JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION-2016

M.Tech 2nd Semester

COURSE CODE: 10B11CE614   MAX. MARKS: 15

COURSE NAME: Transportation Engineering

COURSE CREDITS: 3   MAX. TIME: 1 HR

Note: All questions are compulsory. Carrying mobile phone during examinations will be treated as case of unfair means. Illustrate your answers with neat sketches wherever necessary. Preferably, write the answers in sequential order.

1. Why is the widening of gauge required on sharp curves? Determine the extent of gauge widening required for a board gauge track on a 5° curve, given the following data: B = 6 m is the rigid wheel base, D = 1.5 m is the diameter of wheel, and h = 3.2 m is the depth of flange below rail top.   [3]

2. Calculate the maximum permissible speed on a curve on a Rajdhani route with a maximum sanctioned speed of 130 km/h. The superelevation provided is 50 mm and the transition length is 60 m. Also, the transition length of the curve cannot be increased due to proximity of the yard.   [5]

3. Explain the following terms and state the circumstances under which they occur: [5]

   a. Negative superelevation
   b. Grade compensation
   c. Pusher gradient
   d. Momentum gradient
   e. Transition curve

4. Discuss different types of rail sections used on BG tracks in India. Provide suitable sketches.   [2]