Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-II Remedial Examination December 2010

Subject code:721307

Subject Name: Economics and Evaluation of Transportation Projects

Date: 22 /12 /2010 **Time: 02.30 pm – 05.00 pm**

Total Marks: 60

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Name any three ongoing transportation projects in India. Discuss about project appraisal. **06**

(b) 1) Ordinal analysis **03**

2) Sensitivity analysis **03**

Q.2 **(a)** What is NI? Discuss various methods of estimating NI. **06**

(b) What are the considerations for evaluating a traffic system? **06**

OR

(b) Define utility. Discuss elasticity of supply. **06**

Q.3 **(a)** 1) Transportation fares **03**

2) Toll fixation **03**

(b) What is DBFO? Discuss methods of highway financing. **06**

OR

Q.3 **(a)** 1) Subsidy **03**

2) Factors affecting maintenance cost **03**

(b) Write principle behind road pricing. Also write requirements of a good road pricing system. **06**

Q.4 **(a)** The cost of widening to two lane of existing 30 km long single lane road is Rs. 10 lacs per km. following table gives details for 10 years. **06**

Discount rate is 12%.

Use methods of economic evaluation of transportation project and give concluding remarks.

Alternative-1: do nothing or do minimum. i.e. existing single lane road

Alternative-2: widening of single lane to two lanes.

year	Roaduser cost Rs.lacs		Accident cost Rs.lacs		Maintenance cost Rs.lacs	
	Alt-2	Alt-1	Alt-2	Alt-1	Alt-2	Alt-1
1	101.6	160.7	2.5	3.6	10	7.5
2	105.8	168.2	2.6	3.7	10	7.5
3	110.35	176.3	2.7	3.8	10	7.5
4	116.2	185.25	2.85	3.9	10	7.5
5	122.35	190.50	2.9	4.0	10	7.5
6	128.45	199.5	2.95	4.0	10	7.5
7	135.75	210.5	3.05	4.1	10	7.5
8	143.35	219.55	3.10	4.2	10	7.5
9	149.25	228.25	3.25	4.3	10	7.5
10	154.55	240.10	3.25	4.3	10	7.5

(b) What is MARR? Discuss stages of economic evaluation of transportation project. **06**

OR

Q.4 **(a)** 1) Time value of money **03**

2) Shadow pricing **03**

(b) Select the best alternative from following for a highway construction. **06**

Alt	Overlay type	Life (Year)	Construction cost(Rs. Lacs)	Ave. maintenance cost Rs./Km	VOC Rs./ veh-km
A	WBM+PMC	5	5.5	16,000	2.30
B	BM+PMC	8	7.25	9,000	2.20
C	BM+AC	12	9.75	5,000	2.05

Rate of interest: 9% per annum
Annual Growth rate: 6%
There are 4250 motorized vehicles per day.

Q.5 **(a)** (I) An aggregate demand function is represented by the equation: **03**
T=200-10P. Where, T= no. of trips and P=price in Rs.
Find the price elasticity of demand.

(II) Calculate the IRR for the following data. **03**

Year	Rs.
0	1,80,000
1	35,000
2	35,000
3	40,000
4	45,000
5	50,000

(b) Explain GDP, GNP and NNP. **06**

OR

Q.5 **(a)** 1) Factors affecting fuel consumption of motor vehicles. **03**

2) Marginal cost pricing **03**

(b) A motorized vehicle costing Rs. 15 lacs is estimated for last 10 years. It is used for 15,000 km/yr. Fuel, tyres and maintenance cost is Rs. 50,000 per annum. The vehicle is on lease for 10 years. The monthly lease payment to bank is Rs. 15,000.Calculate the total annual average cost of operation for this vehicle. Also, calculate cost per km of its usage. **06**

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