Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: RAILWAY ENGINEERING [AAE 4030]

REVISED CREDIT SYSTEM
(01/12/2016)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A.	What is creep? Discuss the remedial measures to reduce creep.	**(03)**
1B.	Explain the causes of wear and suggest suitable measure to reduce the wear of rail.	**(04)**
1C.	What is super-elevation? Explain the need of super-elevation	**(03)**
2A.	Explain the Essentials of Track Maintenance	**(02)**
2B.	Explain Coning of wheels and tilting of rails. Explain the necessity of both.	**(04)**
2C.	Mention the basic factors considered in designing turnout.	**(04)**
3A.	Calculate the maximum permissible speed on a curve of a high speed BG group A route having the following particulars: degree of the curve = 1°, super-elevation = 80 mm, length of transition curve = 120 m, maximum speed likely to be sanctioned for the section =160 km/h**.**	**(04)**
3B.	What are the requirements of rails in a railway track?	**(02)**
3C.	With relevant sketches explain the different types of crossings	**(04)**
4A.	With a neat sketch derive an expression for equilibrium super-elevation	**(04)**
4B.	A curve of 600 m radius on a BG section has a limited transition of 40 m length. Calculate the maximum permissible speed for the same. The maximum sectional speed (MSS) is 100 km/h.	**(02)**
4C.	What are the functions of sleepers and ballast? Explain	**(04)**
5A.	Calculate the maximum permissible speed on a 1° curve on a Rajdhani route with a maximum sanctioned speed of 130 km/h. The super-elevation provided is 50 mm and the transition length is 60 m. The transition length of the curve cannot be increased due to the proximity of the yard.	**(05)**
5B.	Explain the double lock system of interlocking.	**(02)**
5C.	With a neat sketch explain Drainage in Mid-Sections Between Railway Stations	**(03)**