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QP-5384

Seat No. CE- 5th Sem

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Water Resource Engineering-I

Sub. Code: 66235/80763/81000

Day and Date: MAY ,05-05-2025 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: 1. Draw neat labelled diagrams wherever necessary
2. Figures to the right indicate full marks
3. Use of Scientific calculator is allowed

Special Inst.: Q.4 and Q.8 are compulsory. Solve any two questions from question number 1 to 3 and any two questions from question number 5 to 7.

Q1) A. Explain various methods used to calculate avaragr precipitation of the area ? [5]

B. Explain the concept of hydrological cycle along with neat skectch ? [6]

Q2) A. Describe the method of separating Base flow from Total Runoff Hydrograph ? [6]

B. The rates of rainfall for sucessive 30 minutes period of a four hours storm are 3.5, 4.5, 5.6, 8.5, 7.8, 6.4, 4.0 and 3.8 cm/h. taking Phi index as 5cm/h, calculate W index ? [6]

Q3) A. Define various time parameters used in hydrograph analysis ? [5]

B. Define Standard Project flood (SPF), maximum Probable flood (MPF) and Design Flood ? [6]

Q4) Write a note on:(Solve any two) [12]

a. Types of raingauges [6]

b. Factors affecting Runoff [6]

c. Flood discharge by rational formula [6]

Q5) A. Explain with neat sketch Occurrence, Distribution, and classification of ground water ? [5]

B. Derive the equation for discharge well penetrating through a confined aquifer ? [6]

Q6) A. What is mean by irrigation? what is necessasity of irrigation in india ? [6]

B. Explain in detail general layout, main components & functioning of Percolation tank and KT weir ? [6]

Q7) A. Explain various factors affecting duty ? [5]

B. Define Duty, Delta & Base period ? Derive relation duty delta and base period ? [6]

P.T.O.

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Q8) Write short note on:(Solve any two) [12]

a. Methods of improving duty [6]

b. Depth and frequency of irrigation [6]

c. Percolation tank [6]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (66235) Water Resource Engineering-I Part 3 SEM 5
2] (101) Bachelor of Engineering (81000) Water Resource Engineering-I Part 3 SEM 5
3] (1154) B.Tech. CBCS (80763) Water Resource Engineering-I Part 3 SEM 5

Seat No.	CE-5th-Sem

SQ-80

Total No. of Pages : 3

T.Y. B.Tech. (Semester -V) (CBCS)

Examination, May-2025

CIVIL ENGINEERING

Design of Steel Structures

Sub. Code : 80764/66236/81001

Day and Date : Tuesday, 06/05/2025 **Total Marks : 70**

Time : 02:30 p.m. to 05:00 p.m.

Instructions :
1) **IS:800-2007 is permitted in examination.**
2) **Q.No. 1 and Q.No. 5 are compulsory.**
3) **Attempt any two questions from Q.No. 2, 3, 4, and any two questions from Q.No.6, 7, 8.**
4) **Assume suitable data if necessary and state them clearly.**
5) **Answer shall be supported by adequate sketches.**

SECTION-I

Q1) Attempt any two questions. [7]

1) What are the advantages of steel structure over other types of structures?
2) Explain step by step procedure to be followed in the design of tension member.
3) What is an angle strut? Differentiate between continuous and discontinuous strut.

Q2) A tie member of a truss consisting of an angle section ISA 90 × 90 × 6 of Fe 410 grade is welded to an 8 mm gusset plate. Design a weld to transmit a load equal to full strength of the member. Assume shop welding. [14]

Q3) Design a tension member to carry load of 190 kN by Limit state method consisting of pair of equal angles back to back connected to opposite side of gusset plate by bolt. Design connections and draw neat sketch. **[14]**

Q4) Design a double angle discontinuous strut of roof truss to carry factored load 180 kN. The length of strut between c/c of intersection is 3m, connection is bolted. Also design the connection. **[14]**

SECTION-II

Q5) Attempt any two questions. **[7]**

1) Write a note on curtailment of flange.
2) Explain the steps to be followed in design of lacing system.
3) Draw the neat sketch of crane system with all components, the typical cross sections for gantry girder.

Q6) Design a column to carry axial compression of 950 kN and having a length of 10 m. It is effectively held in position at both ends, but not restrained against rotation. Design built-up section by using two channel sections Placed Back To Back. Also design suitable lacing system. **[14]**

Q7) A simply supported beam 5m span carries a central point Ultimate load of 300 kN. The load is transfered to plate of 180 mm length. Design the section and check the section for shear and deflection. **[14]**

Q8) The Crane system has the following data. Determine the design force acting on gantry girder. **[14]**

- Crane capacity = 250kN
- Weight of crane = 250kN
- Weight of crab = 60kN

- Minimum hook Approach = 1.2m
- Wheel base = 3.2m
- Spacing of columns = 6m
- Weight of rail section = 0.3kN/m
- Crane is electrically operated.

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SQ-83

Seat No.	CE-5th-Sem

Total No. of Pages : 03

T.Y.B.Tech (CBCS) (Semester-V)

Examination, May, 2025

Civil Engineering

PCC-CV503 : ENVIRONMENTAL ENGINEERING - I

Subject Code : 80765/66237/81002

Day and Date : Wednesday, 07/05/2025 **Total Marks : 70**

Time : 2.30 p.m. to 5.00 p.m.

Instructions : 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data if necessary and state them clearly.

4) Answer shall be supported by adequate sketches.

SECTION I

Q.1) Attempt all questions :

a) Explain meaning and acceptable limits for following water quality parameters : [6]

i) Dissolved Oxygen ii) Hardness iii) Turbidity

b) Forecast population in year 2030 from the following census record by any two methods : [6]

Year	Population
1990	41000
2000	43500
2010	47100
2020	50000

[P.T.O.]

SQ-83

Q.2) Attempt any Two :

a) Draw the flow diagram of a typical surface water treatment plant and state the function of each unit. [6]

OR

a) Design a circular sedimentation tank for a flow of 4.2 MLD, detention period is 4.5 hours and depth of water is 3.3 m.

b) Explain the principle and working of a Tube settler. [6]

Q.3) Attempt any Two :

a) Write a note on rapid sand filter. [7]

b) What is difference between disinfection and sterilization? Why disinfection is necessary? [4]

OR

b) Explain the lime soda method of water softening. What are its advantages and disadvantages?

SECTION II

Q.4) Attempt all questions :

a) State the various types of corrosion. Explain cathodic protection for corrosion control in detail. [8]

b) What is thrust block? Where is it provided? [4]

Q.5) Attempt any Two :

a) Find the equivalent length of 30 cm diameter pipe for the network mentioned in table below using Darcy's formula : [7]

Pipe	Length (m)	Dia. (mm)
AB	300	400
BC	400	300
CD	500	200
DE	600	300

OR

a) Differentiate between gravity, pumped and combined water distribution systems with figures.

b) What are basic functional and hydraulic requirements of a water distribution system? [4]

Q.6) Attempt any Two :

a) Sketch and explain : [6]

i) Air valve

ii) Sluice valve

iii) Non - return valve

b) Explain the procedure and importance of Leakage and pressure testing of newly - laid water mains [6]

c) Explain necessity and importance of water audit in water supply system. [6]

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(3)

Seat No.	CE- 5th. Sem

SQ-87

Total No. of Pages : 02

T.Y.B.TECH. (CBCS) (Semester-V)

Examination, May, 2025

CIVIL

Geotechnical Engineering - I

Subject Code : 80766/66238/81003

Day and Date : Thursday, 08/05/2025 **Total Marks : 70**

Time : 2.30 p.m. to 05.00 p.m.

