**CE 2303 Railways airport and Harbour engineering**

**UNIT 1**

**Part-A**

1. What are the functions of sleepers?
2. List the different conventional methods of surveys for track alignment.
3. What is creep? How is it prevented?
4. State the effects of creep.
5. What are the functions of rails?
6. What are the requirements of ideal fastening?
7. State any two factors which govern the selection of gauge.
8. What are the advantages of concrete sleepers?
9. What is fish plates and why it is used in railways?
10. State the disadvantages of coning of wheels.
11. List the different railways for urban railway transportation.
12. What is meant by cant deficiency ?
13. Explain coning of wheels?
14. What is permanent way?
15. Define widening of gauge in railway geometric design.
16. Write the classifications of gradients.
17. On a BG track of 4degree curve equilibrium cant is provided for a speed of 60km/hr calculate value of equilibrium cant.
18. Define creep of rail.
19. State any four ideal requirements of permanent way?
20. What is meant by cant gradient?

**Part-B**

1. Explain the permanent way components with neat sketch.
2. Explain in detail about rail fastenings and fixtures with suitable Fig.
3. (I)What are the requirements of an ideal permanent Why?.What are the factors that govern the cross section and length of the rail?

 (ii) What are the objectives of providing transition curves in railways?

1. What are the classifications in various modes of transportation?
2. (i)Briefly explain the modern methods of surveys for track alignment.

(ii)Drive an expression for the relationship between super elevation,gauge and curve in a railway track.

1. (i)Describe the preliminary survey for the alignment of a railway line. Enumerate the data to be collected.

(ii)What are the different types of gradients in Railways? Discuss the factors governing the gradients.

1. Explain the various Geometric design elements of Railway Track.
2. (i)How will Remote sensing and GIS technology help in track alignment? Discuss.

(ii)Draw the cross section of a two track permanent way in an embankment and indicate the elements in detail.

1. Explain briefly about Rails?
2. (i)What are the objects of providing transition curve in railways? Explain briefly how the length of the transition curve is decided.

(ii)List the various types of sleepers. Describe their materials and demerits.

**UNIT 2**

**Part-A**

1. Distinguish between crossings and crossovers. [Nov/Dec 2007, 2009]
2. What is the necessity of track circuiting? [Nov/Dec 2009,2010]
3. Write down the various train control systems in India? [Nov/Dec 2007, 2010]
4. Define the points and crossings.
5. Define number of crossing? [Nov/Dec 2010]
6. What are the track resistance? [Nov/Dec 2011]
7. Write a note on automated track maintenance? [Nov/Dec 2011]
8. List the components of switch? [Nov/Dec 2012]
9. Differentiate between loop and sliding? [Nov/Dec 2012]
10. What are all the characteristic classification of signals? [April/May 2013]
11. Define interlocking? [April/May 2011, 2013]
12. What is mean by turn out?
13. What are the features in turn outs?
14. What is the necessity of relaying railway track?
15. Give any four requirements of track drainage system?
16. Difference between daily maintenance and periodic maintenance?
17. How to maintenance of super structure?
18. Write short notes on modernization of track?
19. Define cement grouting?
20. What is the junction station?[April/May 2013]

**Part-B**

1. Draw a neat sketch of left hand turnout and show the various components[Nov/Dec 2009, 2011]
2. Explain the various types of marshalling yard[Nov/Dec 2009]
3. Explain the different systems of controlling train traffic[Nov/Dec 2007, 2012]
4. What are all the main objectives of signalling and interlocking? Explain how the track circuit helps in controlling train movements. [Nov/Dec 2007]
5. Expolain the automatic block system of controlling train traffic[Nov/Dec 2007]
6. Distinguish between a railway station and a railway yard with a neat sketch, also explain a marshalling yard[Nov/Dec 2010]
7. Describe the operations involved in plate laying by telescopic method with neat sketches difference between reception signals and departure signals[Nov/Dec 2010, 2011]
8. What is mean by crossing? Discuss various types of crossing used in Indian railway[Nov/Dec 2011]
9. Explain in detail about the miscellaneous measures of track modernization[Nov/Dec 2011]
10. Enumerate the types and classification of signals with suitable drawings?[April/May 2013]