Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

V SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, DEC 2018

SUBJECT: RAILWAY ENGINEERING [AAE 4030]

REVISED CREDIT SYSTEM
(28/12/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A. Mention the different types of elastic fastening used to join rails **(02)**

1B. Compare the reconnaissance survey and engineering survey. **(03)**

1C. Describe the various strengths and weaknesses of Indian railways **(05)**

2A. Determine the depth of the ballast cushion on a railway track with a concrete sleeper of 25.4 cm width and spaced 68.4 cm apart. **(02)**

2B. Explain the considerations for the design of rail components. **(04)**

2C. Estimate the superelevation and maximum permissible speed for a 2° BG transitioned curve on high-speed route with maximum sanctioned speed of 110 kmph. The speed for calculating the equilibrium superelevation as decided by the chief engineer is 80 kmph and the booked speed of goods trains is 50 kmph. **(04)**

3A. List the different types of ballast that can be used in a railway track. **(02)**

3B. Describe the factors which help in the formation of rail corrugation. **(04)**

3C. A 1-in-8.5 crossover exists between two BG parallel tracks with centers 5 m apart. Find the length of the straight track and the overall length of the crossover. Use Coles method. **(02)**

3D. Determine the steepest gradient on a 2° curve for BG with a ruling gradient of 1-in-200. **(02)**

4A. Sketch the layout of double turnout with contrary flexure of railway track. **(02)**

4B. Explain the principles of working of on-track tapering process of railway track. **(04)**

4C. Distinguish between mono-block and two-block concrete sleepers **(04)**

5A. Describe the preventive measures available in Indian railways to avoid accidents at level crossing. **(03)**

5B. List the different methods to construct tunneling in railways. **(03)**

5C. Differentiate between the time interval method and space interval method of signaling in railways. **(04)**