

Hall Ticket Number :

R-17

Code: 7G686

IV B.Tech. II Semester Regular Examinations July 2021

Advanced Transportation Engineering

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. a) What are the ideal requirements of Rail fastenings?	7M	CO1	L4
b) Define: i). Super elevation. ii). Negative cant. iii). Cant deficiency. iv). Grade compensation on curves.	7M	CO1	L1
OR			
2. a) Find the number of sleepers required for constructing a B.G. railway track 840m long, using a sleeper density of M+5, where M is the length of the rail in meters.	7M	CO2	L3
b) Define permanent way. What are the ideal requirements of permanent way?	7M	CO1	L2
UNIT-II			
3. a) Explain various parts of Turnout with neat diagram of Left Hand Turnout.	7M	CO2	L1
b) Explain about i) Advantages of tunneling ii) Objects of lining and ventilation in tunnels.	7M	CO2	L1
OR			
4. a) Give the classification of signals according to their locations in station yards along with suitable sketches.	7M	CO2	L4
b) Comparison between Horse shoe, egg shape and segmental tunnel sections.	7M	CO3	L2
UNIT-III			
5. a) List and explain aircraft characteristics which affect the planning and design of air ports.	7M	CO3	L1
b) A taxi way is to be designed for operating a Boeing aircraft which has the following characteristics. Determine the turning radius of the taxiway. Wheel base=17.70m, Tread of main gear = 6.62 m, width of taxiway (T)=22.5 m, turn of speed=40kmph and co-efficient of friction = 0.3.	7M	CO5	L5
OR			
6. a) Define optimum airport capacity and mention various factors affecting airport capacity.	7 M	CO4	L1
b) What are the basic assumptions made in finalizing runway length? Explain.	7 M	CO4	L1
UNIT-IV			
7. a) Differentiate between Greek harbors and Roman harbors	7M	CO3	L2
b) What are the uses of dry and wet docks? What is the role of ware houses?	7M	CO4	L1
OR			
8. a) Differentiate between Natural and Artificial harbors.	7M	CO2	L2
b) Explain the different types of temporary breakwaters with neat sketches.	7M	CO1	L1
UNIT-V			
9. What are the theories associated with formation of waves and tides? What protective works are needed in a harbour for safety against tides?	14M	CO5	L2
OR			
10. a) What is Dredging? Classify the different types of dredging works.	7M	CO4	L1
b) What are the various services that are required for the maintenance of shipping terminals?	7M	CO2	L1

*****END*****

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IV B.Tech. II Semester Regular Examinations July 2021
Construction Planning and Project Management
 (Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

	Marks	CO	Blooms Level
UNIT-I			
1. Explain the functions of Lintels, arches and vaults.	14M	CO2	L1
OR			
2. Compare the merits and demerits of Pitched roofs and flat roofs.	14M	CO2	L5
UNIT-II			
3. Mention the constituents of paints. Also explain their role.	14M	CO1	L1
OR			
4. Give types of paints. Explain the methods of painting old wood and new wood.	14M	CO1	L1
UNIT-III			
5. Describe the classification of construction equipment's.	14M	CO3	L5
OR			
6. Write short notes on the followings.			
a). Resource smoothing.	4M		
b). Resource levelling.	5M		
c). Establishing workers' productivity.	5M	CO2	L1
UNIT-IV			
7. Describe the shortcomings of bar charts and remedial measures.	14M	CO4	L5
OR			
8. Compare the merits and demerits of different types of organizations.	14M	CO2	L5
UNIT-V			
9. Explain the steps involved in the planning for network construction.	14M	CO2	L1
OR			
10. Write short notes on the followings.			
a). PERT.	4M		
b). Slack.	5M		
c). Critical path.	5M	CO1	L1

****END****

Hall Ticket Number :

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Code: 7G682

IV B.Tech. II Semester Regular Examinations July 2021

Green Buildings

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

Marks CO Blooms Level

UNIT-I

1. a) What is green Building? And explain why to go for Green building? 7M CO1 L2
b) List the key Requisites for Constructing a Green Building? 7M CO1 L1

OR

2. a) Explain in detail about benefits of the green buildings? 7M CO1 L2
b) Discuss in detail on eco-friendly materials for green buildings. 7M CO1 L2

UNIT-II

3. a) Explain the Launch of Green Building Rating Systems 7M CO2 L2
b) List out the opportunities of a green building 7M CO2 L1

OR

4. a) Discuss the Optimum Energy Efficiency of a green building 7M CO2 L2
b) Write brief note on
i. Water Efficiency ii. Energy Efficiency 7M CO2 L1

