

Question Bank (Chapter wise)

Semester: 5th

Subject: Railway & Bridge Engineering (Th.3)

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PART: A (Railways)

Chapter: 1 (Introduction)

Short Type Questions: (2 Mark)

1. Write short notes on:

- Adhesion of wheels
- Adzing of sleepers
- Buckling of rails
- Buffer stop
- Cant deficiency
- Coning of wheels
- Double headed rails
- Fish plates
- Stretcher bar

Long Type Questions: (5 Mark)

1. Explain the advantages of railways.

Long Type Questions: (10 Mark)

1. Describe the classification of Indian railways.

Chapter: 2 (Permanent way)

Short Type Questions: (2 Mark)

1. Define the permanent way.
2. Explain the gauge and its types.
3. Differentiate broad gauge and meter gauge.

Long Type Questions: (5 Mark)

1. Explain the methods of selection of gauge.

2. Define permanent way. Write down the requirements of ideal permanent way.

Long Type Questions: (10 Mark)

1. Discuss the requirements of a permanent way.

Chapter: 3 (Track materials)

Short Type Questions: (2 Mark)

1. Define the rails.
2. Explain bull headed rail with sketch.
3. Define double headed rail.
4. Define rail joints.
5. Explain the suspended rail joint.
6. Define compromise joint.
7. Explain the welding of rails.
8. Define the creep of rails.
9. Explain the indications of creep.
10. Define creep of rails. Mention two causes of creep in rails.
11. Define sleepers.
12. Classify the sleepers.
13. Define sleepers. Write down the types of sleepers used in railways.
14. Write three functions of sleeper.
15. Explain the ballast.
16. Discuss the broken stone ballast.

Long Type Questions: (5 Mark)

1. Explain the functions of rails.
2. Discuss the types of rails with sketches.
3. Briefly explain the factors responsible for site selection of a railway station.
4. Write down the functions of rails. Briefly explain the types of rail sections used in railway track along with neat sketches.
5. Explain the requirements of ideal rail joint.
6. Differentiate supported and bridge rail joint.
7. Explain the purposes of welding of rails.
8. Discuss the causes of creep.
9. Explain the effects of creep.
10. Discuss the theories of creep.
11. Discuss the prevention of creep.
12. Explain the functions of sleepers.
13. Differentiate metal and concrete sleepers.

14. Explain the functions of ballast.
15. Describe the requirement of ballast in laying of rails.

Long Type Questions: (10 Mark)

1. Discuss the flat footed rails and advantages of it.
2. Describe the requirements of rails.
3. Discuss the advantages of welding of rails.
4. Describe the ideal requirements of sleepers.
5. Define wooden sleepers and its advantages and disadvantages.
6. Define concrete sleepers and its advantages and disadvantages.
7. Describe the requirements of good ballast.
8. Describe the types of ballast.
9. Define ballast. Write down functions and classification of ballast. Also mention the characteristics of good ballast.

Chapter: 4 (Geometric for broad gauge)

Short Type Questions: (2 Mark)

1. Differentiate permanent and temporary land width.
2. Explain the gradients.
3. Name the types of gradients provided in railway track.
4. Define the ruling gradient.
5. Explain the super elevation.
6. Define cant deficiency.
7. Explain equilibrium cant.
8. Explain negative super elevation.

Long Type Questions: (5 Mark)

1. Discuss the requirements of good track.
2. Define gradients and classify it.
3. Explain the functions of super elevation.
4. Define superelevation. Write down the functions of superelevations in railways.
5. Explain negative super elevation with sketch.
6. Explain the relationship of e , G , V , R on superelevation.

Long Type Questions: (10 Mark)

1. Describe the gradients and its types.
2. Discuss super elevation and negative super elevation with diagram.

Chapter: 5 (Points and crossings)

Short Type Questions: (2 Mark)

1. Define the points and crossings.
2. Explain the turnouts.
3. Explain the tongue rail and stock rail.
4. Define the square crossing.

