

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**M.Tech. Winter 2018 – 19 Examination**

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

**Date: 11/12/2018**  
**Time: 10.30 to 1.00**  
**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) Write a short note on geotextile materials. (05)  
 B) Write a difference between Tar & Bitumen. (05)  
 C) What is significance of design gradation? (05)
- Q.2** Answer the following questions. (Attempt any three) (Each five mark) (15)  
 A) What is the main objective of prime coat, tack coat?  
 B) What do you mean by soil stabilization? What is the need for soil stabilization?  
 C) Explain in detail any one test on bitumen.  
 D) Write a short note on High performance concrete.
- Q.3** A) What are the methods of soil stabilization? Explain one in brief. (07)  
 B) Explain procedure of blending of aggregate. (08)
- OR**
- B) Explain in detail preparation of test specimen for Marshall test, test procedure & Evaluation and adjustment of mix design. (08)
- Q.4** A) Write a short note on Highway Drainage. (07)
- OR**
- A) What is the construction procedure & quality control test for BC? (07)  
 B) A trial mix of surface course of N.H. which carries heavy traffic is designed by Marshall Mix design; average test results obtained are as under.

Bitumen Content	Stability in kg	Flow in mm	CDM gm/cc
4	902	1.23	2.5
4.5	1015	1.65	2.511
5	1106	2.31	2.519
5.5	1098	3.28	2.517
6	961	5.10	2.509

(08)

Determine OBC to satisfy Marshall design criteria. Discuss necessary adjustments of trial does not satisfy the following criteria. Assume SGMA = 2.810 & Gb = 1.02

1. Stability = 820 kg (min req)
2. Flow = 2-4 mm
3. VMA = 10-12%
4. VIM = 3-5%
5. VFB = 65-78%