

Total No. of Questions : 4]

SEAT No. :

PC171

[6361]-28

[Total No. of Pages : 2

B.E. (Civil)(Insem)

**TRANSPORTATION ENGINEERING**  
**(2019 Pattern) (Semester - VII) (401002)**

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Solve Q.1 or Q.2, Q.3 or Q.4.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable data, if necessary.
- 5) Use of logarithmic tables, slide rule, molliers charts, electronic pocket calculator and steam tables is allowed.

- Q1)** a) Explain in brief the salient features of First 20 year road development plan. [4]
- b) For economical road alignment shortest length is usually the best. What circumstances justify a deviation far from this principle. [5]
- c) Four new road links A, B, C and D are to be constructed during a five year plan period. Suggest the order of priority for phasing the road construction program based on maximum utility approach. Assume utility units of 0.25, 0.75, 1.5 and 3.0 for the population ranges and 1.5, 2.0 and 4.0 units per thousand tonnes of Agricultural, raw material and industrial products from the following data: [6]

Road Link	Length Km	No of villages served with population range				productivity served in tonnes		
		Less than 500	501 to 1000	1001 to 2000	Greater than 2000	Agri. Products	Raw Material	Industrial
A	75	20	15	10	3	9000	1000	1600
B	35	30	6	6	3	6000	3000	1000
C	40	10	8	3	2	7000	7000	500
D	50	45	4	5	5	4000	2000	3200

OR

P.T.O.

**Q2) a)** Discuss in brief the various stages of engineering surveys for highway alignment. [4]

b) Explain obligatory points. With sketches, discuss how these control the alignment. [5]

c) Determine the lengths of different categories of roads in a state in India by the year 2001, using the Lucknow road development plan formula.  
Total area of the state = 86000 sq. km  
Total No. of towns as per 1981 census = 90 [6]

**Q3) a)** Explain in brief the importance and uses of Origin and Destination study. [5]

b) What is PCU? What are the factors on which PCU values depends? [5]

c) Define Highway capacity. Explain the terms basic capacity, possible capacity. [5]

OR

**Q4) a)** Discuss in brief advantages and disadvantages of traffic signals [5]

b) What is understood by the following terms: [5]

i) 85th percentile speed

ii) A.A.D.T.

iii) Space Mean Speed

iv) Parking Demand

v) Grade separated Interchange

c) A vehicle moving at 40 kmph speed was stopped by applying the brake and the length of skid mark was 12.2m. If the average skid resistance of the pavement is known to be 0.70, determine the brake efficiency of the vehicle. [5]

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