ULTIMATE CA

PYQ RTP COMPILER

Chp 12 Service Cost

Costing CA Intermediate Regular Batch May / Sep 2025

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Past Year Questions (PYQs)

May 2018 to Jan 2025

PYQ Analysis

Exam	Q No.	Marks	Requirement	Special Points
PYQ - Jan 2025	4a	8m	Bus Fare per passenger km	Regular
PYQ - Sep 2024	1a	5m	Total Cost per batch, Min Fee per student, fee at profit	New Pattern, Easy
PYQ - Sep 2024	4b	5m	BOT and Items classification	Theory
PYQ - May 2024	MCQ - 5	2m	Cost per passenger km	Basic Easy
PYQ - May 2024	2b	6m	Net Operating Income per flight, Proposal of fare reduction to be evaluated	New Pattern - Airline Service
PYQ - Nov 2023	3b	10m	Total Profit for each type of room	Breakfast and Swimming Pool Expenses are per person not per room,
PYQ - May 2023	1d	5m	Toll rate with return concession and without return concession	Exempted Vehicles, Return Journey Concession within 24 hours, Part ii IMP
PYQ - Nov 2022	1b	5m	Cost of processing loan application	Similar to ICAI SM
PYQ - May 2022	1d	5m	Cost per ton km of carrying coal from each mine	Time Calculation for each trip and Ton Km only for loaded part
PYQ - Dec 2021	3a	10m	Opex Statement, Avg Cost per employee per month	Basic Easy, Similar to School Bus Que
PYQ - July 2021	4b	5m	Cost per policy	Back Calculation of IT cost from cost per rupee of insured value

PYQ Analysis

Exam	Q No.	Marks	Requirement	Special Points
PYQ - July 2021	6d	5m	What do you understand by BOT Approach in Service Costing? How Toll Rate is computed?	Theory
PYQ - Jan 2021	5a	10m	Profit per patient day and Break Even Point	Extra Bed Days Count Reverse Calculation from its cost
PYQ - Nov 2020	5a	10m	Cost per km, Toll Fee to be charged per vehicle for each type	Similar to SM
PYQ - Nov 2019	3a	10m	room rent per day during on and off season	Cal of lighting charges and room attendants wages, Winter Off Season is given in Question
PYQ - Nov 2019	6a	5m	Describe Composite Cost Unit as used in Service Costing and discuss ways of computing it	Theory
PYQ - May 2019	4a	10m	Cost of Operating for 4 week period, Cost per tonkm	Need to Split Cost Statement into fixed and running charges. Repairs treated as running, may be treated alternatively
PYQ - Nov 2018	4b	10m	Operating Cost for the month, Bus Fare per passenger	Basic Easy
PYQ - May 2018	4b	10m	Profit per patient day and Break Even Point	Similar to Hospital Que in Module

PYQ Jan 2025 – Q4a

ALC2

4. (a) XYZ Transport is running a bus between town A and town B which are 25 kms apart. The bus will make 4 round trips every day carrying on an average 30 passengers on each trip. The bus costs the company a sum of ₹ 5,00,000. It has been insured at 2% per annum and the annual tax will amount to ₹ 2,000 and the garage rent is ₹ 500 per month. Annual repairs will be ₹ 8,000 and the bus is likely to last for 5 years. The driver's salary will be ₹ 15,000 per month and the conductor's salary will be ₹ 12,000 per month in addition to 10% of the takings as commission (to be shared by the driver and conductor equally). Cost of stationery will be ₹ 800 per month. Manager-cum-accountant's salary is ₹ 35,000 per month. Petrol and Oil will be ₹ 1,000 per 100 km. Assuming 15% profit on takings. Depreciation will be charged at straight line method. 8

You are required to calculate the bus fare to be charged for per passenger kilometer. The bus will run on an average 25 days in a month.

PYQ Jan 2025 – Q4a

WN-1 Unit calculation

Running kms for the month = 25 kms X (4X2) X 25 days
= 5000 kms

Passenger kms = 30 passengers X 5000 kms = 150,000 pass km.

Cal of bus fare to be charged

Particulars		Amount p.m.
Depreciation	$\frac{500,000}{5} \times \frac{1}{12}$	8333
Insurance	500,000 X 2% p.a. X 1/12	833
Tax	2000/12	167

PYQ Jan 2025 – Q4a

Garage rent	500
Repairs 8000/12	667
Salary to driver	15000
Salary to conductor	12000
Stationery	800
Manager A/c salary	35000
Petrol and oil $\frac{1000}{100\,km} \times 3000\,km$	30,000
	123300
Commission (10% of Takings	16440
Total cost	139740
Profit (15% of Takings)	24660
Takings $\frac{123300}{75\%}$	164400
no. of passenger km	150,000 pass km
Fare per passenger km	₹1.096/pass km

PYQ Sep 2024 – Q1a

(a) *Language Achievers, a renowned institute specializing in TOEFL preparation, has secured a spacious hall for 20,000 on weekly basis with a seating capacity of 250 students. The instructor, highly qualified and experienced, is compensated generously with an honorarium of 1,500 per lecture. Additionally, he receives reimbursement for travel expenses of ₹ 200 per day along with refreshments costing 1,500 per week to ensure his comfort and focus during teaching sessions. Administrative and miscellaneous expenses, covering essential utilities and materials are, 500 per week. Language Achievers has meticulously planned its curriculum, scheduling batches of 2 lectures per day, 5 days a week for 30 weeks, ensuring comprehensive coverage of the TOEFL syllabus.*

Required:

(i) *Calculate the total cost per batch.*

(ii) *Determine the minimum fee per student in a batch to cover costs, if the batch is fully occupied.*

(iii) *Calculate the fee to be charged from. each student if batch is 80% filled and institute aims to achieve a profit margin of 25% on the fee.*

(5 Marks)

PYQ Sep 2024 – Q1a

(a) (i) Calculation of Total cost per batch

Particulars	Amount (₹)
Hall Charges (₹ 20,000 x 30)	6,00,000
Honorarium of instructor (₹ 1,500 x 2 x 5 x 30)	4,50,000
Reimbursement of travel expenses (₹ 200 x 5 x 30)	30,000
Refreshment (₹ 1,500 x 30)	45,000
Administrative and miscellaneous expenses (₹ 500 x 30)	15,000
Total Cost	11,40,000
No. of Batches	1
Total cost per batch	11,40,000

PYQ Sep 2024 – Q1a

(ii) Minimum fee per student in a batch to cover costs

$$= \frac{\text{Total cost per batch}}{\text{Students per batch}}$$

$$= \frac{11,40,000}{250} = ₹\ 4,560$$

(iii) Number of Students if batch is 80% filled

= 250 students x 80% = 200 students

Total Fee to be recovered to achieve 25% profit margin on the fee

= ₹ 11,40,000 + (₹ 11,40,000 x 1/4th of sales or 1/3rd of the cost)
= ₹ 15,20,000

Fee per student

$$= \frac{\text{Total Fee per batch}}{\text{Students per batch}}$$

$$= \frac{15,20,000}{200} = ₹\ 7,600$$

PYQ May 2024 – Q5 (MCQ)

cost per pass km = ₹ 1572480 / 224640 pass km = 0.7 / pass km

5. ABC Transport Company is running 8 buses between two towns which are 40 kms apart. Seating capacity of each bus is 60 passengers. Actual passengers carried were 75% of the seating capacity. Each bus made three round trips per day and operates 26 days in a month. Total cost incurred for the month of June 2023 was ₹ 15,72,480. 2

What is the cost per passenger kilometer ?

