

Problem 9.1 A lorry starts with a load of 20 tonnes of goods from station A . It unloads 8 tonnes at station B and rest of goods at station C . It reaches back directly to station A after getting reloaded with 16 tonnes of goods at station C . The distance between A to B , B to C and then from C to A are 80 km, 120 km and 160 km, respectively. Compute 'Absolute tonne-km' and 'Commercial tonne-km'.
(*B.Com. Hons., Delhi, CA Inter*)

Problem 9.15 SR Airlines has been permitted to operate three flights per week between A and B cities (both sides). The Airline operates a single aircraft of 160 seating capacity. The normal occupancy is estimated at 60% throughout the year of 52 weeks. The one way fare is ₹7,200. The cost of operation of flights are:

Variable cost:

Fuel Cost	₹76,600 per flight
Crew Charges	₹24,000 per flight
Food served on board (On non-chargeable basis)	₹125 per passenger

Commission 5% of the fare applicable for all bookings

Fixed Costs:

Aircraft Lease	₹3,50,000 per flight
Landing Charge	₹72,000 per flight

Required:

- (i) Calculate Operating Cost per passenger per flight
- (ii) Calculate net operating income per flight
- (iii) The airlines expects that its occupancy will increase to 120 passengers per flight if the fare is reduced to ₹6,500. Find operating cost per passenger per flight and net operating income per flight if this proposal is implemented.

(B Com Hons., Delhi)

Problem 9.13 Carryall Enterprise has been permitted to run a minibus on a route covering 20 km. The minibus has been purchased at a cost of ₹1 lakh, part of which was financed through bank loan and balance by loan from other sources.

The annual charges for the minibus are insurance ₹4,000, road tax ₹2,000 and garage rent ₹1,200. Cost of repairs and maintenance is estimated at ₹6,000 per annum while replacement of tyre and tube will cost ₹480 per month. Office expenses are estimated at ₹600 per month. Petrol and oil will cost @ 45 paise per km.

Two drivers and two conductors are engaged at a monthly salary of ₹500 and ₹350 respectively. In addition, drivers and conductors are entitled to 5% of the sale of tickets.

The effective life of the vehicle is estimated at 5 years, at the end of which the vehicle will have scrap value of ₹10,000.

The minibus is 24-seater and is expected to run 6 two-way trips during the day for 25 days in a month.

You are required to submit passenger fare structure for approval by the transport authority which allows 20% profit on net sales. Interest on loan is allowed as cost, if instalments are paid regularly, assume the amount of interest to be ₹6,720 p.a.

(ICWA Inter)

Problem 9.12 A practising Chartered Accountant now spends ₹0.90 per kilometre on taxi fares for his clients' work. He is considering two other alternatives, the purchase of a new small car or an old bigger car. The estimated cost figures are:

<i>Items</i>	<i>New small car</i>	<i>Old bigger car</i>
Purchase price	₹35,000	20,000
Sale price, after 5 years	₹19,000	12,000
Repairs and servicing per annum	₹1,000	1,200
Taxes and insurance per annum	₹1,700	700
Petrol consumption, per litre	10 km	7 km
Petrol price, per litre	₹3.50	3.50

He estimates that he travels 10,000 km annually. Which of the three alternatives will be cheaper? If his practice expands and he has to do 19,000 km per annum, what should be his decision?

At how many km per annum will the cost of the two cars break-even and why? Ignore interest and income-tax.
(B. Com. Hons., Delhi, CA Inter)

Problem 9.11 A company is considering three alternative proposals for conveyance facilities for its sales personnel who have to do considerable travelling; approximately 20,000 kilometres every year. The proposals are as follows:

- (i) Purchase and maintain its own fleet of cars. The average cost of a car is ₹1,00,000.
- (ii) Allow the Executive use his own car and reimburse expenses at the rate of ₹1.60 per kilometre and also bear insurance costs.
- (iii) Hire cars from an agency at ₹20,000 per year per car. The company will have to bear costs of petrol, taxes and tyres.

The following further details are available:

Petrol	₹0.60 per km
Repairs and maintenance	₹0.20 per km
Tyres	₹0.12 per km
Insurance	₹1,200 per car per annum
Taxes	₹800 per car per annum

Life of the car: 5 years with annual mileage of 20,000 km
 Resale value: ₹20,000 at the end of the fifth year

Work out the relative costs of three proposals and rank them.

(B. Com. Hons., Delhi; CA Inter)

Problem 9.9 DAS is a public school having five buses each plying in different directions for the transport of its school students. In view of a large number of students availing of the school bus service, the buses work two shifts daily, both in the morning and in the afternoon. The buses are garaged in the school. The workload of the students have been so arranged that, in the morning, the first trip picks up senior students and, the second trip plying an hour later, picks up the junior students. Similarly, in the afternoon, the first trip drops the junior students and an hour later the second trip takes the senior student back home.

The distance travelled by each bus one way is 8 km. The school works 25 days in a month and remains closed for vacation in May, June and December. Bus fee, however, is payable by students for all the 12 months in a year.

The details of expenses for a year are as under:

Driver's salary (per month per driver)	₹ 450
Cleaner's salary (per month)	350
(Salaries are payable for all the twelve months and one cleaner is employed for all the five buses)	
Licence fee, taxes, etc. (per bus per annum)	860
Insurance (per bus per annum)	1,000
Repairs and maintenance (per bus per annum)	3,500
Purchase price of bus (each)	1,50,000
Scrap value of bus (each)	30,000
Diesel cost (per litre)	2
Estimated useful life 12 years	

Each bus gives an average mileage of 4 km per litre of diesel. Seating capacity of each bus is 50 students which is fully occupied during the entire year.