Instructions : 1) All quesions are compulsory.

2) Assume suitable data wherever necessary and mentioned it boldly.

3) Figures to the right indicate full marks.

Special Inst. : 1) Use of non-programmable calculator is allowed.

Q.1) Attempt two quesions : [12]

a) Define : Three Phase System.

b) Explain :
i) Degree of Saturation ii) Air Content iii) Water Content

c) Explain : Casagrande's Plasticity Chart.

Q.2) Attempt two quesions :

a) Describe Darcy's law with its validity. [06]

b) Define lab test fordetermination of coefficient of Permeability - Constant head Permeability method with equation and diagram. [06]

c) Determine average coefficient of permeability in the horizontal direction for a deposit consisting of three layers of thickness 5 mt, 1 mt, and 2.5 mt and having the coefficients of permeability of 3×10^{-2} mm/sec, 3×10^{-5} mm/sec, 4×10^{-2} mm/sec Assume the layers to be isotropic. [06]

[P.T.O.]

SQ-87

Q.3) Attempt all the questions :

a) Describe Standard Proctor Test [06]

b) Define consolidation and Factors affecting consolidation. [05]

Q.4) Attempt any two questions :

a) Explain Equivalent point load method. [06]

b) Define Pressure distribution diagram on horizontal plane. [06]

c) A concentrated load of 22.5 kN acts on the surface of homogenous soil mass large extent Find the stress intensity at a depth of 15 mt directly under the load.
Use Boussinesq's Equation. [06]

Q.5) Attempt all the questions :

a) Explain Vane Shear test with neat diagram. [05]

b) Explain Unconfined compression test in detail. [06]

Q.6) Attempt any two questions :

a) Define Rankine's theory on Active earth pressure of cohesionless soil. [06]

b) Explain the concept, Earth Pressure at Rest. [06]

c) What are the limiting values of the lateral earth pressure at a depth of 3 meters in a uniform sand fill with a unit weight of 20 kN/M^3 and a friction angle of 35°? The ground surface is level. [06]

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(8)

SQ-95

Seat No.	CE- 5th Sem

Total No. of Pages : 02

T.Y.B.Tech. (Semester-V) (CBCS)

Examination, May, 2025

CIVIL

Waste Management [open Elective-I]

Subject Code : 80939/81006

Day and Date : Saturday, 10/05/2025 **Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Answers shall be supported by adequate sketches.

SECTION-I

Q.1) Attempt all the questions :

a) Describe waste. Explain in brief, sources of water. **[05]**

b) Define various acts and rules for waste in India. **[06]**

Q.2) Attempt any two questions : **[12]**

a) Define water Quality standards.

b) Draw flow diagram of waste water treatment plant.

c) Describe SBR Techniques in detail.

Q.3) Attempt any two questions : **[12]**

a) Draw a flow diagram of sugar industry treatment plant. And explain it in detail.

b) Write note on Equalization.

c) Explain Neutralization process in detail.

[P.T.O.]

SQ-95

SECTION II

Q.4) Attempt any two : **[12]**

a) Describe reuse of construction and Demolition waste.

b) What are collection processes of the Bio-medical waste?

c) Define collection process of municipal waste.

Q.5) Attempt all questions :

a) Describe classification of hazardous waste. **[05]**

b) What are processing techniques of hazardous waste? Explain any one in details. **[06]**

Q.6) Attempt any two : **[12]**

a) Define reuse of the E-waste products.

b) Describe composition of E-waste.

c) Define disposal techniques of the E-waste.

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QP-5857

Seat No. CE- 6th Sem

Total No. of Pages : 3

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Theory of Structures

Sub. Code: 66873/81515/81792

Day and Date: MAY ,13-05-2025

Total Marks: 70

Time: 02:30 PM To 05:00 PM

Instructions:

Special Inst.:
1) Q. No. 1 & Q. No. 5 are compulsory questions.
2) Solve any two questions from Q. No. 2 to Q. No. 4 and any two questions from Q. No. 6 to Q. No. 8.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

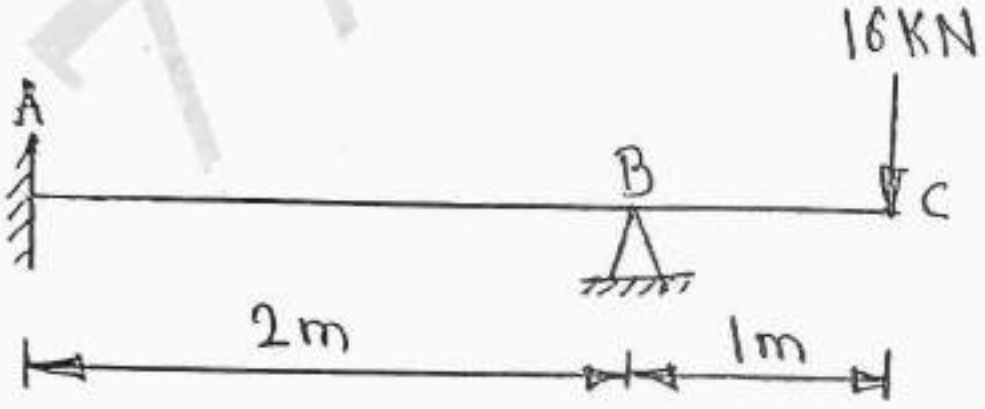
Q1) Write a short Note on following **[7]**

a. Explain in detail about various methods of structural analysis **[2]**

b. Explain in detail step by step process of Clapeyron's theorem of three moments. **[3]**

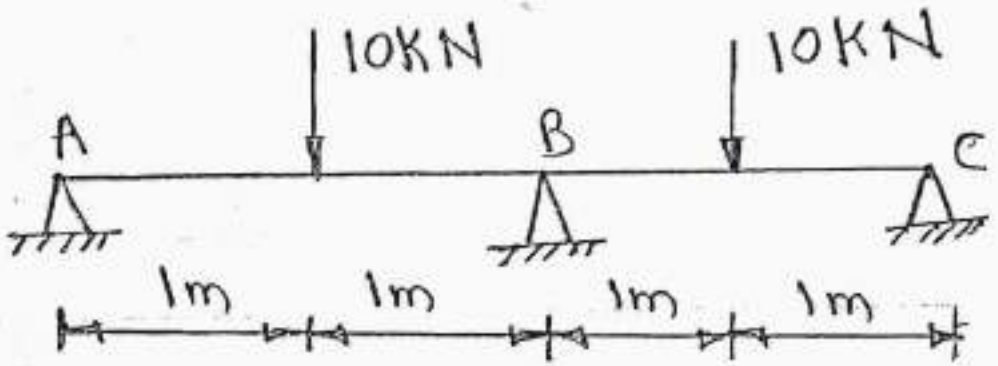
c. Explain Castiglione's energy theorem. **[2]**

