

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E –Ist SEMESTER–EXAMINATION – JULY- 2012****Subject code: 711303N****Date: 09/07/2012****Subject Name: Highway Materials and Construction****Time: 2:30 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) Enlist the soil classification systems and discuss the IS method of soil classification. **07**
- (b) Sub grade soil material was tested in laboratory and following results were obtained. **07**
- Liquid limit = 76 %
Plastic limit = 54 %
Soil finer than 75 μ are = 70 %
Calculate the GI and classify the soil by HRB system of classification.
- Q.2** (a) List the methods of soil stabilization. Explain stabilization of Desert sand. **07**
- (b) Discuss the principles and scope of soil – cement stabilization. **07**
- OR**
- (b) Write principles of good drainage in hilly road. **07**
- Q.3** (a) Classify the aggregates according to different criteria and state desired properties for road construction. **07**
- (b) Explain aggregate crushing value test and mention the significance of the test result. **07**
- OR**
- Q.3** (a) Discuss the desirable properties of bitumen. Compare Tar and Bitumen. **07**
- (b) List the tests for quality check of Bitumen and explain ductility test. **07**
- Q.4** (a) Write the required properties of bitumen mix used for road pavement. **07**
- (b) Explain “Marshal Stability Test” and it’s significance in bitumen mix design. **07**
- OR**
- Q.4** (a) Enlist the different methods of road construction. Discuss their advantages and limitations. **07**
- (b) Write short note on. **07**
- (i) Surface dressing
(ii) Interface treatment
- Q.5** (a) Discuss the importance of drainage in highway engineering. **07**
- (b) Explain with sketch the “Catch Water Drain” in highway. **07**
- OR**
- Q.5** (a) State and explain various ways of road construction in Swampy area. **07**
- (b) How are land slides caused in hill roads and how can they be prevented? **07**
