Total No. of Questions : 10]

SEAT No :

P 2970

[Total No. of Pages :3

[5154]-522
B.E.(Civil)
ADVANCED TRANSPORTATION ENGINEERING
(2012 Pattern) (Semester-II) (401010 B) (Elective-IV)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Figures to the right indicate full marks.***

Q1) a) Explain the comprehensive transport planning with a flow diagram. **[6]**

b) Explain the road side interview method of carrying O-D survey. **[4]**

OR

Q2) a) Estimate the total number of trips using Modesto Model based on the following data. **[5]**

i) No. of dwelling unit = 5000
ii) No. of cars owned per dwelling unit = 2
iii) Average number of persons per house = 4
iv) Social Rank Index = 2.5
v) Urbanization Index = 4

b) Highlight the importance of mass transit system in Mumbai. **[5]**

Q3) a) What are the advantages of providing BRTS (Bus rapid Transit Systems) in a city. **[5]**

b) Write a short note on NHDP projects. **[5]**

OR

Q4) Compare and contrast between. **[10]**

a) BOT and BOOT
b) NPV and B/C ratio

Q5) a) Describe with an example the process of conducting classified traffic volume count using the manual method. Also, explain how you would use the data collected for improving the existing traffic scenario. **[10]**

b) Explain the necessity and types of grade separated intersections. **[6]**

OR

P.T.O.

Q6) a) Enumerate the various traffic studies. Describe any two modern technologies involved in conduction of the traffic surveys. **[10]**

b) Write a note on various 'Level of Service '(LOS) of a road. **[6]**

Q7) a) Design a flexible pavement as per IRC 37-2001 for the construction of a new road based on following data. Draw a typical cross-section showing all the basic layers. **[10]**

i) Two lane single carriageway.

ii) Initial traffic in the year of completion of construction = 400 CVPD in both directions.

iii) Traffic growth rate per annum = 7.5%.

iv) Design life = 15 years.

v) CBR = 4%

vi) Terrain - Rolling

Assume any necessary data but state it clearly.

b) With neat sketches explain any 3 types of distresses on flexible pavements. **[6]**

OR

Q8) a) With reference to IRC 37, explain the following terms: **[10]**

i) Vehicle Damage Factor

ii) Lane Distribution Factor

b) Write a note on pavement unevenness and its measurement. **[6]**

Q9) a) List out the various types of overlays. Explain with an example the design procedure for estimating the thickness of the overlay as per IRC 81.**[12]**

b) Explain the concept behind the design of rigid pavement in comparison to that of a flexible pavement. **[6]**

OR

Q10)a) Discuss the various parameters necessary for the design of thickness of rigid pavement as per IRC 58. **[6]**

b) Explain function of dowel bars in concrete pavement with a sketch. **[6]**

c) Write a note on failures in rigid pavement. **[6]**

PAVEMENT DESIGN CATALOGUE

PLATE 1 – RECOMMENDED DESIGNS FOR TRAFFIC RANGE 1-10 msa

CBR 4%					
Cumulative Traffic (msa)	Total Pavement Thickness (mm)	PAVEMENT COMPOSITION			
		Bituminous Surfacing		Granular Base (mm)	Granular Sub-base (mm)
		Wearing Course (mm)	Binder Course (mm)		
1	480	20 PC		225	255
2	540	20 PC	50 BM	225	265
3	580	20 PC	50 BM	250	280
5	620	25 SDBC	60 DBM	250	285
10	700	40 BC	80 DBM	250	330