Q2) Analyse the propped cantilever beam loaded as shown in the figure by using Consistent deformation method. Also draw SFD and BMD. **[14]**



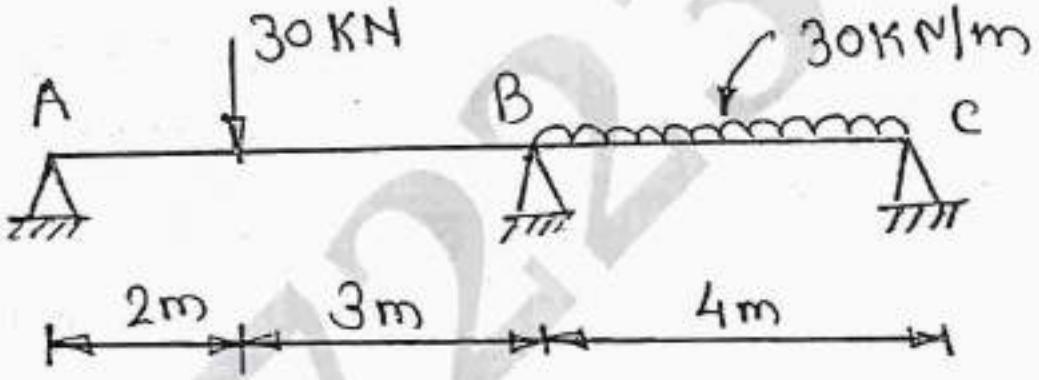
Figure

Q3) A continuous beam ABC is loaded as shown in the figure below. Find out supports moments and reactions by using Clapeyron's theorem of three moments. Also draw BMD. **[14]**



Figure

Q4) A continuous beam ABC is loaded as shown in the figure below. Find out supports moments and reactions by using Castiglione's theorem. Also draw BMD. **[14]**



Figure

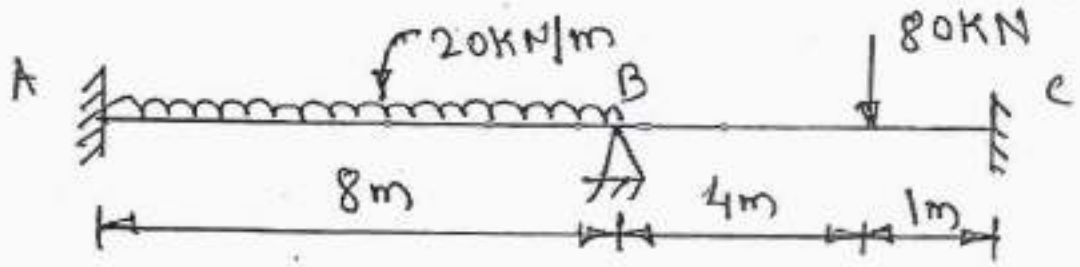
Q5) Write short note on following **[7]**

a. Explain Slope and deflection method in detail. **[2]**

b. Explain Distribution factor used in Moment distribution method. **[2]**

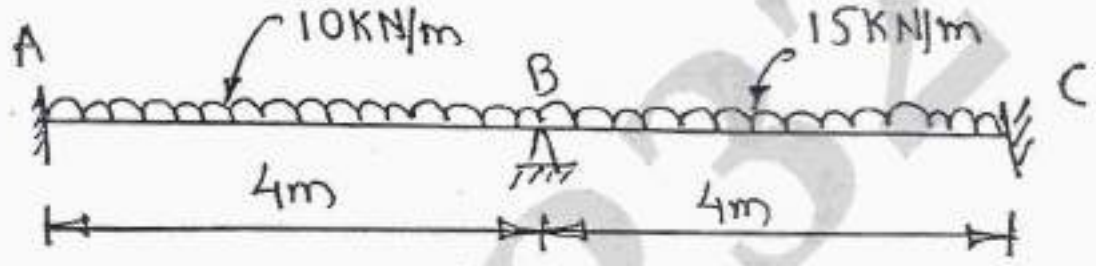
c. Explain properties of stiffness matrix. **[3]**

Q6) A continuous beam is loaded as shown in the figure below. Find out supports moments and reactions by using slope and deflection equation. Also draw BMD. **[14]**



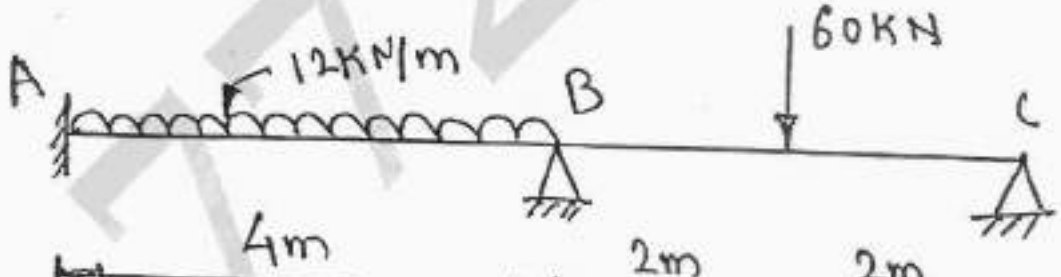
Figure

Q7) A continuous beam ABC is loaded as shown in the figure below. Find out supports moments and reactions by using moment distribution method. Also draw BMD. **[14]**



Figure

Q8) A continuous beam is loaded as shown in the figure below. Find out supports moments and reactions by using stiffness matrix method. Also draw BMD. **[14]**



Figure

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (81515) Theory of Structures Part 3 SEM 6
2] (101) Bachelor of Engineering (81792) Theory of Structures Part 3 SEM 6
3] (101) Bachelor of Engineering (66873) Theory of Structures Part 3 SEM 6

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QP-5906

Seat No. CE-6th Sem

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Geotechnical Engineering - II

Sub. Code: 66874/81518/81795

Day and Date: MAY ,15-05-2025

Total Marks: 70

Time: 02:30 PM To 05:00 PM

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks

Special Inst.: Use of non-programmable calculator is allowed.

