

Faculty of Engineering

End Semester Examination May 2025

CE3CO22 Transportation Engineering -I

Programme	:	B.Tech.	Branch/Specialisation	:	CE
Duration	:	3 hours	Maximum Marks	:	60

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary.
 Notations and symbols have their usual meaning.

Section 1 (Answer all question(s))				Marks CO BL
Q1. Which of the following is not a function of sleepers in railway tracks?				1 1 1
<input type="radio"/> Load distribution		<input type="radio"/> Rail fastening		
<input checked="" type="radio"/> Reducing creep		<input type="radio"/> Absorbing shocks		
Q2. The standard rail section in Indian Railways for BROAD GAUGE tracks is-				1 1 2
<input type="radio"/> 52 kg/m		<input type="radio"/> 60 kg/m		
<input type="radio"/> 90 R		<input checked="" type="radio"/> All of the above		
Q3. What is the main purpose of super-elevation in railway tracks?				1 2 2
<input type="radio"/> To increase train speed		<input checked="" type="radio"/> To counteract centrifugal force		
<input type="radio"/> To improve track aesthetics		<input type="radio"/> To reduce train weight		
Q4. Grade compensation is required for-				1 2 2
<input type="radio"/> Reducing traction		<input type="radio"/> Overcoming rolling resistance		
<input type="radio"/> Minimizing train wear		<input checked="" type="radio"/> All of the above		
Q5. Which of the following is not a component of railway station yards?				1 1 1
<input type="radio"/> Platforms		<input type="radio"/> Sidings		
<input checked="" type="radio"/> Foot-over-bridges		<input type="radio"/> Turnouts		
Q6. Which type of signal is commonly used in interlocking systems?				1 2 2
<input checked="" type="radio"/> Fixed signals		<input type="radio"/> Hand signals		
<input type="radio"/> Flag signals		<input type="radio"/> None of the above		
Q7. The approach area in airport zoning regulations refers to-				1 2 2
<input type="radio"/> The land near the airport		<input checked="" type="radio"/> The space required for landing and take-off		
<input type="radio"/> The space between taxiways		<input type="radio"/> The area inside the terminal		
Q8. Runway orientation is primarily based on-				1 2 1
<input type="radio"/> Air traffic control guidelines		<input checked="" type="radio"/> Wind-rose diagram		
<input type="radio"/> Passenger convenience		<input type="radio"/> Airport lighting		
Q9. Tunneling through soft soil requires-				1 1 1
<input type="radio"/> Blasting		<input checked="" type="radio"/> Shield method		
<input type="radio"/> TBM only		<input type="radio"/> Open-cut method		
Q10. The primary function of tunnel lining is-				1 2 2
<input type="radio"/> Ventilation		<input checked="" type="radio"/> Structural support		
<input type="radio"/> Decoration		<input type="radio"/> Drainage		

Section 2 (Answer all question(s))

Marks CO BL

Q11. Explain the concept of creep in railway tracks.

2 2 2

Rubric	Marks
correct explanation OF Concept of creep	2

Q12. Discuss the role of ballast in railway track construction.

2 3 3

Rubric	Marks
Role of Ballast	2

Q13. (a) Analyze the forces acting on a railway track and how they influence track stability.

6 4 4

Rubric	Marks
analyzing	3
influence	3

(OR)

(b) Compare different methods of track stabilization used in railways.

Rubric	Marks
any 3 methods	6

Section 3 (Answer all question(s))

Marks CO BL

Q14. What is grade compensation in railways?

2 2 2

Rubric	Marks
Definition	2

Q15. Explain the role of super-elevation in railway track design.

3 3 3

Rubric	Marks
for correct answer	3

Q16. (a) Compare the stresses in different railway track components under varying traction conditions.

5 4 4

Rubric	Marks
for correct answer	5

(OR)

(b) Evaluate the effects of speed and axle load on railway track design.

Rubric	Marks
for correct answer	5

Section 4 (Answer all question(s))

Marks CO BL

Q17. Describe the different types of railway crossings.

3 2 2

Rubric	Marks
correct explanation	3

Q18.(a) Explain the concept of interlocking in railway signaling and its importance.

7 3 3

Rubric	Marks
for correct answer	7

(OR)

(b) Analyze the advantages and limitations of different railway station layouts.

Rubric	Marks
for correct answer	7

Section 5 (Answer all question(s))

Marks CO BL

4 2 2

Q19. Explain the importance of site selection in airport planning.

Rubric	Marks
for correct answer	4

Q20.(a) Discuss the geometrical elements of taxiways and runways.

6 3 3

Rubric	Marks
for taxiway 3 marks and runway 3 marks	6

(OR)

(b) Evaluate the impact of environmental factors on airport runway design.

Rubric	Marks
for correct answer	6

Section 6 (Answer any 2 question(s))

Marks CO BL

5 2 2

Q21. Describe the different methods used for tunnel construction in hard rock.

Rubric	Marks
For correct explanation of any 2 methods	5

Q22. Explain the concept of pressure relief in tunnels and its impact on tunnel stability.

5 3 3

Rubric	Marks
concept	2
impact on tunnel stability.	3

Q23. Compare different ventilation systems used in underground tunnels.

5 3 3

Rubric	Marks
for correct answer	5
