

## JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKE UP EXAMINATION- April 2018

B.Tech VI Semester

COURSE CODE: 10B11CE614

MAX. MARKS: 25

COURSE NAME: TRANSPORTATION ENGINEERING

COURSE CREDITS: 04

MAX. TIME: 1 Hr 30 Min

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1. (a) A B.G. has a sleeper density of (M+6). If the track is laid with welded rails of 26 m length, find out the number of sleepers on rail length.

(b) Describe the suitability of concrete sleepers for heavy axle loads, high speed traffic and electric-traction on Railways. (5)

Q2. (a) What is the ballast in permanent way? Mention the functions of ballast and state the requirements of a good ballast material.

(b) Explain why periodic renewal of ballast is necessary? How is it done? (5)

Q3. (a) Determine the length of transition curve and determine the offsets at every 15m. Given that the design speed of the train on curve is 90 kmph on a B.G. track.

(b) What are the objections for providing curves on a railway track? Under what circumstances the use of curves is warranted? (5)

Q4. (a) What are the functions of points and crossings in railway track layout?

(b) Describe "Loops" and "Sidings" with the help of neat sketches. (5)

Q5. Explain in detail how the maintenance of the surface of rails is done? (5)