UNIT-III

5. Explain how to Reduction in Energy Demand for green buildings. 14M CO3 L2

OR

6. a) List the requirements to build a green building 7M CO3 L1
b) Explain about Use Onsite Sources and Sinks of a green building 7M CO3 L3

UNIT-IV

7. a) Discuss about the passive cooling techniques in green buildings. 7M CO4 L2
b) List the Key feature of a green building 7M CO4 L1

OR

8. a) List the factors should be considered while Selection of air handing units 7M CO4 L1
b) Explain about the Energy modeling of a green building? 7M CO4 L2

UNIT-V

9. a) What are the Measures required to achieve Acceptable IAQ levels. 7M CO5 L1
b) Discuss how to improve the fresh air ventilation in green building? 7M CO5 L2

OR

10. Explain the terms, Indore Environment air quality, Tobacco smoke control, and Sick building syndrome in green buildings. 14M CO5 L2

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R-17

Code: 7G683

IV B.Tech. II Semester Regular Examinations July 2021

Prestressed Concrete

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

Marks CO Blooms Level

UNIT-I

- | | | | | |
|-------|---|----|----|----|
| 1. a) | Explain the Freyssinet system of prestressing | 7M | 01 | 01 |
| b) | What is the basic principle of prestressed concrete? Explain the application of prestressed concrete. | 7M | 01 | 01 |

OR

- | | | | | |
|-------|---|----|----|----|
| 2. a) | Explain with neat sketches "Hoyer's system of pretensioning?" | 8M | 01 | 01 |
| b) | Discuss the load transfer mechanism in pre-tensioned and post-tensioned members | 6M | 02 | 02 |

UNIT-II

- | | | | | |
|-------|---|-----|----|----|
| 3. a) | Discuss the measures to be adopted for counteracting elastic loss and friction loss in case of post tensioned members | 4M | 03 | 02 |
| b) | A pretensioned beam 250 mm wide and 360 mm deep is prestressed by 10 wires of 8 mm dia. Initial stress to 1000N/mm^2 . The centroid of the steel wires is located at 105mm from the soffit. Determine the max.stress in concrete immediately after transfer allowing elastic shortening of concrete only at the level of centroid of the steel. If however, the concrete is subjected to additional shortening due to the creep and shrinkage and the steel is subjected to relaxation of stress of 5% of initial stress. Find the final percentage of loss of stress in steel wires. Take $E_s=210\text{kN/mm}^2$, $E_c=36.85\text{kN/mm}^2$, $\mu=1.60$, take residual shrinkage strain $=3 \times 10^{-4}$ | 10M | 03 | 03 |

OR

- | | | | | |
|----|--|-----|----|----|
| 4. | A prestressed concrete pile 250 mm square, contains 60 pre-tensioned wires, each of 2mm diameter, uniformly distributed over the section. The wires are initially tensioned on the prestressing bed with a total force fo 300 kN. Calculate the final stress in concrete and the percentage loss of stress in steel after all losses, given the following data : $E_s = 210 \text{ kN/mm}^2$ & $E_c = 32 \text{ kN/mm}^2$
Shortening due to creep = $30 \times 10^{-6} \text{ mm/mm per N/mm}^2$ of stress
Total shrinkage = 200×10^{-6} per unit length
Relaxation of steel stress = 5 per cent of initial stress
Prestressing force, P = 300 kN | 14M | 03 | 03 |
|----|--|-----|----|----|

UNIT-III

- | | | | | |
|-------|---|----|----|----|
| 5. a) | A PSC beam of 230 mm wide and 450 mm deep is used over an span of 4m is pre stressed by a cable carrying a force of 650 kN & located at an eccentricity of 75mm. The beam supports three concentrated loads of 25 kN at each quarter span points. Determine the location of the pressure line in beam at centre, quarter & support sections. Neglect the moment due to self weight of the beam. | 7M | 03 | 03 |
|-------|---|----|----|----|

- b) A concrete beam of symmetrical I section of simply supported span 10 m has a width and thickness of flange 250 mm and 80 mm respectively. The overall depth is 500 mm. The thickness of web is 80 mm. The beam is prestressed by a parabolic cable with an eccentricity of 150 mm below centroidal axis at midspan and concentric at supports. The effective prestress in the cable is 200 kN. The beam supports a liveload of 3 kN/m. Compute the fibre stress at midspan under working load. At what eccentricity the fibre stress at bottom become zero at working load?

