

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E Sem-I Remedial Examination January/ February 2011****Subject code: 711303****Subject Name: Highway Material and Construction****Date: 02 /02 /2011****Time: 02.30 pm – 05.00 pm****Total Marks: 60****Instructions:**

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

- Q.1** (a) What are the importances of surface and subsurface drainage? Explain any one subsurface drainage system provides in pavement. **06**
- (b) Explain the different between WBM and WMM? Explain procedure of laying any one with the cross section details. **06**

OR

- Q.2** (a) What is blending? Explain the method of blending? State its advantages. **06**
- (b) Explain the procedure for laying cement concrete(CC) also Enlist the precautions required to take while laying CC. **06**

OR

- (b) Write short note on Soil–Lime Stabilization. Explain any one method of soil stabilization in details. **06**

- Q.3** (a) Explain Sand Replacement Method for measurement of density on road construction. **06**
- (b) What are geo-synthetics? Discuss about various types of geo-synthetics used in road construction. **06**

OR

- Q.3** (a) What is modulus of sub-grade reaction? How it is determined? **06**
- (b) Enlist the various tests carried out for bitumen. Write the specific purpose of each test. **06**

- Q.4** (a) Explain problems in the construction of high embankments over weak foundation. **06**
- (b) Explain objects of compaction and effect of inadequate compaction. **06**

OR

- Q.4** (a) What is sub-grade? Enlist the desirable properties of sub-grade. Enlist the type of failures due to improper sub-grade. **06**
- (b) Explain CBR test for soil. **06**

- Q.5** (a) Find out the VMA, VFB, Air voids and percentage absorbed bitumen for 5% bituminous content. 1.08, 2.55, 2.65, and 2.6 are the specific gravity of bitumen, cement, fine aggregate and coarse aggregate respectively. 50%, 25% and 20% are the composition of coarse aggregate, fine aggregate and cement respectively. The Bulk specific gravity of Marshall mould is found to be 2.324 at 5% bituminous content. Theoretical maximum specific gravity is 2.441 **06**
- (b) Explain the Marshall stability test. **06**

OR

- Q.5** (a) Explain soundness test and its significance. **06**
- (b) Explain Gradation design of the filter layer. **06**
