M.E. Second Semester (Civil Engineering (Transportation Engg. & Management)) (New CGS)

13111 : Advanced Rail Road Engineering : 2 SFTR 1

P. Pages : 1

Time : Three Hours

AW - 3505

Max. Marks : 80

* 0 3 4 8 *

Notes :
1. All question carry as indicated marks.
2. Answer **any five** questions.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.
6. Use of pen Blue/Black refill only for writing the answer book.

1. a) Explain various stresses induced in railway track. **8**

b) State the necessity of coning of wheel? Explain with neat sketch behaviour of coned wheel on curved path. **8**

2. Attempt **any two.**

a) Explain with neat sketches, how surface and sub-surface water is removed from railway track. **8**

b) Draw a neat sketch of Right hand turn out (split switch) & show component parts. **8**

c) What is creep of Rail? Explain the causes and remedial measure of creep of rail. **8**

3. a) Draw neat sketch of **8**

i) Track Triangle. ii) Symmetrical split.

b) State the necessity of providing super elevation on Horizontal curve. State the limits of super elevation and cant deficiency for B.G. and M.G. **8**

4. Attempt **any two.**

a) A 5° curve diverges from a 3° main curve in reverse direction in the layout of BG yard. If the speed on branch line is restricted to 35 kmph. Determine the restricted speed on the main line. **8**

b) Find out the distance between ANC and TNC for a crossing number of 1 in 12. Assume the thickness of nose crossing = 1.3 cm. **8**

c) Derive the relationship of super elevation (e) with gauge, speed and radius of curve for BG and MG. **8**

5. Attempt **any two.**

a) Explain resistances due to gradient with neat sketch. **8**

b) Explain in brief Hauling capacity of a locomotive. **8**

c) What would be the gradient for a BG track when the grade resistance together with curve resistance due to a curve of 3° shall be equal to the resistance due to a ruling gradient of 1 in 200? Assume 'w' be the weight of train and 1 in X be the required gradient. **8**

6. a) Explain working principle of C.T.C. system. **8**

b) Define interlocking and explain the principle of interlocking. Describe the various mechanical devices used for interlocking. **8**

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