Q1) Answer the following questions [11]

a) Write the necessity & objectives of soil exploration. (05)

b) What do you mean by RQD? Classify the rock according to RQD. (06)

Q2) Answer the following questions [12]

a) Distinguish general shear failure from local shear failure. (05)

OR

b) List and explain corrections applied to standard penetration test number (N). (05)

c) A square footing, 1.8 m × 1.8 m, is placed over loose sand of density 16 kN/m3 and at a depth of 0.8 m. The angle of shearing resistance is 30°. Nc = 30.14, Nq = 18.4, and Nγ = 15.1. Determine the total load that can be carried by the footing. (07)

Q3) Answer the following questions [12]

a) List and explain types of shallow foundations with suitability of each. (05)

OR

b) Write a note on floating foundation. (05)

c) Explain stepwise procedure for design of trapezoidal combined foundation with required equations and sketch. (07)

Q4) Answer the following questions [12]

a) What are the different types of piles according to its function ? (05)

OR

b) What is negative skin friction? What are the various causes of negative skin friction? (05)

c) A timber pile was driven by a drop hammer weighing 20 kN with a free fall of 1 m. The average penetration of the last few blows was 5 mm. What is the capacity of the pile according to Engineering News Formula? (07)

Q5) Answer the following questions [11]

a) Differentiate between the Open Caissons and Pneumatic Caissons. (05)

OR

b) Write the different types of sheet pile and their suitability. (05)

c) Name the techniques used in ground improvement and explain any one. (06)

Q6) Answer the following questions [12]

a) What are the types and causes of slope failure? (05)

b) An embankment of 10 m height is constructed in a soil having c = 0.20 N/mm2, $\varphi = 20°$ and $\Upsilon = 6$ kN/m3. Find the Factor of safety with respect to cohesion and also the critical height of the embankment. Assume Stability number = 0.05. (07)

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (81795) Geotechnical Engineering - II Part 3 SEM 6
2] (101) Bachelor of Engineering (66874) Geotechnical Engineering-II Part 3 SEM 6
3] (1154) B.Tech. CBCS (81518) Geotechnical Engineering - II Part 3 SEM 6

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(10)

SQ-112

Seat No.	CE-6th Sem

Total No. of Pages : 03

T.Y.B.Tech. (CBCS) (Semester-VI)

Examination, May, 2025

CIVIL ENGINEERING

(HM-CV602) Engineering Management

Subject Code : 81516/66875/81793

Day and Date : Monday, 19/05/2025 **Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and state them clearly.
4) Answer shall be supported by adequate sketches.

SECTION-I

Q.1) Solve the followings :

a) Explain the principal of management by Henry Fayol. [6]

b) Explain the importance of planning function in construction management. [5]

Q.2) Solve the followings :

a) Draw network, find duration. Draw critical path [7]

1) A is first work to be done
2) B and C can be done concurrently and must follow A
3) B must precede D
4) E must succeed C but it can't start until B is completed
5) The last job F depends on D and E
6) A-2, B-2, C-3, D-2, E-4, F-5.

b) Write a short note on-Work breakdown Structure with neat sketch. [5]

OR

Explain concept of Network updating.

Q.3) Attempt any Two : [12]

a) Differentiate between CPM and PERT Network.

b) Explain advantages of using "Microsoft project" software on construction projects.

c) Durations of activities of a project are given below. Draw PERT network, mark expected critical path and calculate expected project duration. Also calculate standard deviation of the project.

Activity	Duration (days)		
	To	Tm	Tp
1-2	6	9	18
2-3	3	7	17
2-4	4	10	16
2-5	2	6	16
3-5	5	10	21
4-5	6	11	22
5-6	4	7	22

SECTION II

Q.4) Solve the followings :

a) Explain EOQ with neat sketch. [06]

b) A construction company uses 1000 cement bags every year for construction activity. It requires Rs. 180 to place order. Each bag costs Rs. 320. If inventory carrying costs is 25% of an average inventory investment, determine EOQ. [06]

SQ-112

Q.5) Solve the followings :

a) Explain 'Benefit Cost Ratio' and 'Payback period' methods. **[06]**

b) By using Benefit Cost ratio method, suggest whether following project be accepted or not. Initial investment = Rs. 300000, i = 10% **[06]**

Year	1	2	3	4
Benefits (Inflows)	50000	80000	100000	150000

Q.6) Attempt any Two : **[11]**

a) Define ISO 9000. Write the benefits of ISO 9000.

b) Draw a site layout for construction of road.

c) Explain the factors considered for site layout.

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(10)

QP-6037

Seat No. CE 6th Sem

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Environmental Engineering-II

Sub. Code: 66877/81517/81794

Day and Date: MAY ,21-05-2025 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions: **1. All questions are compulsory**
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary

Q1) A. Name two most important parameter used to characterize sewage and describe their Significance. **[5]**

B. The BOD5 of waste water is determined to be 110 mg/l at 30[?]C. What would the BOD5 be if the test run at 20[?] C. Assume the deoxygenating constant k at 20[?] C is known to be 0.1 per day . **[6]**

Q2) Answer any two of the following **[12]**

a. Write the different types of bar screen and a summary of the design criteria for bar screen. **[6]**

b. Explain briefly various operational Problems commonly encountered in ASP and trickling filter. **[6]**

c. Describe ASP and give a note on modification in ASP. **[6]**

Q3) Answer any two of the following **[12]**

a. Draw a diagram and briefly write about the working process of the oxidation ditch. **[6]**

b. What is a stabilization pond ? Classify the stabilization pond and explain it in brief. **[6]**

c. Enlist all Low-cost treatment methods and Explain any one in detail. **[6]**

Q4) Answer any two of the following. **[12]**

a. Explain with a neat sketch of the D.O. Sag curve. **[6]**

b. Which activities are involved in the self-purification of the stream? **[6]**

c. Write a note on environmental legislation. (MPCB and CPCB standards.) **[6]**

S1

Q5) Answer any two of the following. [12]

a. What is solid waste management? Write a note on the source classification of SWM. [6]

b. Describe the Functional Outline of solid waste management. [6]

c. Explain with a neat diagram the term incineration. [6]

Q6) A. Define Air Pollution and write a note on Sources and classification of pollutants. [6]

B. Explain the concept and outline of EIA. [5]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (66877) Environmental Engineering-II Part 3 SEM 6
2] (101) Bachelor of Engineering (81794) Environmental Engineering-II Part 3 SEM 6
3] (1154) B.Tech. CBCS (81517) Environmental Engineering-II Part 3 SEM 6

Seat No.	CE - 4th Sem

SQ-119

Total No. of Pages : 02

T.Y.B.Tech. (Semester-VI) (CBCS)

Examination, May, 2025

CIVIL ENGINEERING

(OEC-CV605) Soil and Water Conservation Techniques

Subject Code : 81519/81796

Day and Date : Monday, 26/05/2025 **Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and state them clearly.
4) Answer shall be supported by adequate sketches.

SECTION-I

Q.1) Attempt all questions :

a) Explain concept of water conservation. **[05]**

b) Explain mechanics of soil erosion with diagram. **[06]**

Q.2) Attempt any Two :

a) Illustrate bench terracing. **[06]**

b) Explain gully control measures. **[06]**

c) State principles of gully control. **[06]**

[P.T.O.]

