

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E Sem-I Regular Examination January / February 2011****Subject code: 711303N****Subject Name: Highway Materials and Construction****Date: 02 /02 /2011****Time: 02.30 pm – 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss the desirable properties of aggregate used in the road construction. **07**
(b) What are the factors affecting The compaction of soil sub grade? Explain various equipment used in the field compaction of soil sub grade. **07**

- Q.2** (a) What is Triaxial test? Describe the procedure and significance of the test. **07**
(b) Describe the Los Angeles Abrasion Test for the aggregate. State its importance. **07**

OR

- (b) Describe the Ductility Test for the bitumen. State its importance in road construction. **07**

- Q.3** (a) Write a short note on Marshal Stability test. **07**
(b) The bulk specific gravity of coarse aggregate, fine aggregate and fines are found to be 2.5, 2.6 and 2.65 respectively. The specific gravity of bitumen is given as 1.10. For penetration of Marshall sample, the relative proportions used are 55, 30, 10 and 5% by weight respectively. The mass of the sample measured in air is 1245.2 g. The mass of the paraffin coated sample in air is 1295.8g, and the mass of paraffin coated sample in water is measured as 703.7g. Calculate the following. **07**

1. The bulk specific gravity of mix.
2. VMA
3. VA
4. VFB
5. The percentage absorbed bitumen.

The specific gravity of paraffin is 0.9 and the theoretical maximum specific gravity of the mix, obtained from the vacuum test is 2.441.

OR

- Q.3** (a) Explain the construction method for flexible pavement. **07**
(b) Write a difference between WBM and WMM. **07**

- Q.4** (a) Explain the construction method for rigid pavement. State various precautions required during the construction of rigid pavement. **07**
(b) Write a short note on use of Geotextile material in road construction. **07**

OR

- Q.4** (a) Explain the California Bearing Ratio test and its significance. **07**
(b) Write a difference between Bitumen and Tar. **07**

- Q.5** (a) What is stabilization of soil? Describe soil-lime stabilization. **07**
(b) What are the methods of sub surface drainage? Explain any one in details. **07**

OR

- Q.5** (a) Describe Road construction in swampy area. **07**
(b) Describe aggregate blending. **07**