(A) ₹ 0.52 per passenger km
(B) ₹ 1.40 per passenger km
(C) ₹ 1.00 per passenger km
(D) ₹ 0.70 per passenger km ✓

No. of pass km = [(40km X 2) X 3 X 26 X 8 buses] X [60 X 75%]

= 224640 pass km

PYQ May 2024 – Q2b

(b) *Star Airlines operates a single aircraft of 180 seats capacity between city 'ND' and 'GA'. The average normal occupancy is estimated at 70% per flight. The average one-way fare is ₹ 12,500 from city 'ND" to 'GA'. The costs of operation of the flight as collected by an expert analyst are:*

Fuel cost (Variable) per flight from 'ND' to 'GA'	*₹2,28,000 per flight*
Food served on flight from 'ND' to 'GA' (no charge to passenger)	*₹270 per passenger*
Commission paid to Travel Agents (All ticket booking through agents)	*7.5% of fare*

PYQ May 2024 – Q2b

Fixed costs:	
Lease & landing charges per flight 'ND' to 'GA'	*₹ 9,12,000*
Salaries of flight crew per flight 'ND' to 'GA'	*₹ 90,000*

Note: Assume that fuel costs are unaffected by the actual number of passengers on a flight.

You are required to:

(i) Calculate the net operating income that Star Airlines makes per flight from 'ND' to 'GA'.

(ii) Star Airlines expects that its occupancy will increase to 144 passengers per flight if the fare is reduced to ₹ 11,670. Advise whether this proposal should be implemented or not.

PYQ May 2024 – Q2b

(b) (i) No. of passengers 180 seats × 70% = 126

	(₹)	(₹)
Fare collection (126 passengers × ₹12,500)		15,75,000
Variable costs:		
Fuel	2,28,000	
Food (126 passengers × ₹270)	34,020	
Commission (7.5 % of ₹15,75,000)	1,18,125	3,80,145
Contribution per flight		11,94,855
Fixed costs:		
Lease and Landing Charges	9,12,000	
Salaries of flight Crew	90,000	10,02,000
Net income per flight		1,92,855

PYQ May 2024 – Q2b

(ii)

Fare collection (144 passengers × ₹11,670)		16,80,480
Variable costs:		
Fuel	2,28,000	
Food (144 passengers × ₹270)	38,880	
Commission (7.5% of ₹16,80,480)	1,26,036	3,92,916
Contribution		12,87,564
Fixed costs:		
Lease and Landing Charges	9,12,000	
Salaries of flight Crew	90,000	10,02,000
Net income per flight		2,85,564

There is an increase in contribution by ₹ 92,709. Hence the proposal is acceptable.

PYQ Nov 2023 – Q3b

(b) *Royal Hotel offers three types of rooms to its guests - Deluxe Room, Executive Room and Suite Room. Other information is as follows:-*

	Deluxe Room	Executive Room	Suite Room
Room Tariff per day	₹ 1,500	₹ 2,400	₹ 3,800
No. of rooms	20	10	4
Average occupancy during the year	80%	60%	75%
Housekeeping expenses per day	₹280	₹320	₹425

The hotel provides complimentary breakfast facility to its executive room and suite room guests while swimming pool facility is provided free of cost only to suite room guests.

The restaurant and swimming pool is run by a contractor. The contractor recovers charges of ₹ 150 per person for breakfast and ₹ 200 per person for using swimming pool facility from Royal Hotel.

PYQ Nov 2023 – Q3b

Besides the above-mentioned charges, annual fixed expenses are as follows:

Salaries to staff	*₹ 57,60,000*
Electricity Expenses	*₹ 24,00,000*

Salaries to staff are apportioned to Deluxe Room. Executive Room and Suite Room in the ratio of 25:35:40 and electricity expenses are to be apportioned in proportion to occupancy. You are required to calculate the total profit of each room type on annual basis.

Note: Assume 360 days in a year and double occupancy in each category of room.

(10 Marks)

PYQ Nov 2023 – Q3b

(b) Calculation of room days:

Nature of Room	Occupancy (Room-days)
Deluxe room	5760 (20 x 80% x 360)
Executive room	2160 (10 x 60% x 360)
Suite room	1080 (4 x 75% x 360)

PYQ Nov 2023 – Q3b

Statement showing Total Profit for each room type

Elements	Deluxe room (₹)	Executive room (₹)	Suite room (₹)	Total (₹)
Room Days	**5760**	**2160**	**1080**	
Revenue	86,40,000	51,84,000	41,04,000	1,79,28,000
Cost				
Housekeeping @ ₹ 280 per room day	16,12,800	6,91,200	4,59,000	27,63,000
Breakfast @ ₹ 150 per person	-	6,48,000	3,24,000	9,72,000
Swimming pool @ ₹ 200 per person	-	-	4,32,000	4,32,000
Salaries to staff (25:35:40)	14,40,000	20,16,000	23,04,000	57,60,000
Electricity expenses (occupancy)	15,36,000	5,76,000	2,88,000	24,00,000
Total cost	45,88,800	39,31,200	38,07,000	1,23,27,000
Profit	**40,51,200**	**12,52,800**	**2,97,000**	**56,01,000**

PYQ May 2023 – Q1d

(d) *RST Toll Plaza Limited built an 80-kilometre-long highway between two cities and operates a toll plaza to collect tolls from passing vehicles using the highway. The company has estimated that 50,000 light weight, 12,000 medium weight and 10,000 heavy weight vehicles will be using the highway in one month in outward journey and the same number for return journey.*

As per government notification, vehicles used for medical emergencies, Members of Parliament, and essential services are exempt from toll charges. It is estimated that 10% of light weight vehicles will pass the highway for such use.

It is the policy of the company that if vehicles return within 24 hours of their outward journey, the toll fare will be reduced by 25 percent automatically. It is estimated that 30% of chargeable light weight vehicles return within the specified time frame.

The toll charges for medium weight vehicles is to be fixed as 2.5 times of the light weight vehicles and that of heavy weight vehicles as 2 times of the medium weight vehicles.

The toll and maintenance cost for a month is ₹ 59,09,090, The company requires a profit of 10% over the total cost to cover interest and other costs.