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SQ-119

Q.3) Attempt any Two :

a) Explain control measures for stream bank erosion. [06]

b) Elaborate on susceptible area of stream bank erosion. [06]

c) Explain impacts of stream bank erosion. [06]

SECTION-II

Q.4) Attempt all questions :

a) Write a note on percolation tank. [05]

b) Enlist water harvesting techniques. Explain any one. [06]

Q.5) Attempt any Two :

a) Explain benefits of watershed modeling. [06]

b) Differentiate between deterministic models and stochastic models. [06]

c) Classify watershed models based on type of storm event. [06]

Q.6) Attempt any Two :

a) Enlist sources of ground water and explain any one in detail. [06]

b) Explain causes of ground water depletion. [06]

c) Write a note on sources of ground water. [06]

(12)

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QP-5386

Seat No. CE-7th-Sem

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Design of Concrete Structures-I

Sub. Code: 67558/83732/84012

Day and Date: MAY ,05-05-2025

Time: 10:30 AM To 01:00 PM

Total Marks: 70

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use of Scientific calculator is allowed**

Special Inst.: **Use of IS 456:2000 is allowed**

Q1) Explain the following terms **[12]**

a. Find Xmax, Pt,lim, and Mu,lim for Fe250 and M20 grade concrete **[6]**

b. Compare Working Stress Method with Limit State Method **[6]**

Q2) A beam simply supported over an effective span of 7m carries a live load of 20kN/m. Design the beam using M20 concrete and HYSD bars of grade Fe 415. Keep the width equal to half the depth. Assume unit weight of concrete as 25kN/m3. **[12]**

OR

Design the reinforcement for a doubly reinforced concrete beam 300mm wide and 400mm deep of grade M20 to resist an ultimate moment of 150kN-m, using mild steel bars of grade Fe250.

Q3) A reinforced concrete beam 250mm wide and 400mm effective depth is subjected to ultimate design shear force of 150kN at the critical section near the support. The tensile reinforcement at the section near support is 0.5 percent. Design shear stirrups near the supports. Also, design the minimum shear reinforcement at the mid span. Assume concrete of grade M20 and mild steel bars of Fe250 grade. **[11]**

Q4) Design a RC slab for a room having inside dimensions 3m x 7m. The thickness of supporting wall is 300mm. The slab carries 75mm thick lime concrete at its top, the unit weight of which may be taken as 20kN/m3. The live load on the slab may be taken as 2kN/m2. Assume the slab to be simply supported at the ends. Use M20 concrete and Fe415 steel. **[12]**

OR

Design a dog-legged stair for a building in which the vertical distance between the floor is 3.6m. The stair hall measures 2.5m x 5m. The live load may be taken as 2500N/m2. Use M20 concrete and Fe415 steel bars.

Q5) **[12]**

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a. Write functions of longitudinal and transverse reinforcement in RC column. [6]

b. Design a circular column to carry an axial load of 1000kN. Use M20 concrete and Fe 415 steel. [6]

Q6) Design an isolated square sloped footing for a column 500mm x 500mm, transmitting an axial load of 1200kN. The column is reinforced with 8-20mm diameter. The safe bearing capacity of soil is 120tonnes/m2. Use M20 concrete and Fe415 steel reinforcement. [11]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (84012) Design of Concrete Structures-I Part 4 SEM 7
2] (1154) B.Tech. CBCS (83732) Design of Concrete Structures-I Part 4 SEM 7
3] (101) Bachelor of Engineering (67558) Design of Concrete Structures-I Part 4 SEM 7

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QP-5522

Seat No. CE-7th Sem

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Earthquake Engineering

Sub. Code: 67559/83733/84013

Day and Date: MAY ,06-05-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use Sketches/Diagrams wherever necessary**

Q1) Attempt any one of the following: **[7]**

a. Explain the Continental Drift Theory with a neat sketch. **[7]**

b. Describe the Elastic Rebound Theory of earthquakes with a diagram. **[7]**

Q2) Attempt any two of the following: **[14]**

a. Derive the equation of motion and its solution for forced undamped vibration system. **[7]**

b. Derive the expression for the responce of DSOF free damped structural system. **[7]**

c. Explain the concept of "Resonance" with respect to building behavior under seismic forces. **[7]**

Q3) A four-story building having area 12 m × 15 m (as shown in Fig. 1) is constructed with reinforced concrete framing on medium soil strata in seismic Zone III. The building has a floor-to-floor height of 3.5 meters and a live load of 5 kN/m². Use the seismic coefficient method as per IS 1893 (Part I) to determine the seismic forces on the structure. The following details are provided: **[14]**

- The building has columns and beams of 300mm x 450mm.
- The roof and floor slab thickness is 150mm.
- The wall thickness is 200mm around the building.
- Density of concrete = 25 kN/m³, Masonry = 20 kN/m³.

Assume 5% damping and the building to be in Zone III.

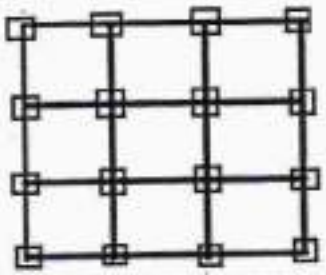

Fig.1 Q3-Plan of Building

Q4) Attempt any two of the following: **[12]**

a. Explain the behavior of soft storey buildings during an earthquake. What design strategies can be adopted to prevent the soft-storey effect in buildings? **[6]**

b. How does the flexibility of a structure influence its seismic performance? Discuss its impact on design. **[6]**

c. Explain the principle of "strong column-weak beam" with respect to seismic behavior and provide examples of its importance in building design. **[6]**

Q5) Attempt all questions: **[12]**

a. What is "Jacketing" in structural strengthening? Discuss the jacketing process for beams with a sketch. **[6]**

b. Define an RC band. Where would you typically provide them in a masonry building, and what role do they play in improving seismic performance? **[6]**

Q6) Attempt all questions: **[11]**

a. Explain the differences between Active and Passive Control Systems in earthquake engineering and their applications. **[6]**

b. Draw and explain the working principle of a Friction Damper used in earthquake-resistant design. **[5]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (84013) Earthquake Engineering Part 4 SEM 7
2] (101) Bachelor of Engineering (67559) Earthquake Engineering Part 4 SEM 7
3] (1154) B.Tech. CBCS (83733) Earthquake Engineering Part 4 SEM 7

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Seat No.	CE- 7th-Sem

SQ-130

Total No. of Pages : 03

B.Tech. (CBCS) (Semester -VII)

Final Year Examination, May, 2025

CIVIL ENGINEERING

PCE-CV703 : Quantity Survey and Valuation

Subject Code : 83734/67560/84014

Day and Date : Wednesday, 07/05/2025 **Total Marks : 70**

Time : 10:30 a.m. to 01.30 p.m.

Instructions : 1) Questions No.3 is compulsory. Attempt any 2 questions from Section I and any 3 questions from Section II.

2) Figures to the right indicate full marks.

3) Make suitable assumptions wherever Necessary and mention it clearly.

4) Use of non-programmable calculator is allowed.

SECTION-I

Q.1) a) **Differentiate between :** [05]

i) Detailed Estimate and Approximate Estimate.

ii) Administrative approval and technical sanction.

b) Explain in detail District Schedule of Rate (DSR). Give the prevailing market rates for any five construction materials in your vicinity. [05]

Q.2 a) Write a detailed note on factors affecting cost of construction. [05]

b) Explain General specification and Detailed specification. [05]

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Q.3 a) **Enlist the Task work or output for the following works :** [10]

i) Excavation in foundation in ordinary soil.

ii) Brickwork in superstructure.

iii) Ashlar masonry in C.M. in superstructure.

iv) R.C.C. work.

v) 12 mm thick internal cement plaster.

b) Enlist the methods used for taking out quantity. Write in detail on any one method. [05]

Q.4) a) **Write a note on (Any two) :** [10]

i) Contingencies and Work charged Establishment

ii) Rate analysis

iii) Provisional sums and Provisional quantities.

