Total No. of Questions : 6]

SEAT No. :

P4895

[Total No. of Pages : 2

B.E./Insem. - 2
B.E. (Civil)
TRANSPORTATION ENGINEERING
(2012 Pattern) (Semester - I)

Time :1Hour] *[Max. Marks :30*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4 and Q.5 or Q.6***
2) ***Figures to the right indicate full marks.***
3) ***Use of logarithmic tables, slide rule, Mollies charts, electronics pocket calculator and steam table is allowed.***
4) ***Assume suitable data if necessary.***
5) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) Explain briefly the modified classification of road system in India as per Third Twenty Year Road Development Plan 1981 - 2001. **[5]**

b) What are the objectives of carrying out traffic volume studies? **[5]**

OR

Q2) a) 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 programme based on maximum utility approach. Assume utility units of 0.5, 1.0, 2 and 4 for the four population ranges and 2, 2 and 5 units per 1000 tones of agricultural, raw material and industrial products from the following data : **[5]**

Road Link	Length Km	No of villages served with Population range				Productivity Served		
		< 500	501 To 1000	1001 To 2000	>2000	Agricultural	Raw Material	Industrial Prod
A	75	30	15	10	3	8000	3000	1000
B	35	20	8	6	3	5000	1000	1600
C	40	15	6	5	5	6000	2000	3200
D	50	40	4	3	2	3000	7000	500

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b) What are the different vehicular characteristics which affect the road design? Briefly explain. **[5]**

Q3) a) A circular curve has a radius of 120 m. The design speed is 60 Kmph and design coefficient of lateral friction is 0.15. Determine the amount of super elevation if full lateral friction is assumed to develop. Also calculate the equilibrium superelevation if the pressure on inner and outer wheels should be equal. **[5]**

b) Explain with an example the PIEV theory. **[5]**

OR

Q4) a) A vertical summit curve is formed at the intersection of two gradients, + 3.0 and – 5.0 percent. Design the length of summit curve to provide a stopping sight distance for a design speed of 80 Kmph. Assume other data. **[5]**

b) Define Alignment. Explain in brief the requirements of an ideal alignment. **[5]**

Q5) a) State the various desirable properties of aggregates used in road construction. Explain in brief the procedure of determining the Flakiness Index of aggregate. **[5]**

b) Explain in brief radius of resisting section. Compute the equivalent radius of resisting section of 20 cm slab, given that the radius of contact area of wheel load is 15 cm. **[5]**

OR

Q6) a) Draw a neat labeled sketch of flexible pavement cross section. Also state the functions and importance of each component of the pavement. **[5]**

b) What are the different types of bituminous materials used in road construction? Discuss the penetration test on Bitumen. **[5]**

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