Long Type Questions: (5 Mark)

1. Explain the necessity of points and crossings.
2. Draw the figure showing constituents of a right-hand turn out and label it neatly.
3. Differentiate acute angle and obtuse angle crossing.
4. Differentiate square and spring or movable crossing.
5. Explain various types of crossing in use on Indian Railways.

Long Type Questions: (10 Mark)

1. Define the turnouts and its components with diagram.
2. Discuss the points or switches and its components with diagram.
3. Describe details of the crossings and its types with sketches.
4. Discuss the necessity of points and crossing in a railway track. Briefly describe the main components.

Chapter: 6 (Laying & maintenance of track)

Long Type Questions: (5 Mark)

1. Discuss the essential of track maintenance.
2. Explain the through packing of track maintenance.

Long Type Questions: (10 Mark)

1. Discuss the duties of a permanent way inspector (PWI).

PART: B (Bridges)

Chapter: 1 (Introduction to bridges)

Short Type Questions: (2 Mark)

1. Explain the requirements of an ideal bridge.
2. Differentiate valley and viaduct.
3. Difference abutments and wing walls.
4. Differentiate free board afflux.
5. Difference cause way and culvert.

6. Define the super-structure and sub-structure.
7. Name different types of masonry bridge.
8. Define waterway and economic span for a bridge.

Long Type Questions: (5 Mark)

1. Discuss the classification of bridges.
2. Write down the site characteristics of an ideal bridge.

Long Type Questions: (10 Mark)

1. a. Name the different components of a bridge.
b. What are the hydraulic data required for particular bridge site selection?
2. Describe the components of a bridge with neat sketch.

Chapter: 2 (Bridge site investigation, hydrology & planning)

Short Type Questions: (2 Mark)

1. Define the Chazy's and Manning's formula.
2. Define the Dicken's and Ryve's formula.
3. Explain the water way.
4. Define details about afflux.
5. Explain the free board.
6. Explain details about the economical span.

Long Type Questions: (5 Mark)

1. Discuss the selection of site of bridges construction.
2. Explain the bridge site based on alignment.
3. Explain afflux with Merriman's formula and Molesworth's formula.

Chapter: 3 (Bridge foundation)

Short Type Questions: (2 Mark)

1. Define the foundation.
2. Explain the well curb.
3. Define the box caissons.
4. Define the open caissons.

Long Type Questions: (5 Mark)

1. Explain the functions of foundation.

2. Define caissons .Briefly explain different types of caissons along with their uses.
3. Discuss the spread foundation.
4. Explain the raft foundation.
5. Discuss the pile foundation.
6. Explain the well foundation.
7. Discuss the different components of well foundation.
8. Explain pile driving methods.

Long Type Questions: (10 Mark)

1. Discuss details about the types of foundation.
2. Explain the caisson foundation.
3. What are the different types of bridge foundation? Describe open foundation and raft foundation with neat sketch.

Chapter: 4 (Bridge substructure and approaches)

Short Type Questions: (2 Mark)

1. Define the pier.
2. Explain the functions of piers.
3. Explain the abutments.
4. Define the wing walls.

Long Type Questions: (5 Mark)

1. Define abutments. Explain the functions of abutments.
2. Explain the functions of wing walls and types of it.

Long Type Questions: (10 Mark)

1. Describe the types of piers with sketch.
2. Define piers of bridges and their functions. Draw the cross sectional shapes of piers. Explain different types of piers.
3. Discuss the types of abutments with sketch.

Chapter: 5 (Culvert & Cause Ways)

Short Type Questions: (2 Mark)

1. Define the culverts.
2. Classify the type culverts.
3. Define the arch culvert with sketch.
4. Explain the slab culvert with sketch.
5. Explain the causeways.

6. Difference a causeway and a bridge.

Long Type Questions: (5 Mark)

1. Explain the pipe culverts with diagram.
2. Explain the box culverts with diagram.
3. Discuss the flush causeway with sketch.
4. Explain the high level causeway with sketch.

Long Type Questions: (10 Mark)

1. Discuss the classification of culverts with sketch.
2. Explain the classification of causeways with sketch.
3. Define causeway. Explain the necessities and classification of causeways. Mention the conditions to be satisfied for providing causeways.