Required:

(i) *Calculate the toll rate for each type of vehicle if concession facilities are not available on the return journey.*

PYQ May 2023 – Q1d

(ii) Calculate the toll rate that will be charged from light weight vehicles if a return journey concession facility is available, assuming that the revenue earned from light weight vehicles calculated in option (i) remains the same. ***(5 Marks)***

(d) Working Notes:

(1) Calculation of equivalent numbers of Light weight vehicles (when no concession is provided on return journey)

Type of vehicle	Monthly traffic (A)	Return traffic (B)	Ratio (C)	Equivalent light weight [(A + B) × C]
Light weight	45,000*	45,000	1	90,000
Medium weight	12,000	12,000	2.5	60,000
Heavy weight	10,000	10,000	5	1,00,000
				2,50,000

*50,000 light vehicles less 10% exempted vehicles

PYQ May 2023 – Q1d

(2) Calculation of equivalent numbers of Light weight vehicles (when concession is provided on return journey)

Type of vehicle	Monthly traffic (A)	Return traffic (B)	Ratio (C)	Equivalent light weight [(A + B) × C]
Light weight	45,000*	41,625 [45,000- (45,000 × 30% × 25%)]	1	86,625
Medium weight	12,000	12,000	2.5	60,000
Heavy weight	10,000	10,000	5	1,00,000
				2,46,625

(i) Calculation of toll rate for each type of vehicle:

Total cost to cover ÷ Equivalent type of vehicles

(₹ 59,09,090 + 10% of ₹ 59,09,090) ÷ 2,50,000 equivalent vehicles (Refer working note 1)

= 65,00,000 ÷ 2,50,000 = ₹ 26

PYQ May 2023 – Q1d

Toll rate for:

Light weight vehicle = ₹ 26

Medium weight vehicle = ₹ 26 × 2.5 = ₹ 65

Heavy weight vehicle = ₹ 26 × 5 = ₹ 130

(ii) Calculation of toll rate for each type of vehicle:

Revenue earned from Light weight vehicle in (i) above

= 90,000 vehicles × ₹ 26 = ₹ 23,40,000

New toll rate to maintain the same revenue from Light weight vehicle

= ₹ 23,40,000 ÷ 86,625 (Refer working note-2) = ₹ 27.01

Light weight vehicle = ₹ 27.01

Rate to be charged from 13,500 light weight vehicles = 27.01 × 0.75 = 20.26

PYQ May 2023 – Q1d

Alternative presentation

(ii) Toll rate to be charged from light weight vehicles if concession applicable

Revenue share in light vehicles = 90,000 × 26 = ₹ 23,40,000

Suppose rate is x, then outward journey 45,000 x; return journey (45,000 - 30% of 45,000) + 13,500 (x - 0.25)

45,000x + 31,500x + 13500 (0.75x) = ₹ 23,40,000

Toll rate to be charged from light weight vehicles : 86,625x = ₹ 23,40,000 = ₹ 27.01

Rate to be charged from 76,500 light weight vehicles @ 27.01; revenue will be ₹ 20,66,494

Rate to be charged from 13,500 light weight vehicles = 27.01 × 0.75 = 20.26 revenue will be ₹ 2,73,506

PYQ Nov 2022 – Q1b

(b) *ABC Bank is having a branch which is engaged in processing of 'Vehicle Loan' and 'Education Loan' applications in addition to other services to customers. 30% of the overhead costs for the branch are estimated to be applicable to the processing of 'Vehicle Loan' applications and 'Education Loan' applications each.*

Branch is having four employees at a monthly salary of ₹ 50,000 each, exclusively for processing of Vehicle Loan applications and two employees at a monthly salary of ₹ 70,000 each, exclusively for processing of Education Loan applications.

In addition to above, following expense are incurred by the Branch:

- *Branch Manager who supervises all the activities of branch, is paid at ₹ 90,000 per month.*
- *Legal charges, Printing & stationery and Advertising Expenses are incurred at ₹ 30,000, ₹ 12,000 and ₹ 18,000 respectively for a month.*
- *Other expenses are ₹ 10,000 per month.*

PYQ Nov 2022 – Q1b

You are required to:

(i) Compute the cost of processing a Vehicle Loan application on the assumption that 496 Vehicle Loan applications are processed each month.

(ii) Find out the number of Education Loan Applications processed, if the total processing cost per Education Loan Application is same as in the Vehicle Loan Application as computed in (i) above.

PYQ Nov 2022 – Q1b

Particulars	Vehicle loan Applications (₹)	Education loan Application (₹)	Total (₹)
Employee Cost	2,00,000 (₹ 50,000 × 4)	1,40,000 (₹ 70,000 × 2)	3,40,000
Apportionment of Branch manager's salary	27,000	27,000	54,000
Legal charges, Printing & stationery and Advertising expenses	18,000	18,000	36,000
Other expenses	3,000	3,000	6,000
Total cost	2,48,000	1,88,000	4,36,000

PYQ Nov 2022 – Q1b

(i) Computation of cost of processing a vehicle loan application:

Total Cost ÷ No. of applications

₹ 2,48,000 ÷ 496 = ₹ 500

(ii) Computation of no. of Education loan Processed

Total Cost = No. of applications × Processing cost per application

₹ 1,88,000 = No. of applications × ₹ 500

No. of education loan applications = ₹1,88,000 ÷ ₹500 = 376 applications

PYQ May 2022 – Q1d

(d) *Coal is transported from two mines X & Y and unloaded at plots in a railway station. X is at distance of 15 kms and Y is at a distance of 20 kms from the rail head plots. A fleet of lorries having carrying capacity of 4 tonnes is used to transport coal from the mines. Records reveal that average speed of the lorries is 40 kms per hour when running and regularly take 15 minutes to unload at the rail head.*

At Mine X average loading time is 30 minutes per load, while at mine Y average loading time is 25 minutes per load.

Additional Information:

Drivers' wages, depreciation, insurance and taxes, etc. ₹ 12 per hour

Operated Fuel, oil tyres, repairs and maintenance, etc. ₹ 1.60 per km

You are required to prepare a statement showing the cost per tonne kilometre of carrying coal from each mine 'X' and 'Y'. ***(4 x 5 = 20 Marks)***

PYQ May 2022 – Q1d

(d) Statement showing the cost per tonne-kilometre of carrying mineral from each mine

	Mine X (₹)	Mine Y (₹)
Fixed cost per trip: (Refer to working note 1)		
(Driver's wages, depreciation, insurance and taxes)		
X: 1 hour 30 minutes @ ₹ 12 per hour	18.00	
Y: 1 hour 40 minutes @ ₹ 12 per hour		20.00
Running and maintenance cost:		
(Fuel, oil, tyres, repairs and maintenance)		
X: 30 km. ₹ 1.60 per km.	48.00	
Y: 40 km. ₹ 1.60 per km.		64.00

PYQ May 2022 – Q1d

Total cost per trip (₹)	66.00	84.00
Cost per tonne – km (Refer to working note 2)	1.1 $\left(\frac{₹\ 66}{60\ \text{tonne - km}}\right)$	1.05 $\left(\frac{₹\ 84}{80\ \text{tonne - km}}\right)$

Working notes:

	Mine- X	Mine- Y
(1) Total operated time taken per trip		
Running time to & fro	**45 minutes** $\left(30\ \text{km.} \times \frac{60\ \text{minutes}}{40\ \text{km.}}\right)$	**60 minutes** $\left(40\ \text{km.} \times \frac{60\ \text{minutes}}{40\ \text{km.}}\right)$
Un-loading time	15 minutes	15 minutes
Loading time	30 minutes	25 minutes
Total operated time	**90 minutes or** 1 hour 30 minutes	**100 minutes or** 1 hour 40 minutes
(2) Effective tones – km.	60 (4 tonnes × 15 km.)	80 (4 tonnes × 20 km.)

