

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**M.Tech. Summer 2017 – 18 Examination**

**Semester: 2**  
**Subject Code: 03211181**  
**Subject Name: Railway Infrastructure Planning and Design**

**Date: 25/05/2018**  
**Time: 2:00 to 4:30pm**  
**Total Marks: 60**

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**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1** A) Enlist various types of defects which occur in rails and describe any two in detail. (05)  
B) Draw profile of ballast and formation. Enlist different types of material used as ballast. (05)  
C) Define a railway station and list out the facilities required at railway station. (05)
- Q.2** Answer the following questions. (Attempt any three) (Each five mark) (15)
- A) A MG track has a sleeper density on M+5. If the track is laid with rails of 13m length. Find out the number of sleepers under 1km rail length.
- B) Why are signals required? Discuss different types of signals.
- C) Explain the necessity of grade compensation at curves. The ruling gradient has been fixed as 1 in 250 on a section of B. G. track. What should be the compensated gradient when a  $6^\circ$  horizontal curve is also to be introduced on this ruling gradient?
- D) What is track alignment and factors affecting in the selection of good alignment
- Q.3** A) Define interlocking and state its principles. (07)  
B) Write short note on the following:  
i. Cant Excess  
ii. Turntable  
iii. Maglev train (08)  
iv. Ash pit  
v. Semaphore Signal  
vi. Wear of rail
- OR**
- B) What are the functions of points and crossings in railway track layout? Draw neat sketch of diamond crossing and show its various components. (08)
- Q.4** A) What is permanent way? Explain with neat sketch the different components of railway track. (07)
- OR**
- A) Describe the various system of controlling movements of trains. (07)  
B) Explain components of right hand turnout with the help of neat sketch. (08)