

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Winter 2019 - 20 Examination

Semester: 5
Subject Code: 03104304
Subject Name: Transportation Engineering- I

Date: 05/ 12 /2019
Time:10:30 am to 01:00 pm
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 Objective Type Questions - (All are compulsory) (15)**A) Fill in the blanks.**

1. The width of carriageway for two lanes with raised kerbs is _____
2. The maximum width of vehicle as per IRC specification is _____
3. The full form of HRB _____
4. The target road length (density) at the end of first twenty year plan was _____
5. The total reaction time for Overtaking Sight distance _____

B) One word answer.

1. Write a unit of traffic volume?
2. When IRC is established?
3. What is the full form PIEV?
4. What is the full form of WBM?
5. Which test is used for checking the toughness of aggregates?

C) Multiple Choice Questions.

1. Design of horizontal and vertical alignments, super-elevation, sight distance and grades, is worst affected by
 (a) width of the vehicle (b) length of the vehicle (c) speed of the vehicle (d) all the above
2. The minimum overtaking zone is
 (a) 3 OSD (b) 2 OSD (c) 5 OSD (d) None
3. What is the relation between density (K), volume (Q) & speed (V)?
 (a) $Q = K/V$ (b) $Q = KV$ (c) $K = V/Q$ (d) None
4. Camber in pavements is provided by
 (a) straight line method (b) parabola method (c) straight at the edges and parabolic at the crown
 (d) all the above
5. Which one are not vehicular characteristics of traffic engineering?
 (a) Dimension of vehicle (b) Speed of vehicle (c) Mental (d) Power of Vehicle

Q.2 Answer the following questions. (Attempt any three) (15)

- A) Explain the Bombay road development plan.
- B) What are the difference between flexible pavement & rigid pavement?
- C) Explain various roads marking of highway.
- D) Explain the repair & maintenance of flexible & rigid pavement.

Q.3 A) (1) Explain various test of bitumen. (07)

- (2) Explain the various test of aggregates.

B) Explain the engineering surveys needed for locating a new highway. (08)

OR

B) (1) The speed of overtaking and overtaken vehicles are 70 and 40 kmph, respectively on two way traffic road. If the acceleration of overtaking vehicle is 0.99 m/sec^2 (a) Calculate safe overtaking sight distance (b) Mention the minimum length of overtaking zone (c) Diagram of overtaking zone. **(08)**

Q.4 A) (1) Derive the expression for mechanical widening. **(07)**
(2) Calculate the extra widening required for a pavement of width 7m on a horizontal curve of radius 250m if the longest wheel base of vehicle expected on the road is 7.0 m. design speed is 70 kmph.

OR

A) (1) Explain various the road user characteristics in detail. **(07)**
(2) Explain the floating car method

B) (1) Explain the collision diagram & condition diagram. **(08)**
(2) Explain the various traffic control devices.