PYQ Dec 2021 – Q3a

(a) *Paras Travels provides mini buses to an IT company for carrying its employees from home to office and dropping back after office hours. It runs a fleet of 8 mini buses for this purpose. The buses are parked in a garage adjoining the company's premises. Company is operating in two shifts (one shift in the morning and one shift in the afternoon). The distance travelled by each mini bus one way is 30 kms. The company works for 20 days in a month.*

The seating capacity of each mini bus is 30 persons. The seating capacity is normally 80% occupied during the year. The details of expenses incurred for a year are as under:

Particulars	
Driver's salary	₹ 20,000 per driver per month
Lady attendant's salary (mandatorily required for each mini bus)	₹ 10,000 per attendant per month
Cleaner's salary (One cleaner for 2 mini buses)	₹ 15,000 per cleaner per month
Diesel (Avg. 8 kms per litre)	₹ 80 per litre

PYQ Dec 2021 – Q3a

Insurance charges (per annum)	*2% of Purchase Price*
License fees and taxes	*₹ 5,080 per mini bus per month*
Garage rent paid	*₹ 24,000 per month*
Repair & maintenance including engine oil and lubricants (for every 5,760 kms)	*₹ 2,856 per mini bus*
Purchase Price of mini bus	*₹ 15,00,000 each*
Residual life of mini bus	*8 Years*
Scrap value per mini bus at the end of residual life	*₹ 3,00,000*

PYQ Dec 2021 – Q3a

Paras Travels charges two types of fare from the employees. Employees coming from a distance of beyond 15 kms away from the office are charged double the fare which is charged from employees coming from a distance of up-to 15 kms. away from the office. 50% of employees travelling in each trip are coming from a distance beyond 15 kms. from the office. The charges are to be based on average cost.

You are required to:

(i) Prepare a statement showing expenses of operating a single mini bus for a year,

(ii) Calculate the average cost per employee per month in respect of:

(a) Employees coming from a distance upto 15 kms. from the office.

(b) Employees coming from a distance beyond 15 kms. from the office. ***(10 Marks)***

PYQ Dec 2021 – Q3a

(a) (i) Statement of Expenses of operating a mini bus in a year

Particulars		Rate (₹)	Per Bus per annum (₹)
(A)	**Standing Charges:**		
	Driver's salary	20,000 p.m	2,40,000
	Lady attendant's salary	10,000 p.m	1,20,000
	Average Cleaner's salary (50%)	15,000 p.m	90,000
	Insurance charge	30,000 p.a.	30,000
	License fee, taxes etc.	5,080 p.m.	60,960
	Average Garage Rent	24,000 p.m	36,000
	Depreciation {(15,00,000 – 3,00,000) ÷ 8}	1,50,000 p.a.	1,50,000
(B)	**Maintenance Charges:**		
	Repairs & maintenance including engine oil and lubricants (Working Note 1)	28,560 p.a.	
(C)	**Operating Charges:**		
	Diesel (Working Note 2)		5,76,000
	Total Cost (A + B + C)		13,31,520
	Cost per month		1,10,960

PYQ Dec 2021 – Q3a

(ii) Average cost per employee per month:

A. Employee coming from distance of upto 15 km

$$= \frac{\text{Total cost per month}}{\text{Total no.of equivalent employee}} = \frac{1,10,960}{72^*} = ₹\ 1,541.11$$

B. Employee coming from a distance beyond 15 km

= 1541.11 × 2 = ₹ 3,082.22

*** Considering half fare employees as a base**

Full fare employees (12 × 2)	24 employees
Add: Half fare employees (Working Note 3)	12 employees
Total Equivalent number of employees per month	36 employees
Total Equivalent number of employees per month (morning + afternoon shift of company)	72 employees

PYQ Dec 2021 – Q3a

Working Notes:

1. **Calculation of Repairs and maintenance cost of a bus :**

Distance travelled in a year:

(4 trip × 2 shifts × 30 km. × 20 days × 12 months)

Distance travelled p.a.: 57,600 km.

Repairs and maintenance cost per Bus per annum:

$$= \frac{57,600 \text{ km.}}{5,760 \text{ km}} \times ₹ 2,856 \text{ per bus}$$

= ₹ 28,560 per annum

2. **Calculation of diesel cost per bus per annum**:

Distance travelled in a year = 57,600 km

Diesel cost per Bus per annum:

$$= \frac{57,600 \text{ km.}}{8 \text{ Km}} \times ₹ 80$$

= 5,76,000

3. **Calculation of equivalent number of employees per bus:**

Seating capacity of a bus	30 employees
Occupancy (80% of capacity)	24 employees
Half fare employees (50% of 24 employees)	12 employees
Full fare employees (50% of 24 employees)	12 employee

PYQ Jul 2021 – Q4b

(b) *MRSL Healthcare Ltd. has incurred the following expenditure during the last year for its newly launched 'COVID-19' Insurance policy:*

Office administration cost	*48,00,000*
Claim management cost	*3,80,000*
Employees cost	*16,20,000*
Postage and logistics	*32,40,000*
Policy issuance cost	*29,50,000*
Facilities cost	*46,75,000*
Cost of marketing of the policy	*1,38,90,000*
Policy development cost	*35,00,000*
Policy servicing cost	*96,45,000*
Sales support expenses	*32,00,000*
I.T. Cost	*?*

Number of Policy sold: 2,800

Total insured value of policies - ₹ 3,500 Crores

Cost per rupee of insured value - ₹ 0.002

You are required to:

(i) *Calculate Total Cost for "COVID-19" Insurance policy segregating the costs into four main activities namely (a) Marketing and Sales support (b) Operations (c) I.T. Cost and (d) Support functions.*

(ii) *Calculate Cost Per Policy.* ***(5 Marks)***

PYQ Jul 2021 – Q4b

(b) (i) Calculation of total cost for 'COVID-19' Insurance policy

	Particulars	Amount (₹)	Amount (₹)
a.	**Marketing and Sales support:**		
	- Policy development cost	35,00,000	
	- Cost of marketing	1,38,90,000	
	- Sales support expenses	32,00,000	**2,05,90,000**
b.	**Operations:**		
	- Policy issuance cost	29,50,000	
	- Policy servicing cost	96,45,000	
	- Claim management cost	3,80,000	**1,29,75,000**
c.	**IT Cost***		**2,21,00,000**
d.	**Support functions**		
	- Postage and logistics	32,40,000	
	- Facilities cost	46,75,000	
	- Employees cost	16,20,000	
	- Office administration cost	48,00,000	**1,43,35,000**
	Total Cost		**7,00,00,000**

