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GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 711308N Date: 06-01-2014 **Subject Name: Highway Geometric Design** Time: 10.30 am - 01.00 pm**Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full mark. **Q.1** (a) Explain total reaction time of driver and the factors on which it depends. 07 Explain "PIEV" theory. **(b)** What is gradient? Explain various types of gradients. 07 There is a horizontal curve of radius 360m and length 180m. Calculate the **Q.2** 07 clearance required from the central line on the inner side of the curve so as to provide stopping sight distance of 80m. (b) Explain summit and valley curves and the various cases when these are formed **07** while two different gradients meet. OR **(b)** Explain briefly classification of Urban roads adopted in India. 07 Q.3 (a) Derive an expression for finding the stopping sight distance at level and at **07** grades. **(b)** Write the necessity of super elevation on horizontal curve? Derive an **07** expression for calculating super elevation. **Q.3** (a) What are the general controls to be kept in mind in designing vertical profile of 07 a road? **(b)** Write short note on Horizontal Transition curve. 07 0.4 (a) Discuss cross-sectional details for different categories of roads. 07 **(b)** Explain briefly overtaking zones with neat sketch. **07 Q.4** Derive a formula determining the length of a sag curve for fulfilling rider 07 comfort criterion. **(b)** Write a note on channelization **07** Q.5 Briefly describe various elements of intersection design 07 (a) Explain the factor to be considered in geometric design of parking areas in the 07 urban region. OR **Q.5** Explain briefly the geometrics of Bus stop layouts. 07 How would you find problematic spots on existing highway? what remedies 07 would you suggest to improve them?
