoxygenation in problems of stream sanitation. 8
 - (b) Discuss the self-purification of streams and sewage sickness. 7

Roll No.

3311

**B. Tech. 6th Semester (Civil) (Elective-II)
Examination – May, 2026**

REPAIR & REHABILITATION OF STRUCTURE

Paper : PEC-CEEL-312-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*. All question carry equal marks.

1. Describe the following : $3 \times 5 = 15$
- (a) Repair Materials
 - (b) Structure Health Monitoring
 - (c) Need of Repair
 - (d) Advanced Concrete
 - (e) Corrosion

3311-552 -(P-3)(Q-9)(26)

P. T. O.

SECTION – A

2. (a) Explain the process for Durable concrete Repair. 7.5
(b) Why it is necessary to upgrade the structure ? 7.5
3. (a) What are the causes of physical and chemical deterioration of concrete used ? 7.5
(b) Explain the design and construction deficiencies in detail. 7.5

SECTION – B

4. Explain the methodology to measure the cracks and its interpretation phenomenon. 15
5. Explain the destructive, semi-Destructive and Non-Destructive tests for damage assessment. 15

SECTION – C

6. Explain the different types of repair techniques used for the repair of concrete structure. 15
7. (a) Explain the seismic Retrofit of Concrete Structures in detail. 7.5
(b) Explain the conventional and advanced techniques available for strengthening. 7.5

3311- (P-3)(Q-9)(26) (2)

SECTION – D

8. Explain the importance of protection and maintenance and categories of maintenance in detail. 15
9. (a) Explain the components of structural health monitoring (SHM) and its working mechanism. 7.5
(b) Explain the working of structural health monitoring as a tool for proactive maintenance of structures. 7.5

3311- (P-3)(Q-9)(26) (3)