*IT cost

= (₹ 3,500 crores x 0.002) – ₹ 4,79,00,000 = ₹ 2,21,00,000

(ii) Calculation of cost per policy = $\frac{\text{Total cost}}{\text{No. of policies}} = \frac{₹\ 7,00,00,000}{2,800} =$ ₹ 25,000

PYQ Jan 2021 – Q5a

(a) *ABC Health care runs an Intensive Medical Care Unit. For this purpose, it has hired a building at a rent of ₹ 50,000 per month with the agreement to bear the repairs and maintenance charges also.*

The unit consists of 100 beds and 5 more beds can comfortably be accommodated when the situation demands. Though the unit is open for patients all the 365 days in a year, scrutiny of accounts for the year 2020 reveals that only for 120 days in the year, the unit had the full capacity of 100 patients per day and for another 80 days, it had, on an average only 40 beds occupied per day. But, there were occasions when the beds were full, extra beds were hired at a charge of ₹ 50 per bed per day. This did not come to more than 5 beds above the normal capacity on any one day. The total hire charges for the extra beds incurred for the whole year amounted to ₹ 20,000.

The unit engaged expert doctors from outside to attend on the patients and the fees were paid on the basis of the number of patients attended and time spent by them which on an average worked out to ₹ 30,000 per month in the year 2020.

PYQ Jan 2021 – Q5a

The permanent staff expenses and other expenses of the unit were as follows:

	₹
2 Supervisors each at a per month salary of	*5,000*
4 Nurses each at a per month salary of	*3,000*
2 Ward boys each at a per month salary of	*1,500*
Other Expenses for the year were as under:	
Repairs and Maintenance	*28,000*
Food supplied to patients	*4,40,000*
Caretaker and Other services for patients	*1,25,000*
Laundry charges for bed linen	*1,40,000*
Medicines supplied	*2,80,000*
Cost of Oxygen etc. other than directly borne for treatment of patients	*75,000*
General Administration Charges allocated to the unit	*71,000*

PYQ Jan 2021 – Q5a

Required:

(i) What is the profit per patient day made by the unit in the year 2020, if the unit recovered an overall amount of ₹ 200 per day on an average from each patient.

(ii) The unit wants to work on a budget for the year 2021, but the number of patients requiring medical care is a very uncertain factor. Assuming that same revenue and expenses prevail in the year 2021 in the first instance, work out the number of patient days required by the unit to break even. ***(10 Marks)***

PYQ Jan 2021 – Q5a

Calculation of number of Patient days

100 Beds × 120 days	=	12000
40 Beds × 80 days	=	3,200
Extra beds	=	400
Total	=	15,600

(i) Statement of Profitability

Particulars	Amount (₹)	Amount (₹)
Income for the year (₹ 200 per patient per day × 15,600 patient days)		31,20,000
Variable Costs:		
Doctor Fees (₹ 30,000 per month × 12)	3,60,000	
Food to Patients (Variable)	4,40,000	
Caretaker Other services to patients (Variable)	1,25,000	
Laundry charges (Variable)	1,40,000	
Medicines (Variable)	2,80,000	
Bed Hire Charges (₹ 50 × 400 Beds)	20,000	
Total Variable costs		(13,65,000)
Contribution		17,55,000

PYQ Jan 2021 – Q5a

Fixed Costs:		
Rent (₹ 50,000 per month × 12)	6,00,000	
Supervisor (2 persons × ₹ 5,000 × 12)	1,20,000	
Nurses (4 persons × ₹ 3,000 × 12)	1,44,000	
Ward Boys (2 persons x ₹ 1500 x12)	36,000	
Repairs (Fixed)	28,000	
Cost of Oxygen	75,000	
Administration expenses allocated	71,000	
Total Fixed Costs		(10,74,000)
Profit		**6,81,000**

PYQ Jan 2021 – Q5a

Calculation of Contribution and profit per Patient day

Total Contribution	= ₹ 17,55,000
Total Patient days	= 15,600 days
Contribution per Patient day	= ₹ 17,55,000 / 15,600 days = ₹ 112.50
Total Profit	= ₹ 6,81,000
Total Patient days	= 15,600 days
Profit per Patient day	= ₹ 6,81,000 / 15,600 days = ₹ 43.65

(ii) **Breakeven Point** = Fixed Cost / Contribution per Patient day

= ₹ 10,74,000 / ₹ 112.50

= 9,547 patient days

PYQ Nov 2020 – 5a

(a) *SEZ Ltd. built a 120 km. long highway and now operates a toll road to collect tolls. The company has invested ₹ 900 crore to build the road and has estimated that a total of 120 crore vehicles will be using the highway during the 10 years toll collection tenure. The other costs for the month of "June 2020" are as follows:*

(i) *Salary:*

- *Collection personnel (3 shifts and 5 persons per shift) - ₹ 200 per day per person.*
- *Supervisor (3 shifts and 2 persons per shift) - ₹ 350 per day per person.*
- *Security personnel (2 shifts and 2 persons per shift) - ₹ 200 per day per person.*
- *Toll Booth Manager (3 shifts and 1 person per shift) - ₹ 500 per day per person.*

(ii) *Electricity - ₹ 1,50,000*

(iii) *Telephone - ₹ 1,00,000*

(iv) *Maintenance cost - ₹ 50 lakhs*

(v) *The company needs 30% profit over total cost.*

Required:

(1) *Calculate cost per kilometre.*

(2) *Calculate the toll rate per vehicle.* **(10 Marks)**

PYQ Nov 2020 – 5a

(a) **Statement of Cost**

Particulars		(₹)
A. Apportionment of capital cost	$\left(\frac{₹\ 900\text{crore}}{10\text{years}} \times \frac{1}{12\text{months}}\right)$	**7,50,00,000**
B. Other Costs		
Salary to Collection Personnel	(3 Shifts × 5 persons per shift × 30 days × ₹ 200 per day)	**90,000**
Salary to Supervisor	(3 Shifts × 2 persons per shift × 30 days × ₹ 350 per day)	**63,000**
Salary to Security Personnel	(2 Shifts × 2 persons per shift × 30 days × ₹ 200 per day)	**24,000**
Salary to Toll Booth Manager	(3 Shifts × 1 person per shift × 30 days × ₹ 500 per day)	**45,000**
Electricity		1,50,000
Telephone		1,00,000
		4,72,000
C. Maintenance cost		50,00,000
Total (A + B + C)		**8,04,72,000**

PYQ Nov 2020 – 5a

(1) Calculation of cost per kilometre:

$$= \frac{\text{Total Cost}}{\text{Total km.}} = \frac{₹\,8,04,72,000}{120\,\text{km.}} = ₹\,6,70,600$$

