

Road Traffic Engineering (315318)

MSBTE Diploma · K-Scheme · Model Question Paper — Set B

Time: 3 Hours
Max. Marks: 70
Instructions:

1. All questions are compulsory.
2. Answer each next main question on a new page.
3. Illustrate your answers with neat sketches wherever necessary.
4. Figures to the right indicate full marks.
5. Assume suitable data, if necessary.
6. Use of non-programmable electronic pocket calculator is permissible.
7. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following:
10

- a) State any four objectives of traffic engineering.
- b) Define PIEV time. State the value of total reaction time adopted by IRC.
- c) State any four necessities of origin and destination (O-D) study.
- d) Define Intelligent Transportation System (ITS). Name any two ITS applications used in India.
- e) List any four common terms used in parking survey.
- f) Define arboriculture.
- g) List any four road-user (human) causes of road accidents.

Q.2 Attempt any THREE of the following:
12

- a) Explain the difficulties in urban traffic conditions and suggest measures to overcome them.
- b) An in-out parking survey of a parking lot of 50 bays gave the following data. 12 vehicles were already parked at 8:00. Find the parking accumulation, peak accumulation, parking load, parking volume, average parking duration, parking turnover and parking index.

Interval	8:00–8:30	8:30–9:00	9:00–9:30	9:30–10:00	10:00–10:30	10:30–11:00	11:00–11:30	11:30–12:00	12:00–12:30	12:30–13:00
Vehicles in	10	14	9	8	6	7	9	5	4	3
Vehicles out	2	4	5	6	8	5	6	9	7	6

- c) Explain journey time and delay study by the floating car method. State its uses.
- d) State the parking space requirements as per IRC for residential flats, hotels, shops (mercantile) and industrial buildings in a city of 20 lakh population.

Q.3 Attempt any THREE of the following:
12

- Define traffic volume. Explain its uses in planning and design of roads.
- Describe the benefits of Intelligent Transportation System (ITS) in road traffic surveys and management.
- Explain the ill effects of unregulated parking in the central business district of a city.
- Explain the necessity of street lighting. Draw any two arrangements of street lamps.

Q.4 Attempt any THREE of the following:

12

- Explain the physical road characteristics — gradient, curves, design speed and friction — considered in traffic engineering.
- Explain any four factors affecting the reaction time of a driver.
- Explain 'discernment by silhouette' and the factors affecting visibility of the road at night.
- Describe the common techniques used for the care and maintenance of roadside trees.
- Suggest preventive measures for avoiding road accidents.

Q.5 Attempt any TWO of the following:

12

- Draw a neat sketch of an on-street parking system for a busy commercial street and explain the provisions made in it.
- Explain how off-street parking facilities help to reduce congestion in commercial areas. Sketch a multi-storey car park.
- Explain the factors to be considered while selecting trees for roadside plantation.

Q.6 Attempt any TWO of the following:

12

- Spot speed observations on a state highway are given below. Prepare the cumulative frequency table, plot the cumulative speed distribution curve and determine the 85th and 98th percentile speeds. Also find the mean spot speed.

Speed range (km/h)	30–40	40–50	50–60	60–70	70–80	80–90	90–100
No. of vehicles	9	21	44	58	32	11	5

- Discuss the legislation and law enforcement measures for road safety. State the role of education and propaganda in reducing accidents.
- The accident records of an intersection of MG Road and Station Road for three months are given below. Explain the collision diagram and draw it for these records. State any two remedial measures.

No.	Date, time	Description	Severity
1	12 Jan, 18:40	Eastbound car hit northbound motorcycle in the junction (right-angle)	Injury
2	03 Feb, 21:15	Westbound truck hit southbound car in the junction (right-angle)	Fatal
3	17 Feb, 09:10	Rear-end collision on the west approach (eastbound)	Property damage
4	25 Feb, 19:30	Rear-end collision on the east approach (westbound)	Property damage

5	08 Mar, 13:05	Southbound car turning right hit northbound car	Injury
6	19 Mar, 20:20	Northbound auto-rickshaw hit pedestrian crossing the south arm	Injury
7	27 Mar, 23:50	Westbound car turning left hit lamp post at south-east corner	Property damage

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in