SECTION-II

Q.5) a) Write a note on bar bending schedule. [05]

b) What is meant by valuation? What are factors affecting valuation of property. [06]

Q.6) a) A property fetches a net annual income of Rs. 900 deducting all outgoings. Work out the capitalized value of the property if the rate of interest is 6% per annum [05]

b) **Explain Following terms :** [06]

1) Book Value 2) Distress Value 3) Sentimental Value

Q.7 a) A G+2 building is standing on a plot of land measuring 800 sqm. The plinth area of each floor is 400 sqm. The building is of RCC framed structure and the future life of building may be taken as [09]

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72 years. The building gets gross rent of Rs 1500 per month. Work out the value of property on the basis of 7% net yield. For sinking fund, 3% compound interest rate may be assumed. Cost of land may be taken as Rs. 40 per sqm. The details of outgoings are given as :

1) Repairs 0.5% of gross rent per year.
2) Taxes 20% of gross rent.
3) Property tax 5% of gross rent.
4) Insurance, Management charges and other charges 0.5%, 6%, 2% respectively Calculate total value of property.

b) What is meant by Year Purchase? [03]

Q.8) a) Write a note on (Any two) : [12]

i) Belting method of valuation.

ii) Capitalized value and sinking fund.

iii) Price, cost and value with examples.

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QP-5670

Seat No. CE-7th-Sem

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Transportation Engineering - I

Sub. Code: 83735/84015

Day and Date: MAY ,08-05-2025

Time: 10:30 AM To 01:00 PM

Total Marks: 70

Instructions:
1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary
3. Figures to the right indicate full marks

Special Inst.: Q.4 & Q.8 are compulsary
Attempt any two questions from Q.1,2,3 and any two from 5,6,7

Q1) Attempt any two questions [10]

a. Describe importance of Highway transportation. [5]

b. Define: Analysis of Overtaking Sight Distance [5]

c. Draw with neat sketch of Highway cross section. Explain it's all parts in detail. [5]

Q2) Attempt any two questions [10]

a. Explain the necessity of widening of pavements on curve with sketch. [5]

b. The radius of horizontal circular curve is 100 mt.The design speed is 50 kmph.and Design coeff.of lateral friction is 0.15. Calculate the superelevation required if full lateral friction is assumed to develop. [5]

c. Define in detail intersection and at grade sepereted intersection. [5]

Q3) Attempt any two questions. [10]

a. Explain desirable properties of the stone aggregate. [5]

b. Define in detail :Types of Pavements [5]

c. Explain :Fillers and Sealers [5]

Q4) Attempt all the questions [15]

a. Design Speed [5]

b. Valley Curves [5]

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c. Modified Binders [5]

Q5) Attempt any two questions [10]

a. Describe the procedure of W.B.M.Road [5]

b. Describe in etail "Structral and Functional "Evaluation of pavements [5]

c. Describe Pavement Management System [5]

Q6) Attempt all the questions [10]

a. Desribe Origin- Destination Parking Study [5]

b. Define Necessity of Highway Drainage. [5]

c. What are traffic control devices? Explain any one in detail [5]

Q7) Attempt any two questions [10]

a. Define shapes of Tunnels with their suitability. [5]

b. Explain Tunnelling in Hard rocks. [5]

c. Importance of lighting in the tunneling [5]

Q8) Attempt all the questions [15]

a. Intelligent Transportation System [5]

b. Safety measures in Tunneling [5]

c. Define:1.DLC
2.PQC [5]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (84015) Transportation Engineering - I Part 4 SEM 7
2] (1154) B.Tech. CBCS (83735) Transportation Engineering - I Part 4 SEM 7

(16)

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Seat No. CE-7th Sem

QP-5728

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Solid Waste Management

Sub. Code: 67569/83739/84019

Day and Date: MAY ,09-05-2025

Time: 10:30 AM To 01:00 PM

Total Marks: 70

Instructions:
1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Figures to the right indicate full marks

Special Inst.: Q. No. 4 and Q. No. 8 are compulsory and attempt any two questions from Q. No. 1, 2, 3 and any two questions from Q. No. 5, 6, 7.

Q1) Answer the following questions [10]

a. Discuss the major problems and issues associated with solid waste management..**[05]**

b. Classify solid waste based on sources and types. [05]

Q2) Answer the following questions [10]

a. Define solid waste generation. What are the various factors affecting the rate of solid waste generation?.[05]

b. Discuss the composition of municipal solid waste and the importance of knowing its characteristics.[05]

Q3) Answer the following questions [10]

a. What is a transfer station? Explain its types [05]

b. Define waste processing. What are the major unit operations used for component separation of solid waste?[05]

Q4) Answer the following questions [15]

a. Define hazardous waste and explain its characteristics, management and disposal methods.[05]

b. Describe the methods of on-site handling, storage, and processing of solid waste.[05]

c. Describe the processing techniques used in a typical Material Recovery Facility (MRF). [05]

Q5) Answer the following questions [10]

a. What are the methods of landfilling ? Describe any one with a simple sketch [05]

b. What are the criteria for selecting a landfill site? [05]

Q6) Answer the following questions [10]

a. Define composting. Explain the phases of composting.[05]

b. Discuss the factors affecting the composting process [05]

Q7) Answer the following questions [10]

a. What are the objectives and need for incineration in solid waste management? [05]

b. What are the site selection criteria for an incineration plant? [05]

Q8) Answer the following questions [15]

a. What is leachate? How is it managed and treated in sanitary landfills? [05]

b. Compare aerobic and anaerobic composting. [05]

c. What are the key factors that affect incineration performance? [05]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (1154) B.Tech. CBCS (83739) Solid Waste Management Part 4 SEM 7

2] (101) Bachelor of Engineering (84019) Solid Waste Management Part 4 SEM 7

3] (101) Bachelor of Engineering (67569) Solid Waste Management Part 4 SEM 7

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Seat No.	CE-8th-Sem

SQ - 133

Total No. of Pages : 3

F.Y.B.Tech. (Semester – VIII) (CBCS)
Examination - May 2025
(Civil)
(PCC – CV801) DESIGN OF CONCRETE STRUCTURES - II
Sub. Code : 84745/67748/84930

Day and Date : Thursday, 15/05/2025 **Total Marks : 70**

Time : 10.30 am to 1.00 pm

Instruction :
1) **All the questions are compulsory.**
2) **Figure to the right indicate full marks.**
3) **Assume any suitable data whenever necessary and mention it clearly.**
4) **Use of non programmable calculator is allowed.**
5) **Use of I.S.: 456 Code is allowed.**
6) **Use of I.S.: 3370 Part IV Code is allowed.**

SECTION – I

Q. 1. Design a rectangular beam section for the following data: **[12]**

Width of the beam = 230 mm.

Factored bending moment = 85 kNm.

Factored torsional moment = 45 kNm.

Factored shear force = 60 kN.

Use M20 grade concrete and Fe 415 grade steel.

OR

OR

A R.C. beam rectangular in section 250 mm wide and 530 mm deep is reinforced with 4 bars of 16 mm diameter at top and 4 bars of 20 mm diameter at bottom, with an effective cover of 40 mm. Calculate the strength of section in torsion, when it is subjected to an ultimate bending moment of 50 kNm. Use M20 grade of concrete and Fe500 steel.