(2) Calculation of toll rate per vehicle:

$$= \frac{\text{Total Cost} + 25\%\ \text{profit}}{\text{Vehicles per month}} = \frac{₹\,8,04,72,000 + ₹\,2,41,41,600}{1,00,00,000\ \text{vehicles}} = ₹\ \mathbf{10.46}$$

Working:

$$\text{Vehicles per month} = \frac{\text{Total estimated vehicles}}{10\ \text{years}} \times \frac{1\ \text{month}}{12\ \text{months}}$$

$$= \frac{120\,\text{crore}}{10\,\text{years}} \times \frac{1\,\text{month}}{12\,\text{months}} = 1\ \text{Crore vehicles}$$

PYQ Nov 2019 – 3a

(a) *A hotel is being run in a Hill station with 200 single rooms. The hotel offers concessional rates during six off-season months in a year.*

During this period, half of the full room rent is charged. The management's profit margin is targeted at 20% of the room rent. The following are the cost estimates and other details for the year ending 31st March ,2019:

(i) *Occupancy during the season is 80% while in the off-season it is 40%.*

(ii) *Total investment in the hotel is ₹ 300 lakhs of which 80% relates to Buildings and the balance to Furniture and other Equipment.*

(iii) *Room attendants are paid ₹ 15 per room per day on the basis of occupancy of rooms in a month.*

PYQ Nov 2019 – 3a

(iv) *Expenses:*

- *Staff salary (excluding that of room attendants)* ₹ 8,00,000
- *Repairs to Buildings* ₹ 3,00,000
- *Laundry Charges* ₹ 1,40,000
- *Interior Charges* ₹ 2,50,000
- *Miscellaneous Expenses* ₹ 2,00,200

(v) *Annual Depreciation is to be provided on Buildings @ 5% and 15% on Furniture and other Equipments on straight line method.*

(vi) *Monthly lighting charges are ₹ 110, except in four months in winter when it is ₹ 30 per room and this cost is on the basis of full occupancy for a month.*

You are required to workout the room rent chargeable per day both during the season and the off-season months using the foregoing information.

(Assume a month to be of 30 days and winter season to be considered as part of off-season).

(10 Marks)

PYQ Nov 2019 – 3a

(a) Working Notes:

(i) Total Room days in a year

Season	Occupancy (Room-days)	Equivalent Full Room charge days
Season – 80% Occupancy	200 Rooms × 80% × 6 months × 30 days in a month = **28,800** Room Days	28,800 Room Days × 100% = 28,800
Off-season – 40% Occupancy	200 Rooms × 40% × 6 months × 30 days in a month = **14,400** Room Days	14,400 Room Days × 50% = 7,200
Total Room Days	28,800 + 14,400 = 43,200 Room Days	36,000 Full Room days

(ii) Lighting Charges:

It is given in the question that lighting charges for 8 months is ₹110 per month and during winter season of 4 months it is ₹30 per month. Further it is also given that peak season is 6 months and off season is 6 months.

It should be noted that – being Hill station, winter season is to be considered as part of Off season. Hence, the non-winter season of 8 months include – Peak season of 6 months and Off season of 2 months.

PYQ Nov 2019 – 3a

Accordingly, the lighting charges are calculated as follows:

Season	Occupancy (Room-days)
Season & Non-winter – 80% Occupancy	200 Rooms × 80% × 6 months × ₹ 110 per month = ₹ **1,05,600**
Off- season & Non-winter – 40% Occupancy (8 – 6 months)	200 Rooms × 40% × 2 months × ₹110 per month = ₹ **17,600**
Off- season & -winter – 40% Occupancy months)	200 Rooms × 40% × 4 months × ₹ 30 per month = ₹ **9,600**
Total Lighting charges	₹ 1,05,600+ ₹ 17,600 + ₹ 9,600 = ₹ **132,800**

PYQ Nov 2019 – 3a

Statement of total cost:

	(₹)
Staff salary	8,00,000
Repairs to building	3,00,000
Laundry	1,40,000
Interior	2,50,000
Miscellaneous Expenses	2,00,200
Depreciation on Building (₹ 300 Lakhs × 80% × 5%)	**12,00,000**
Depreciation on Furniture & Equipment (₹ 300 Lakhs × 20% × 15%)	**9,00,000**
Room attendant's wages (₹ 15 per Room Day for 43,200 Room Days)	**6,48,000**
Lighting charges	1,32,800
Total cost	**45,71,000**
Add: Profit Margin (20% on Room rent or 25% on Cost)	11,42,750
Total Rent to be charged	**57,13,750**

Total Rent / Equivalent Full Room days = ₹ 57,13,750/ 36,000 = ₹ 158.72

Room Rent during Season – ₹ 158.72

Room Rent during Off season = ₹ 158.72 × 50% = ₹ 79.36

PYQ May 2019 – Q4a

(a) *X Ltd. distributes' its goods to a regional dealer using single lorry. The dealer premises are 40 kms away by road. The capacity of the lorry is 10 tonnes. The lorry makes the journey twice a day fully loaded on the outward journey and empty on return journey. The following information is available:*

Diesel Consumption	*8 km per litre*
Diesel Cost	*₹60 per litre*
Engine Oil	*₹200 per week*
Driver's Wages (fixed)	*₹2,500 per week*
Repairs	*₹600 per week*
Garage Rent	*₹800 per week*
Cost of Lorry (excluding cost of tyres)	*₹9,50,000*
Life of Lorry	*1,60,000 kms*
Insurance	*₹18,200 per annum*

PYQ May 2019 – Q4a

Insurance	*₹18,200 per annum*
Cost of Tyres	*₹52,500*
Life of Tyres	*25,000 kms*
Estimated sale value of the lorry at end of its life is	*₹1,50,000*
Vehicle License Cost	*₹7,800 per annum*
Other Overhead Cost	*₹41,600 per annum*

The lorry operates on a 5 day week.

Required:

(i) A statement to show the total cost of operating the vehicle for the four week period analysed into Running cost and Fixed cost.

(ii) Calculate the vehicle operating cost per km and per tonne km. (Assume 52 weeks in a year) ***(10 Marks)***

PYQ May 2019 – Q4a

(i) Statement showing Operating Cost

Amount (₹

	Particulars	For 4 weeks	For 1 week (by dividing by 4)
A.	**Fixed Charges:**		
	Drivers' wages (₹2,500 × 4 weeks)	10,000	2,500
	Garage rent (₹800 × 4 weeks)	3,200	800
	Insurance {(₹18,200 ÷ 52 weeks) × 4 weeks}	1,400	350
	Vehicle license {(₹7,800 ÷ 52 weeks) × 4 weeks}	600	150
	Other overheads cost {(₹41,600 ÷ 52 weeks) × 4 weeks}	3,200	800
	Total (A)	**18,400**	**4,600**

PYQ May 2019 – Q4a

B.	**Running Cost:**		
	Cost of diesel {(3,200 ÷ 8 kms) × ₹60}	24,000	6,000
	Engine Oil (₹200 × 4 weeks)*	800	200
	Repairs (₹600 × 4 weeks)*	2,400	600
	Depreciation on vehicle $\left(\frac{₹9,50,000 - ₹1,50,000}{1,60,000\,km} \times 3,200\,km\right)$	16,000	4,000
	Depreciation on tyres $\left(\frac{₹52,500}{25,000\,km} \times 3,200\,km\right)$	6,720	1,680
	Total (B)	**49,920**	**12,480**
C.	**Total Cost (A + B)**	**68,320**	**17,080**

*Cost of engine oil & repairs may also be treated as fixed cost, as the question relates these with time i.e. in weeks instead of running of vehicle.

