

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER-1 EXAMINATION – WINTER • 2014

Subject Code: 711303N

Date: 03-12-2014

Subject Name: Highway Material and Construction

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 marks.

Q.1 (a) Compare surface area concept and void ratio concept for bituminous concrete mix design for Pavement? **07**

(b) Explain Marshall method for mix design of Bituminous Concrete? **07**

Q.2 (a) What are admixtures? List different types of admixtures and their influence on performance of bituminous Pavement. **07**

(b) What is meant by Penetration grade & viscous grade for bitumen? Which one is currently considered for pavement design? Why? **07**

OR

(b) List the test conducted on bitumen to check its suitability for pavement construction? Also discuss the importance of each test? **07**

Q.3 (a) Explain with neat sketch the procedure for determining the viscosity grade of bitumen? **07**

(b) Differentiate between Cut back & emulsions, Stone Mastic Asphalt & Asphalt. **07**

OR

Q.3 (a) Explain the test on bitumen to evaluate the visco elastic behavior of bitumen & asphalts? **07**

(b) What is Falling weight deflectometer test? How it contributes in examining & evaluating the conditions of various Pavement layers. **07**

Q.4 (a) List the Test conducted on fillers to check its suitability for pavement construction? Discuss about their permissible limits to be suitable for highway construction as suggested by IRC. **07**

(b) List various kind of rollers used in road construction? Explain why and under what conditions they are used? **07**

OR

Q.4 (a) Write a note on hot mix plant. **07**

(b) Explain laboratory test procedure to determine optimum moisture content for compaction of road sub grade? **07**

Q.5 (a) Explain the procedure for designing road side drains? **07**

(b) Explain how geotextile contribute in construction of bridge abutments? Also discuss about its advantages & disadvantages? **07**

OR

Q.5 (a) Discuss soil stabilization technique using geotextile & stone piles in marshy land for construction of road embankment? **07**

(b) What is CBR Value? How is it determined? What is its significance in road construction? **07**
