

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2018 - 19 Examination

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

Date:22/05/2019
Time:10:30am to 01:00pm
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 Objective Type Questions - (All are compulsory) (15)**A) Fill in the blanks. (5)**

1. The total reaction time for Overtaking Sight distance _____
2. The maximum width of vehicle as per IRC specification is _____
3. The full form of IRC _____
4. The target road length (density) at the end of second twenty year plan was _____
5. The width of carriageway for two lanes without raised kerbs is _____

B) One word answer. (5)

1. Write a unit of traffic density?
2. When HRB 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 hardness of aggregates?

C) Multiple Choice Questions. (5)

1. Which one are not vehicular characteristics of traffic engineering?
 (a) Dimension of vehicle (b) Speed of vehicle (c) Mental (d) Power of Vehicle
2. The desired 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. 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

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

- A)** Explain the Nagpur 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) Explain the various method of Origin & Destination studies. (07)**B) (1) Explain the collision diagram & condition diagram. (08)**

- (2) Explain the various traffic control devices.

OR

B) (1) Derive the expression for mechanical widening.

(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. **(08)**

Q.4 A) (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.. **(07)**

OR

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)**