M.E. Second Semester (Civil Engineering (Transpo. Engg. & Manag.)) (New CGS)

13111 : Advanced Rail Road Engineering : 2 SFTR 1

P. Pages : 1 **AW - 3776**

Time : Three Hours * 1066 * Max. Marks : 80

Notes : 1. All question carry marks as indicated.
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 ink/refill only for writing the answer book.

1. a) Draw typical Cross-Section of double line B. G. railway track in embankment on curved path. **8**

b) Explain various resistances which a locomotive has to overcome before hauling a train. **8**

2. a) Define "Sleeper density". B. G. Track has a sleeper density n + 6. If the track is laid with welded rails of 26m length. Find out the number of sleepers on rail length. **8**

b) A 2-8-2 locomotive is required to haul a train at 55 kmph. The axle load of driving wheels of engine is 16 tonnes. Total weigh of the train is 900 tonnes. If the train has to ascend a slope of 1 in 180. How much the speed should be reduced. **8**

3. Attempt **any two.**

a) Draw a neat sketch of **8**
i) Symmetrical split. ii) Diamond crossing.

b) Explain 'Negative superelevation' with neat sketch. **8**

c) 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**

4. a) Derive the relationship of superelevation 'e' with Gauge, speed and turning radius of curve for B.G. and M.G. **8**

b) Explain the terms with neat sketch. **8**
i) Heel divergence. ii) Flangeway clearance.

5. Attempt **any two.**

a) Explain in brief tractive effort of a locomotive. **8**

b) What are the objects of signalling? Describe the engineering principles of signalling. **8**

c) Explain resistance due of curve with neat sketch. **8**

6. a) Explain working procedure of Absolute block system. **8**

b) Explain in brief. **8**
- Monorail system. - Tube rail system.

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