

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**M.Tech. Winter 2019- 20 Examinations**

**Semester: 1**  
**Subject Code: 203211102**  
**Subject Name: Highway Materials & Construction**

**Date: 17/12/2019**  
**Time: 10:30am to 1:00pm**  
**Total Marks: 60**

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1** A) Enlist the methods of soil classification. (05)  
 B) What is the importance of Highway Drainage? (05)  
 C) What are the purposes of soil stabilization? (05)

- Q.2 Answer the following questions.** (Attempt any three) (Each five mark) (15)  
 A) Write the short note on “Vibratory roller”.  
 B) Explain “CBR Test” of soil fo pavement construction.  
 C) Write a difference between Tar & Bitumen.  
 D) Enlist the factors affecting the concrete mix design and objectives of it.

- Q.3** A) Explain Viscosity test of Bitumen. Explain the use of bitumen with different grades of viscosity. (07)  
 B) What are the materials which can be used for GSB layer? Write the construction method for GSB. (08)  
**OR**  
 B) What are the materials used in WMM? Explain the steps of Construction Procedure and Quality control for WMM. (08)

- Q.4** A) Write short note on “Rothfutch Method of Aggregate blending” (07)  
**OR**  
 A) Explain Los Angeles Abrasion Test on Aggregates. (07)

- B) The specific gravities and weight proportions for aggregate and bitumen are as under for the preparation of Marshall Mix design. The volume and weight of one Marshall specimen was found to be 475 cm<sup>3</sup> and 1100 g. Assuming absorption of bitumen in aggregate is zero, find  $V_v$ ,  $V_b$ , VMA and VFB. (08)

Item	A1	A2	A3	A4	B
Wt. (g)	825	1200	325	150	100
Specific Gravity	2.63	2.51	2.46	2.43	1.05