Q. 2. A three span R.C.C. continuous rectangular beam ABCD is simply supported at A and D and continuous over supports B and C. The beam carries a 230 mm thick and 2.5 m high brick wall and superimposed load of 14 kN/m. Span AB = BC = CD = 5 m. Unit weight of brick wall = 20 kN/m^3. Design the beam using I.S. Code coefficient method for flexure at midspan of BC and for shear at support B only. Use M20 grade concrete and Fe 415 grade steel. **[12]**

Q. 3. Design a circular water tank with fixed base for 5 lakhs liter capacity. The height of the tank is 4.3 m. The walls of the tank are free at the top. Use M20 grade concrete and Fe 415 grade steel. **[11]**

SECTION – II

Q. 4. A simply supported beam of prestressed concrete of span 12m and of cross section 400 mm × 600mm carries a U D L of 10 kN/m, including self weight. Find the prestressing force required to be applied at 80 mm above softe, for no tension to occur at sofite at mid span. **[11]**

Q. 5. A pre tensioned prestressed concrete beam 250 mm × 360 mm prestressed with 10 wires of 35 mm^2 each area, located at a constant eccentricity of 60 mm and carrying an initial stress of 1250N/mm^2 The span of beam is 12 m. Calculate the loss of prestress due to elastic shortening, relaxation of steel, creep of concrete and shrinkage of concrete. Also calculate total % loss of prestress. **[12]**

Take Es = 210 kN/mm^2 Ec = 35 kN / mm^2, Relaxation of steel = 5%, Shrinkage of Concrete = 0.0003, Ultimate Creep Coefficient = 0.000045.

OR

OR

Q. 5. Attempt any Two of the following.

1) Explain in brief various concepts for analysis of prestressed concrete.
2) Explain in detail all the losses occuring in prestress concrete.
3) Why high strength steel and high strength concrete is required for prestressing?

Q. 6. Design a simply supported concrete slab for the following data **[12]**

1) Span of the slab – 12 m,
2) Safe compressive stress in concrete – 14N / mm^2
3) Safe stress in steel – 900N / mm^2
4) Superimposed load – 20 kN / m^2
5) Weight of concrete – 24 kN / m^3
6) No tension condition for the concrete

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Seat No.	CE-8th Sem

SQ-138

Total No. of Pages : 02

Final Year (Semester -VIII) (CBCS)

Examination, May, 2025

CIVIL ENGINEERING

(PCC-CV 802) WATER RESOURCE ENGINEERING - II

Subject Code : 84746/67749/84931

Day and Date : Monday, 19/05/2025 **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions: 1) **Q.4 and Q8 are compulsory. In Section I Attempt any two questions from Q1, Q.2 and Q.3 and in Section II attempt any two questions from Q.5, Q.6 and Q7.**

2) **Figures to the right indicate full marks.**

3) **Assume suitable data if necessary and state them clearly.**

4) **Answer shall be supported by adequate sketches.**

SECTION-I

Q.1) a) Which investigations are required for reservoir planning? Explain them in detail. **[05]**

b) Describe in brief various modes of failure of earthen dams. **[05]**

Q.2) a) Explain in detail forces acting on a dam: Self weight, water pressure, uplift pressure, silt pressure and wind pressure. **[05]**

b) Define and describe in detail with a neat sketch the elementary profile and practical profile of a gravity dam. **[05]**

Q.3) a) Classify the spillways. Describe any one in detail. **[05]**

b) Describe selection criteria of spillways. **[05]**

[P.T.O.]

Q.4) Solve any three :

a) Write Note on Reservoir Sedimentation. [05]

b) Write Note on Modes of failure of Gravity Dam. [05]

c) Write Short Note on Outlets in earthen Dam. [05]

d) Explain various factors affecting selection of type of dam. [05]

SECTION II

Q.5) a) Explain Bligh's creep theory in detail. [05]

b) Draw a layout of Diversion headwork and explain any three components in detail. [05]

Q.6) a) Classify different types of canals. [05]

b) Discuss in detail selection criteria for canal lining. [05]

Q.7) a) Write in detail about River Meandering - causes, factors controlling process and features. [05]

b) Explain the major components of Hydro Power Plant. [05]

Q.8) Write note on (Solve any Three) :

a) Fish Ladder and Divide wall. [05]

b) Types of Canal falls. [05]

c) Groyne and Spurs. [05]

d) Balancing Depth of Canal. [05]

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Seat No. CE-8th-Sem

QP-6041

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Transportation Engineering-II

Sub. Code: 67750/84747/84932

Day and Date: MAY ,21-05-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions: 1. Draw neat labelled diagrams wherever necessary
2. Figures to the right indicate full marks

Special Inst.: Q. No.4 and Q. No. 8 are compulsory and attempt any two questions from Q. No. 1,2,3 and any two questions from Q. No. 5,6,7.

Q1) Attempt all questions. [10]

a. Explain classification of airports. [5]

b. What are the markings made on the runways? Explain. [5]

Q2) Attempt all questions. [10]

a. Write a note on: Airport Obstructions. [5]

b. Describe the movement of an aircraft in three principal axes with a neat sketch. [5]

Q3) Attempt all questions. [10]

a. What are breakwaters? Explain the types of breakwaters with sketches. [5]

b. Explain the concept of 'Littoral Drift'. [5]

Q4) Write a short note on the following. [15]

a. Transit Shade [5]

b. Zoning Laws [5]

c. Fuselage [5]

Q5) Attempt all questions. [10]

a. Explain points and crossings. Sketch and explain acute angle crossing. [5]

b. Define and enlist different types of station yards. [5]

Q6) Attempt all questions. [10]

P.T.O.

a. Describe the daily and periodic maintenance of railway track. [5]

b. Describe the stages of construction of railway track. [5]

Q7) Attempt all questions. [10]

a. Enlist the different type of loadings used for designing of bridge. [5]

b. What are the factors considered for selecting a site of a bridge? [5]

Q8) Write a short note on the following. [15]

a. Modern trends in Railways. [5]

b. Permanent way and its component parts. [5]

c. Loads acting on a bridge. [5]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
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1] (101) Bachelor of Engineering (84932) Transportation Engineering-II Part 4 SEM 8
2] (1154) B.Tech. CBCS (84747) Transportation Engineering-II Part 4 SEM 8
3] (101) Bachelor of Engineering (67750) Transportation Engineering II Part 4 SEM 8

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QP-6087

Seat No. CE- 4th Sem

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Advanced Design of Concrete Structures

Sub. Code: 67751/84753/84938

Day and Date: MAY ,23-05-2025 **Total Marks: 70**

Time: 10:30 AM To 01:00 PM

Instructions:
1. **All questions are compulsory**
2. **Assume suitable data wherever necessary and mention it boldly**
3. **Draw neat labelled diagrams wherever necessary**
4. **Figures to the right indicate full marks**
5. **Use of Scientific calculator is allowed**

Special Inst.: **Use of IS 456:2000, IS 3370 is allowed.**

Q1) Design an interior panel of a flat slab of size 5m x5m without providing drop and column head. Size of column is 500mm x 500mm and live load on the panel is 4kN/m2. Take floor finishing load as 1kN/m2. Use M20 concrete and Fe 415 steel. **[12]**

Q2) Design a simply supported 300mm thick RC vertical deep beam of height 4m, which is supported on 500mm wide piers having a clear spacing of 5m. A beam carries a service super imposed load of 200kN/m. Assume M20 grade concrete and Steel of grade Fe 415. **[12]**

OR

Design a deep beam 300mm wide and 4m deep, simply supported over a clear span of 6m. The beam carries a live load of 160kN/m at the service state and is supported on walls of 600mm thick on each end. Use M20 concrete and Fe 415 steel having permissible tensile stress of 230N/mm2.

