

B.E. (CE) Part-III 6th Semester Examination, 2010

Transportation Engineering-II
(CE-606)

Time : 3 hours

Full Marks : 70

Use separate answerscript for each half.

Assume data, if required.

FIRST HALF

{Answer O.No.1 and anu TWO from the rest.}

1. Write short notes on any three from the following : [3x5]
 - a) Various types of rails in use,
 - b) Coning of wheels,
 - c) Crossover,
 - d) Types of modal split model,
 - e) Gravity model.

2.
 - a) What are the loading conditions adopted by Indian Railways for the design of concrete sleepers?
 - b) Discuss the merits and demerits of wooden sleepers and concrete sleepers.
 - c) If the width of the wooden sleeper is 2.54 cm, then what will be the depth of stone ballast cushion below sleepers of density $N + 7$ on a BG track.

(3+4+31)

3.
 - a) Draw the neat sketch of a turnout and label all the important features.
 - b) A turnout is to be laid off a straight BG track with a 1 in 12 crossing. Determine the lead and radius of the turnout with the help of the following data:
Heel divergence = 15 cm
Angle of switch = $1^\circ 12'$.

[5+5]

4.
 - a) Discuss the four-stage travel demand modeling.
State the doubly constrained growth factor model.
 - b) It has been given that a zone has 250 households with car and 250 households without car and the average trip generation rates of each group is 5.0 and 2.5 per day respectively. Assuming that in the future, all households will have car, find the growth factor and future trips from that zone considering the population and income remains constant.

[2+4+4]

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— (2) —

SECOND HALF

[Answer O.No.5 and anu TWO from the rest.]

5. Write short notes on any three from the rest: 13 x 5
- a) Runway orientation,
 - b) Separation criteria for taxiways,
 - c) Rotary intersection,
 - d) ADT and AADT,
 - e) Two phase traffic signal.
6. Why exit taxiway is required in an airport? Discuss the factors on which the location of exit taxiway depends. For high speed exit taxiway deduce the equation for distance from touchdown point to the point of exit. [3+3+4]
6. What is runway occupancy time? What is balancing point? State the procedures for estimating total runway occupancy time. Discuss the characteristics of apron area of an air port. [2+2+4+2]
8. The following spot speed data given in table below has been obtained from the field. Draw the cumulative frequency distribution curve and suggest the design speed for geometric design, speed limit for traffic regulation and lower speed limit. 1101

Table: Spot Speed data

Mid speed (km/h)	No of vehicle observed	Mid speed (km/h)	No of vehicle observed	Mid speed (km/h)	No of vehicle observed
28	9	40	75	52	17
32	74	44	66	56	6
36	79	48	33	60	1