Students picked up and dropped within a range of 4 km of distance from the school are charged half fare and fifty per cent of the students travelling in each trip are in this category.

Ignore interest.

Since the charges are to be based on average cost, you are required to:

- (i) Prepare a Statement showing the expenses of operating a single bus and a fleet of five buses for a year; and
- (ii) Work out the average cost per student per month in respect of—(a) students coming from distance of 4 km from the school; and (b) students coming from a distance beyond 4 km from the school.

(B. Com. Hons., Delhi, CA Inter)

Problem 9.7 A transport company has been given a 40 km long route to run 5 buses. The cost of each bus is ₹6,50,000. The buses will make 3 round trips per day carrying on an average 80% passengers of their seating capacity. The seating capacity of each bus is 40 passengers. The buses will run on an average 25 days in a month. The other information for a year are given below:

Garage rent	₹4,000 per month
Annual repairs and maintenance	₹22,500 per bus
Salary of 5 drivers	₹3,000 each per month
Wages of 5 conductors	₹1,200 each per month
Manager's salary	₹7,500 per month
Road tax etc.	₹5,000 per quarter
Office expenses	₹2,000 per month
Cost of diesel per litre	₹33
km run per litre for each bus	6 km
Annual depreciation	15% of cost
Annual insurance	3% of cost

Calculate the bus fare to be charged from each passenger per km, if the company wants to earn a profit of $33\frac{1}{3}\%$ on takings (total receipts from passengers) (CA CPE)

Salary of conductor ₹1,500 per month

Salary of part time accountant ₹400 per month

Insurance ₹2,000 per annum

Diesel consumption: 6 km per litre costing ₹4.00 per litre

Token tax ₹600 per annum

Repairs ₹1,000 per month

Normal capacity 50 passengers

The bus is generally occupied 90% of the capacity when it goes to Chandigarh and 80% when it goes to Agra. It is always full when it runs within the city.

(CA Inter, B. Com., Adapted)

Problem 9.5 A person owns a bus which runs between Delhi and Chandigarh and back, for 10 days in a month. The distance from Delhi to Chandigarh is 240 km. The bus completes the trip from Delhi to Chandigarh and back in the same day. The bus goes another 10 days in a month to Agra and the distance covered being 200 km. The trip is also completed in the same day. For the rest of 4 days it runs in the local city. Daily distance covered in local city is 60 km. Calculate the rate, the person should charge from passenger when he wants to earn a profit of $33\frac{1}{2}\%$ on his takings. The other particulars are given below:

Cost of bus ₹2,00,000

Depreciation 20% per annum

Salary of driver ₹1,600 per month

(iv) Driver's salary per taxi

(v) Insurance, tax and sundry expenses per taxi

4,000 p.m.

55,200 per yr

The life of a taxi is 3,00,000 km at the end of which, it is estimated to be sold at ₹20,000. A taxi is expected to run on an average 4,000 km per month. Petrol consumption is 12 km per litre of petrol costing ₹30 per litre. You are required to:

- (i) Calculate the cost of running a taxi per km by preparing a statement of operating cost; and
- (ii) Find out the profit Mr Singh may expect to earn during the first month of operations if the hire charge is ₹10 per km.

Assume that during the month each taxi runs on an average 4,000 km of which 800 km it runs empty.

(B.Com. Hons., Delhi)

Problem 9.4 Mr Singh started transport business with a fleet of 10 taxis. Expenses of operating the fleet are given below:

	₹
	3,80,000
(i) Cost of each taxi	38,000 p.m.
(ii) Salary of office and garage staff	12,000 p.m.
(iii) Rent of garage	

Driver's salary
Annual repair

200 p.m. per taxi

1,000 per taxi

Total life of a taxi is about 2,00,000 km. A taxi runs in all 3,000 km in a month of which 30% it runs empty. Petrol consumption is one litre for 10 km @ ₹6.80 per litre. Oil and other sundries are ₹5.00 per 100 km. Calculate the cost of running a taxi per km.

(B.Com. Hons., Delhi, ICWA Inter)

Problem 9.3 Devi Lal owns a fleet of taxis and the following information is available from his records:

Number of taxis	10
Cost of each taxi	₹ 20,000
Salary of manager	600 p.m.
Salary of accountant	500 p.m.
Salary of cleaner	200 p.m.
Salary of mechanic	400 p.m.
Garage rent	600 p.m.
Insurance premium	5% per annum
Annual tax	600 per taxi

Problem 9.2 A transport company, is running a fleet of six buses between two towns 75 km apart. Seating capacity of each bus is 40 passengers. The following particulars are available for the month of June:

	₹		₹
Wages of drivers, conductors and cleaners	3,600	Taxation, insurance, etc	2,400
Salaries of office and supervisory staff	1,500	Depreciation	3,900
Diesel and other oils	10,320	Interest on capital	3,000
Repairs and maintenance	1,200		

Actual passengers carried were 80 per cent of the seating capacity. All the buses ran on all days of the month. Each bus made one round trip per day.

Find out the cost per passenger-kilometre.