7M 03 03

OR

6. a) A beam of size 500mm x 1000mm is used on simply supported span of 10m. It is provided with a bent tendon having an eccentricity of 100mm at centre and an eccentricity of 50mm upwards at the ends. The dead load of the beam is 10kN/m. Compute the stresses at ends and at mid span.
- b) A rectangular concrete beam 100mm wide & 250mm deep spanning over 8m is prestressed by a straight cable carrying a effective prestressing force of 250Kn located at an eccentricity of 40mm. The beam supports a live load of 12 kN/m. Find the magnitude of prestressing force with an eccentricity of 40mm which can balance the stresses due to dead load & live load at the soffit of the centre span section.

7M 04 03

7M 03 03

UNIT-IV

7. Write the design procedure of rectangular section according to IS code 1343.

14M 03 03

OR

8. A post tensioned beam of 15m of rectangular cross section, 250 mm wide and 475 mm deep, is 10 m long and carries an applied load of 10kN/m. UDL on the beam. The effective prestressing force in the cable is 650 kN. The cable is Parabolic with zero eccentricity at the supports and a maximum eccentricity of 150 mm at the center of span. Calculate the principal stresses at the supports

14M 04 03

UNIT-V

9. The end block of a prestressed concrete beam, rectangular in section, is 120 mm wide and 300mm deep. The prestressing force of 250kN is transmitted to concrete by distribution plate, 120mm wide and 75mm deep, concentrically located at the ends. Calculate the position and magnitude of the maximum tensile stress on the horizontal section through the centre of the end block using the Guyon method. Yield stress in steel = 250 N/mm² and design the end block also sketch the reinforcement in the designed block.

14M 05 03

OR

10. a) Explain the term End blocks. Write the steps involved in the design of end blocks by Guyon's method.
- b) A pretensioned beam, 160 mm wide by 320 mm deep, is prestressed by four plain wires of 7 mm diameter at an eccentricity of 100 mm. If the cube strength of concrete at transfer is 40 n/mm², estimate the transmission length at the ends of the pretensioned units using IS: 1343 code provisions

7M 01 01

7M 04 03

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Code: 7G689

IV B.Tech. II Semester Regular Examinations July 2021

Remote Sensing and GIS Applications

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any five full questions by choosing one question from each unit (5x14 = 70 Marks)

Marks	CO	Blooms Level
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UNIT-I

- | | | | |
|--|----|-----|----|
| 1. a) What are the advantages of aerial photography? | 5M | CO1 | L1 |
| b) Explain the various types of aerial photographs. | 9M | CO1 | L2 |

OR

- | | | | |
|--|----|-----|----|
| 2. a) Difference between a map and an aerial photograph. | 7M | CO1 | L2 |
| b) Explain the Parallax measurements for height | 7M | CO1 | L2 |

UNIT-II

- | | | | |
|--|----|-----|----|
| 3. a) Explain the basic concept and foundation of remote sensing | 7M | CO2 | L1 |
| b) Explain the electromagnetic spectrum. | 7M | CO2 | L1 |

OR

- | | | | |
|--|----|-----|----|
| 4. a) Explain energy interaction with earth surface materials. | 7M | CO2 | L1 |
| b) Explain the elements of visual interpretation techniques | 7M | CO2 | L2 |

UNIT-III

- | | | | |
|---|----|-----|----|
| 5. a) Define GIS. Explain the components of GIS | 7M | CO3 | L1 |
| b) Explain the theoretical framework for GIS | 7M | CO3 | L2 |

OR

- | | | | |
|--|----|-----|----|
| 6. a) Describe about the attribute data and spatial data | 7M | CO3 | L1 |
| b) Explain the advantages and limitations of GIS. | 7M | CO3 | L1 |

UNIT-IV

- | | | | |
|---|----|-----|----|
| 7. a) Write a brief note on Computational Analysis Methods in GIS | 7M | CO4 | L1 |
| b) Explain the advantages of vector data storage | 7M | CO4 | L1 |

OR

- | | | | |
|--|-----|-----|----|
| 8. Explain the integrated analysis of the spatial and attribute data | 14M | CO4 | L2 |
|--|-----|-----|----|

UNIT-V

- | | | | |
|--|----|-----|----|
| 9. a) Explain the impact of Land use change on stream water quality. | 7M | CO5 | L1 |
| b) Give a brief note on flood and drought impact assessment and monitoring in GIS. | 7M | CO5 | L1 |

OR

- | | | | |
|--|----|-----|----|
| 10. a) How can you monitor water resources management through GIS? | 7M | CO5 | L1 |
| b) Describe briefly about identification of sites for artificial recharge structures | 7M | CO5 | L1 |

END