PYQ May 2019 – Q4a

(ii) Calculation of vehicle operating cost:

Operating cost per k.m. = $\frac{₹\ 68,320}{3,200\ kms}$ **or** $\frac{₹\ 17,080}{800\ Kms}$ = **₹ 21.35**

Operating cost per Tonne-k.m. = $\frac{₹\ 68,320}{16,000}$ or $\frac{₹\ 17,080}{4,000}$ = **₹ 4.27**

(a) Working Notes:

Particulars	For 4 weeks	For 1 week (by dividing by 4)
Total distance travelled (40 k.m × 2 × 2 trips × 5 days × 4 weeks)	3,200 km	800 km
Total tonne km (40 k.m × 10 tonnes × 2 × 5 days × 4 weeks)	16,000 tonne km	4,000 tonne km

PYQ Nov 18 – 4b

(b) *M/s XY Travels has been given a 25 km. long route to run an air- conditioned Mini Bus. The cost of bus is ₹ 20,00,000. It has been insured @3% premium per annum while annual road tax amounts to ₹ 36,000. Annual repairs will be ₹ 50,000 and the bus is likely to last for 5 years. The driver's salary will be ₹2,40,000 per annum and the conductor's salary will be ₹ 1,80,000 per annum in addition to 10% of the takings as commission (to be shared by the driver and the conductor equally). Office and administration overheads will be ₹ 18,000 per annum. Diesel and oil will be ₹ 1,500 per 100 km. The bus will make 4 round trips carrying on an average 40 passengers on each trip.*

Assuming 25% profit on takings and considering that the bus will run on an average 25 days in a month, you are required to:

(i) prepare operating cost sheet (for the month).

(ii) calculate fare to be charged per passenger km. ***(10 Marks)***

PYQ Nov 18 – 4b

(b) (i) Statement showing the Operating Cost per Passenger-km.

	Yearly (₹.)	Monthly (₹.)
(A) Standing Charges:		
Insurance Charge ₹. 20,00,000 × 3%	60,000	5,000
Road Tax	36,000	3,000
Depreciation (20,00,000/5)	4,00,000	33,333.33
Total	4,96,000	41,333.33
(B) Maintenance Charges:		
Annual Repairs	50,000	4166.67
Office and administration overheads	3,18,000	26,500
Total	3,68,000	30666.67
(C) Running Cost/Charges:		
Driver's Salary	2,40,000	20,000
Conductor's Salary	1,80,000	15,000

PYQ Nov 18 – 4b

Diesel & Oil $\left(60{,}000 \times \frac{1{,}500}{100}\right)$	9,00,000	75,000
Total	13,20,000	41,333.33
Total (A+B+C) Cost before commission and profit	21,84,000	1,82,000
Commission (33,60,000 × 10%) (working note 2)	3,36,000	28,000
Profit (33,60,000 × 25%) (working note 2)	8,40,000	70,000
Takings (working note 1)	33,60,000	2,80,000

PYQ Nov 18 – 4b

(ii) Fare per Passenger-km. $= \dfrac{\text{Total Collection/Takings}}{\text{Total Passenger-km (Working note 3)}}$

$$= \frac{33,60,000}{24,00,000} = ₹.\ 1.40$$

OR

Fare per Passenger-km. (monthly) $= \dfrac{2,80,000}{2,00,000} = ₹.1.40$

Working note:

1. Cost before commission (10%) and profit (25%) is 21,84,000 which is 65% of total takings. So total takings is (21,84000÷65) ×100=₹ 33,60,000
2. Commission is 10% of ₹ 33,60,000=₹ 3,36,000 and Profit is 25% of ₹ 33,60,000=₹ 8,40,000
3. Total Km is (4 Round Trips × Days in a month × Month = (4×2×25 ×25×12) = 60,000 km

Passenger km is 60,000 km×40 passenger= 24,00,000

PYQ May 18 – 4b

(b) *A group of 'Health Care Services' has decided to establish a Critical Care Unit in a metro city with an investment of ₹ 85 lakhs in hospital equipments. The unit's capacity shall be of 50 beds and 10 more beds, if required, can be added.*

Other information for a year are as under:

	(₹)
Building Rent	2,25,000 per month
Manager Salary (Number of Manager-03)	50,000 per month to each one
Nurses Salary (Number of Nurses-24)	18,000 per month to each Nurse
Ward boy's Salary (Number of ward boys' -24)	9,000 per month per person
Doctor's payment (Paid on the basis of number of patients attended and time spent by them)	5,50,000 per month
Food and laundry services (variable)	39,53,000
Medicines to patients (variable)	22,75,000 per year
Administrative Overheads	28,00,000 per year
Depreciation on equipments	15% per annum on original cost

PYQ May 18 – 4b

It was reported that for 200 days in a year 50 beds were occupied, for 105 days 30 beds were occupied and for 60 days 20 beds were occupied.

The hospital hired 250 beds at a charge of ₹ 950 per bed to accommodate the flow of patients. However, this never exceeded the normal capacity of 50 beds on any day.

Find out:

(i) Profit per patient day, if hospital charges on an average ₹ 2,500 per day from each patient.

(ii) Break even point per patient day (Make calculation on annual basis) ***(10 Marks)***

PYQ May 18 – 4b

(b) Number of Patient Days = (200x50) + (105x30) + (60x20)

=14,350 patient days + 250 = 14,600

Statement Showing Profit

Elements of Cost and Revenue	Total (₹)
A. Revenue (14,600 x ₹ 2,500)	3,65,00,000
B. Variable Costs	
Food and Laundry Service	39,53,000
Medicines to Patients	22,75,000
Doctor's Payment	66,00,000
Hire Charges of Bed (250 x ₹ 950)	2,37,500
Total Variable Cost	1,30,65,500

PYQ May 18 – 4b

C. Fixed Costs	
Building Rent	27,00,000
Manager's Salary (₹ 50,000 x 3 x 12)	18,00,000
Nurse's Salary (₹ 18,000 x 12 x 24)	51,84,000
Ward boy's Salary (₹ 9,000 x 12 x 24)	25,92,000
Administrative Overheads	28,00,000
Depreciation on Equipment's	12,75,000
	1,63,51,000
D. Total Cost (B+C)	2,94,16,500
E. Profit (A-D)	70,83,500

PYQ May 18 – 4b

Profit per patient day = ₹ 70,83,500/14,600 = ₹ 485.17

(i) Contribution (per patient day) = (₹ 3,65,00,000 – ₹ 1,30,65,500)/ 14,600
= ₹ 1,605.10

BEP = 1,63,51,000/1,605.10 = 10,186.90 or say 10,187 patient days

Notes:

1. Higher Charges for extra beds are a semi variable cost; still, for the sake of convenience it has been considered a variable cost.

