Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

VI SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, MAY/JUNE 2016

SUBJECT: TRANSPORTATION ENGINEERING-2 [CIE-306]
REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- *Answer any FIVE FULL questions.*
- *Missing data may be suitably assumed*

1A.	Explain the terminologies a) Guard rails b) Negative Super elevation	3
1B.	What are the various resistances for moving train on a broad gauge track?	4
1C.	What is grade compensation on curves? Calculate the actual ruling gradient on a BG track of 4° curve, if the ruling gradient of the section is 1 in 100.	3
2A.	Find the length of a transition curve on a BG track with a 30 curve, cant of 120mm and the maximum permissible speed is 75kmph.	3
2B.	Calculate the maximum permissible speed on a curve of high speed BG track having the following particulars. Degree of the curve=2°, Amount of super elevation=7cm, Length of transition curve=130m, Maximum speed of the section like to be handled=165kmph	4
2C.	What are the different components of crossing? Explain with a sketch ANC and TNC	3
3A.	Calculate elements of turnout, when it is given G=1.676 m, N= 12, d=13.3 cm and angle of switch β =1 °8'	4
3B.	Draw a neat sketch of a Semaphore signal and explain the working procedure.	4
3C.	Write any four principles of interlocking of signals	2
4A.	Explain the trailing direction and facing direction in points and crossing	2
4B.	With a neat sketch explain the minimum turning radius of an aircraft. In what way it is helpful for a designer?	3
4C.	Describe with an neat sketch the three controls of an Aircraft:	5
5A.	Explain the cross wind component and calm period with a sketch.	5
5B.	What is an oleo strut? Determine the radius of taxiway for a supersonic aircraft to negotiate a curve at a turning speed of 65kmph. The wheel base is 30m and the wheel tread is 7.8mt. The airport is of A type as per ICAO.	5
6A.	A runway has to be constructed at a site where grading map indicates a falling gradient of 1.2% meeting a rising gradient of 0.7%. Again there is a falling gradient of 0.8%. Design the runway profile as per FAA specifications.	4
6B.	Describe with a neat sketch how the components of ILS works.	6