Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013

Subject code: 711303N **Date: 13-06-2013**

Subject Name: Highway Materials 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)**	What are desirable properties of soil as highway material?	**07**
	(b)	What is the significance of Proctor compaction and CBR test for soil ?	**07**
Q.2	**(a)**	What is the meant by mechanical stabilization? Explain in detail.	**07**
	(b)	Write a short note on ñLos Angeles Abrasion testò.	**07**
		OR	
	(b)	What are the desirable properties of good aggregates for highway construction?	**07**
Q.3	**(a)**	Explain about the Shape test of coarse aggregates.	**07**
	(b)	Explain about the Flash and fire test for bitumen. .	**07**
		OR	
Q.3	**(a)**	Write a short note on ñMastic asphaltò.	**07**
	(b)	Discuss the marshal method of design of asphalt mix.	**07**
Q.4	**(a)**	What is the general requirement of bituminous mix?	**07**
	(b)	What are the advantages and disadvantages of cement concrete roads?	**07**
		OR	
Q.4	**(a)**	Discuss the various types of joints with their objectives with sketch.	**07**
	(b)	Write a short note on ñSeal coatò and ñSurface dressingò.	**07**
Q.5	**(a)**	Discuss the importance of Highway drainage.	**07**
	(b)	What are the precautions to be taken during construction of roads in water logged area?	**07**
		OR	

Q.5 **(a)** A specimen of asphaltic concretes has a height of 62 mm and a diameter of 10.16 cm. The weight of the compacted specimen (uncoated) in air is 1175 gm and in water is 670 gm. When coated with paraffin, its weight in air is 1225 gm and its weight in water is 665 gm. The specific gravity of paraffin is 0.90. The specific gravity of Asphaltic cement, Coarse Aggregate, Fine Aggregates and Fillers is 1.03, 2.60, 2.75 and 2.68 respectively. The composition of Coarse aggregate, Fine Aggregate and Fillers is 55%, 37& and 8% respectively. The asphaltic cement content is 6% by weight of total mix. Calculate **07**

(i) Bulk density of specimen by uncoated specimen under water,

(ii) Bulk density from dimensions of specimen

(iii) Average specific gravity

(iv) Maximum theoretical density .

(b) Write a short note on ñControl of snow in hill roadsò. **07**

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