

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2170613****Date:10/05/2019****Subject Name:Traffic Engineering****Time:02:30 PM TO 05:00 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) Define: 1) Design speed 2) Operational delay 3) free flow operating speed. **03**
- (b) What are the functions of traffic engineering? **04**
- (c) Explain normal resistances encountered by a vehicle on uphill with sketch **07**
- Q.2** (a) Write the name of IRC Code for **03**
- a) 'Practice for road signs'
- b) 'Guidelines on Design and Installation of Road Traffic Signals'
- c) 'Practice for road markings'.
- (b) Show the conflict points on cross roads with two way traffic on both roads & one way traffic on both roads. **04**
- (c) The driver of a vehicle travelling at 80km per hour requires 8.5m less to stop after applying the brakes up a grade, than when travelling down the same grade. **07**
- If the coefficient of friction is 0.55, calculate:
- a) The percent of the gradient.
- b) The braking distance on the down grade.
- OR**
- (c) Explain the various aspects of human vision considered in traffic engineering. **07**
- Q.3** (a) What are the several factors which affect the speed of vehicle? **03**
- (b) Write the objects of traffic volume studies. **04**
- (c) Write a short notes on "3-E's" for road safety. **07**
- OR**
- Q.3** (a) State the purposes of origin & destination studies. **03**
- (b) Draw a sketch of a) collision diagram and b) condition diagram. **04**
- (c) How to analyses & presentation of speed data by tabular arrangement & graphically. **07**
- Q.4** (a) What are interchange ramps? With sketches show different types of interchanges and mention their advantages. **03**
- (b) Draw a neat sketch of a full cloverleaf & partial cloverleaf and show the movement of traffic. **04**
- (c) Explain briefly the principle of Webster's method of signal design. Mention the advantages of this method. **07**
- OR**
- Q.4** (a) Define: 1) Saturation flow 2) PCU 3) Amber period **03**
- (b) Discuss briefly the various factors which affect the road user characteristics and their effects in traffic performance. **04**
- (c) Explain various warning signs as per IRC with sketch. **07**

- Q.5 (a) Draw a neat sketch of Diamond interchange and show the movement of traffic. **03**  
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- (b) Draw a sketches on lighting layout for **04**  
a) Horizontal curves of highway and  
b) Intersections.
- (c) Explain the various design factors in road lighting. **07**
- OR**
- Q.5 (a) Define: Luminous flux, foot candle, Luminaire **03**  
(b) What are the objects of highway lighting? Explain silhouette & reverse silhouette. **04**  
(c) What is traffic rotary? What are its advantages & limitations, in particular reference to traffic conditions in India? **07**

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