Q3) Design a chimney of height 70m, Given **[11]**

External Diameter –(i) at top -4m
(ii) at base – 4.8m
Shell thickness –(i) at top -200mm
(ii) at base – 400mm
Wind intensity 1.8kN/m2, throught.
Thickness of fire brick lining 100mm.
Air gap -100mm
Temperature difference -70C.
Coefficient of thermal expansion -11×10-6/C0
Es - 210×103 N/mm2
Unit weight of brick lined -20kN/m3
Use M25 concrete and Fe 415 grade steel.
Note-No Check for stresses is required

Q4) Design a flat bottom circular elevated water tank of diameter 10m and total height **[12]**

3.2m which is to be supported by ring beam of 9m diameter..The ring beam is to be supported by eight columns equally placed. Use M25 concrete and Fe415 steel. Design the following components,

a) Top dome

b) Top ring beam

c) Tank Wall

Q5) Design a cantilever retaining wall to retain an earth embankment with horizontal top 3.5m above ground level. Density of earth=18kN/m3. Angle of internal friction Φ=30, SBC of soil is 200kN/m2.Take coefficient of friction between soil and concrete =0.5. Adopt M20 grade concrete and Fe-415 steel. Show reinforcement details. **[12]**

OR

Design the stem of a counterfort retaining wall if the height of wall above ground level = 5m. SBC of soil = 180kN/m2. Angle of internal friction Φ = 30. Density of soil =18kN/3. Spacing of counterforts 3m c/c. Adopt M20 concrete and Fe 415 steel.

Q6) Design a simply supported square slab of side 3.6m to carry a service load of 4kN/m2. Use M20 grade concrete and Fe 415 grade steel **[11]**

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (84938) Advanced Design of Concrete Structures Part 4 SEM 8

2] (101) Bachelor of Engineering (67751) Advanced Concrete Design Part 4 SEM 8

3] (1154) B.Tech. CBCS (84753) Advanced Design of Concrete Structures Part 4 SEM 8

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Seat No. CE-8th Sem

QP-6156

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Advance Foundation Engineering

Sub. Code: 67564/84750/84935

Day and Date: MAY ,23-05-2025

Total Marks: 70

Time: 10:30 AM To 01:00 PM

Instructions: 1. All questions are compulsory
2. Assume suitable data wherever necessary and mention it boldly
3. Draw neat labelled diagrams wherever necessary

Special Inst.: Consider Section - I (Q.1, Q.2, Q.3), Section - II (Q.4, Q.5, Q.6)

Q1) A. Write in detail about types of shallow foundations and write the suitability of each type **[5]**

B. Write in detail about types of bearing capacity failures. **[5]**

Q2) A. Write in detail about types of raft foundations with neat sketches **[4]**

B. A building consists of 12 columns 400X 400 mm in sizes arranged in three rows with four columns in each row. Distance between the columns is 6 m each. The load carried by four corner columns is 600 kN each, that carried by exterior column is 700 kN each and that carried by interior column is 800 kN each. Allowable soil pressure is 100 kN/m2. Calculate the soil pressure under each column **[8]**

Q3) A. Write in detail about types of pile foundation **[5]**

B. A group of 9 piles arranged in a square pattern with diameter and length of each pile as 25cm and 10m respectively is used as a foundation in a soft clay deposit. Taking unconfined compressive strength of clay as 120kN/m2 and the pile spacing as 100cm center to center. Find load capacity of group. Assume adhesion factor = 0.75, factor of safety = 2.5 **[8]**

Q4) A. Write in detail about design criteria for machine foundation **[5]**

B. Assuming resonance to have occurred at 22 cycles/sec in vertical vibration block test. The size of the block was 1m x 1m x 1m. The weight of the oscillator is 62 Kg and force produced by it after 12 cycles/sec is 100kg. Calculate the maximum amplitude in vertical direction at 12 cycles/sec and the coefficient of elastic uniform in compression. **[8]**

Q5) A. Write in detail about types and uses of sheet piles. **[6]**

B. Write in detail about earthen coffer dam and rock-fill coffer dam **[6]**

Q6) A. Write in detail about lime stabilization, cement stabilization and mechanical stabilization **[5]**

B. Write in detail about sumps and well point method of dewatering **[5]**

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QP-6146

Seat No. CE-8th Gen

Total No. of Pages : 2

MAR_APR 2025 SUMMER EXAMINATION

11731 Bachelor of Technology (NEP-2.0)

Sub. Name: Advanced Construction Techniques

Sub. Code: 67764/84759/84944

Day and Date: MAY ,26-05-2025 **Total Marks:** 70

Time: 10:30 AM To 01:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labelled diagrams wherever necessary

Special Inst.: 1.Q.4 and Q.8 are compulsory
2. Attempt any two questions from Q. no 1,2, 3 and any two questions from Q. no 5, 6, 7

Q1) Answer the following [10]

a. State the various factors that are considered for designing formwork and explain economical analysis of formwork. [5]

b. Explain different factors that influence the cost of formwork. [5]

Q2) Answer the following. [10]

a. Define Geo-synthesis with advantages and disadvantages. [5]

b. Explain polymer composite with advantages and disadvantages. [5]

Q3) Answer the following [10]

a. Explain ground improvement technique by Vibro Compaction. [5]

b. Explain the concept of soil nailing. [5]

Q4) Short Note(Any Three) [15]

a. FRC [5]

b. MDF [5]

c. Soil Fracturing. [5]

d. Requirement of good formwork [5]

Q5) Answer the following [10]

a. Explain the materials used for construction of caissons. [5]

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b. Explain leakage point and leakage prevention of coffer dam. [5]

Q6) Answer the following. [10]

a. Explain necessity of bridge rehabilitation. [5]

b. Explain method of bridge rehabilitation. [5]

Q7) Answer the following. [10]

a. Explain Vaccum Dewatering Process. [5]

b. Explain Sanitary Landfilling. [5]

Q8) Short Note (Any Three) [15]

a. Roller Compacted Concrete [5]

b. Sinking loading of caissons. [5]

c. Revibrated Concrete [5]

d. Strengthening of bridge pier [5]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -
This Question Paper may be distributed for following Subjects as common code.
सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (101) Bachelor of Engineering (67764) Advanced Construction Techniques Part 4 SEM 8
2] (101) Bachelor of Engineering (84944) Advanced Construction Techniques Part 4 SEM 8
3] (1154) B.Tech. CBCS (84759) Advanced Construction Techniques Part 4 SEM 8