Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1721307 Date: 05-12-2014

Subject Name: Economics and Evaluation of Transportation Projects

Time: 02:30 pm - 05:00 pm Total Marks: 70

Instructions:

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

Q.1 **(a)** What is National income? Describe methods of calculating National income with formulae **07**

(b) What is necessity of economic studies in transportation field? Explain microeconomics and macroeconomics **07**

Q.2 **(a)** Explain quantifiable and non-quantifiable benefits due to improvements in services. **07**

(b) Explain by drawing graph demand ,supply and equilibrium **07**

OR

(b) Explain:- consumer surplus, shadow price, inflation, direct demand and latent- demand **07**

Q.3 **(a)** What are the different methods of economic evaluations? Describe in detail any one by giving formula. **07**

(b) (i) A city transit company needs to setup sinking fund for 10 buses each costing Rs. 5. Lacs for timely replacement after 7years interest rate is 6.5% find sinking fund amount. **07**

(ii) an airlines company has determined price of a seat on particular route p=200+0.02n the demand for this route is found to be n=5000-20p

p= price in rupees, n= no of seats sold. Determine equilibrium price and seats sold per day.

OR

Q.3 A new bypass is to be constructed at a busy town the length of bypass will be 5.2 km and the length of road through is 5.4km. the cost of project is 7,500,000 **14**

The speed of traffic through the town is 46.5kmph. predicted traffic after completing the bypass is7600vehicles/day out of which 50% will use bypass. It is computed that if bypass is not constructed the speed through town will further reduce to 44.1kmph. and the speed through bypass is expected to be 77.0kmph and through the town will be 50.4kmph.

Travel cost at three speed is given below

Speed(kmph)	travel cost/veh/km(Rs)
44.1	1.14
50.4	1.02
77.0	0.89

It is also expected that construction of bypass will bring down the accident rate From 1.75 per million vehicle km on existing route to 0.60 per million vehicle km on bypass, the cost of accident can be taken as Rs 15000.0 the maintenance cost per km is 10000.0 calculate first year rate of return.

Q.4 **(a)** Explain GDP and GNP also give formula for finding **07**

(b) What are the sources of finance for any infrastructure project. Ex plain BOT, BOO, BOOS, FBL, BOOT **07**

OR

Q.4 **(a)** What is necessity of road pricing? Enlist and explain factors of road- pricing **05**

(b) It is proposed to widen a stretch of single lane into double lane road length Is 40km the cost per km is 6.5 lacs rate of interest is 10%. The annual cost of Maintenance of existing is Rs7000/km and after doubling Rs.9000/km the average vehicle operation cost is Rs1.35pervehiclekm and after improvement 1.12Rs per vehicle km at present 2000 motor vehicles/day and at end of 15 years likely to be doubled. Determine whether the proposed improvement is economically viable or not? **0□**

Q.5 **(a)** Enlist the vehicle operating costs **07**

(b) Distinguish between economic analysis and financial analysis **07**

OR

Q.5 Calculate the operating cost of a passenger car for 100km length of rural highway with no sharp curves for most economical speed of vehicles operation using the following data and charts in next page **14**

Gradients : level for 25 km, 0 to 2% for 55 km, 4% for 15 km and 6% for 5km
Pavement surface : Good
Fuel cost : 8.50 Rs/litre
Tyre cost : 950Rs/ tyre
No of stops : 10 stops without delay,5 with 45 seconds delay and 4 with 60 seconds delay
Time cost : Rs 3.0
Depreciation : 5paise/km

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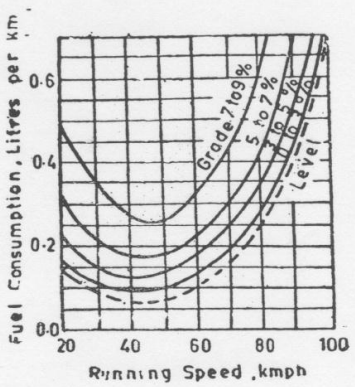
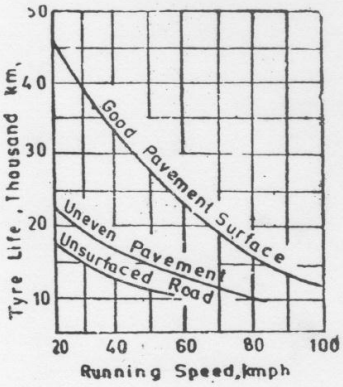
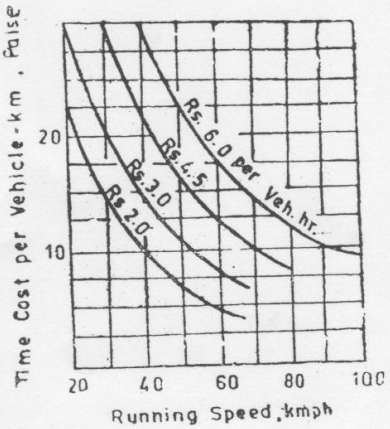
Fuel consumption chart



Tyre Life chart



Time cost per vehicle kilometer



Additional operation cost per