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**Question Paper Code : 21178**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Seventh Semester

Civil Engineering

CE 2026 / CE 701 – TRAFFIC ENGINEERING AND MANAGEMENT

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term banking efficiency.
2. What are the interactions between land use and traffic characteristics?
3. What do you mean by the term desire line diagram?
4. Write the characteristics of level of service "C" in traffic flow on the road.
5. Draw the "give way" sign as per Indian Road Congress (IRC) with its relevance.
6. Differentiate between the "silhouette and reverse silhouette" in street lighting.
7. With neat sketch write any one Channelizing Island as per IRC standard with its function.
8. Differentiate between 'At Grade Intersection and Grade Separated Intersection'.
9. List out the various types of Travel Demand Management (TDM) techniques.
10. What are the uses of exclusive bus lanes in road traffic?

## PART B — (5 × 16 = 80 marks)

11. (a) A passenger car weighing 2 tonnes is required to accelerate at a rate of  $3 \text{ m/sec}^2$  in the first gear from a speed of 11 K.P.H. The gradient is + 1 percent and the road has a black topped surface. The frontal projection area of the car is  $2.0 \text{ m}^2$ . The car tyres have radius of 0.33m. The rear axle gear ratio is 3.82:1 and the first gear ratio is 2.78:1. Calculate the engine horsepower needed and the speed of the engine. Make suitable assumptions.

Or

- (b) Write in short the significance and scope of traffic engineering in today's context.
12. (a) Explain in detail in various origin destination surveys to be conducted to prepare comprehensive traffic plan for the city like Chennai.

Or

- (b) Write briefly the different factors cause accidents in traffic engineering with IRC standards.
13. (a) (i) A fixed time 2 -phase signal is to be provided at an intersection having a North-South and an East-West road where only straight-ahead traffic is permitted. The design hour flows from the various arms and the saturation flows for these arms are given in the following table.

Table 13.a.i Traffic flow details in various arms of intersection

Details on flow	North	South	East	West
Design hour flow (PCU's/hour)	810	380	770	950
Saturation flow (PCU's/hour)	2500	1900	2800	3100

Design the traffic signal with timing diagram and phase diagram. Assume relevant data.

- (ii) Write the various advantages and disadvantages of different types of traffic signals.

Or

- (b) With neat sketches write any eight types of road marking as per IRC standards with its functional elements.

14. (a) Explain the functions of various types of grade separated intersections with IRC standards.

Or

- (b) Enumerate the various design elements of rotary type of intersection with neat sketches and IRC standards.
15. (a) Explain briefly various traffic management regulatory measures commonly implemented.

Or

- (b) What is the significance of traffic management? Write the various travel demand management techniques commonly used in managing traffic on roads.