2. Assumed, the hospital hired 250 beds at a charge of ₹ 950 per bed to accommodate the flow of patients. However, this never exceeded the 10 beds above the normal capacity of 50 beds on any day.

3. The fees were paid based on the number of patients attended to and the time spent by them, which on an average worked out to ₹ 5,50,000 p.m.

Revision Test Papers (RTPs)

May 2018 to Jan 2025

RTP Analysis

Exam	Q No.	Requirement	Special Points
RTP - Jan 2025	15	Statement of Operating Expense, avg cost per student per month	Regular - Similar to School Bus Problem
RTP - Sep 2024	5	MCQ - Room rent to be charged	Cal of room days
RTP - Sep 2024	6	Cost per rupee of insured value	Basic Easy
RTP - Sep 2024	16	Project cost per day, toll fee to be charged for each type	Similar to ICAI SM
RTP – May 2024	9	Operating Cost of Vehicle per month for both CNG and EV	Tyre replacement, Battery Replacement, Fuel
RTP - Nov 2023	10	Tariff to be charged	Similar to ICAI SM
RTP - May 2023	11	Cost per KWH	Similar to ICAI SM
RTP - Nov 2022	11	Cost per passenger km	Buses in repairs but illogical solution so SKIP
RTP - May 2022	10	Opex per month for both CNG vs EV	Same as RTP May 24
RTP - Nov 2021	11	Fare per passenger on different routes	Similar to Exercise Que 2

RTP Analysis

Exam	Q No.	Requirement	Special Points
RTP - May 2021	9	Statement of Expenses - per bus and for fleet. Average cost per student per month for two categories of students Pandemic Year 2020 Special Case	Driver and Cleaner Salary in 2020 is full for first 3 months
RTP - Nov 2020	11	Cost per tonkm, Fare per tonkm	90% vehicles on use affect running and trip count, Loading of outward and return, cost of loading and unloading is per trip, Workshop Expense Apportionment
RTP - May 2020	9	Stream Wise Cost of Higher Secondary	Illustration 11 - Page 12.37
RTP - Nov 2019	10	Annual Cost for 4 trucks, cost per km run, freight per tonkm	Maintenance is semi variable and we need to find split Variable and Fixed, ton km only when loaded
RTP - May 2019	10	Rent for each type of Suite	Illustration 6 - 12.19
RTP - Nov 2018	11	Cost per policy, Grouping of Cost into heads	Illustration 12 - Page 12.43
RTP - May 2018	11	Stream Wise Cost of Higher Secondary	Illustration 11 - Page 12.37

RTP Jan 2025 – Q15

15. Roshan Travels provide bus facility to a College for carrying its students from home to College and dropping them back at home after study hours. The travel company runs a fleet of 6 buses for this purpose and park them in the college premises.

The information regarding bus running is as follows:

(I) The College operates in two shifts (one in the morning and one in the afternoon).

(II) The distance travelled by each bus one way is 20 kms.

(III) The students need to attend the college for 30 days in a month.

(IV) The seating capacity of each bus is 30 persons.

(V) The seating capacity is normally 80% occupied during the year.

RTP Jan 2025 – Q15

The information regarding expenses incurred for a year is as follows:

Particulars	Amount
Driver and attendant salary	₹ 60,000 per bus per month
Cleaner's salary (One cleaner for 2 buses)	₹ 30,000 per cleaner per month
Diesel (Avg. 8 kms per litre)	₹ 160 per litre
Insurance charges (per annum)	2% of Purchase Price
License fees and taxes	₹ 10,160 per bus per month
Parking charges paid	₹ 36,000 per month
Repair & maintenance including engine oil and lubricants (for every 5,760 kms)	₹ 5,712 per bus

RTP Jan 2025 – Q15

Purchase Price of each bus	₹ 30,00,000
Residual life of each bus	8 Years
Scrap value per bus at the end of residual life	₹ 6,00,000

Students coming from a distance of beyond 10 kms away from the College are charged double the fare than that from students coming from a distance of up-to 10 kms. away from the College. 50% of students travelling in each trip are coming from a distance beyond 10 kms. from the College. The charges are to be based on average cost.

You are required to:

(i) PREPARE a statement showing expenses of operating a single bus for a year.

(ii) CALCULATE the average cost per student per month in respect of:

(a) Students coming from a distance up-to 10 kms. from the College.

(b) Students coming from a distance beyond 10 kms. from the College.

RTP Jan 2025 – Q15

15. (i) Statement of Expenses of operating a single bus for a year

Particulars	Rate (₹)	Per Bus per annum (₹)
(A) Standing Charges:		
Driver and attendant salary	60,000 p.m	7,20,000
Average Cleaner's salary (50%)	30,000 p.m	1,80,000
Insurance charge	60,000 p.a.	60,000
License fee, taxes etc.	10,160 p.m.	121,920
Average Parking Charges	36,000 p.m	72,000
Depreciation {(30,00,000 – 6,00,000) ÷ 8}	3,00,000 p.a.	3,00,000

RTP Jan 2025 – Q15

(B)	**Maintenance Charges:**		
	Repairs & maintenance including engine oil and lubricants (Working Note 1)	5,7120 p.a.	5,7120
(C)	**Operating Charges:**		
	Diesel (Working Note 2)		11,52,000
	Total Cost (A + B + C)		26,63,040
	Cost per month		2,21,920

(ii) Average cost per students per month:

A. Student coming from distance of up-to 10 km

$$= \frac{\text{Total cost per month}}{\text{Total no. of equivalent student}} = \frac{₹\ 2,21,920}{72^*} = ₹\ 3,082.22$$

RTP Jan 2025 – Q15

B. Student coming from a distance beyond 10 km

= ₹ 3,082.22 × 2 = ₹ 6,164.44

*** Considering half fare students as a base**

Full fare students (12 × 2)	24 students
Add: Half fare students (Working Note 3)	12 students
Total Equivalent number of students per month	36 students
Total Equivalent number of students per month (morning + afternoon shift)	72 students

Working Notes:

1. Calculation of Repairs and maintenance cost of a bus:

Distance travelled in a year:

(4 trips × 2 × 20 km. × 30 days × 12 months)

Distance travelled p.a.: 57,600 km.

Repairs and maintenance cost per Bus per annum:

$$= \frac{57,600 \text{ km.}}{5,760 \text{ km}} \times ₹ 5,712 \text{ per bus}$$

= ₹ 57,120 per annum

RTP Jan 2025 – Q15

2. Calculation of diesel cost per bus per annum:

Distance travelled in a year = 57,600 km

Diesel cost per Bus per annum:

$$= \frac{57{,}600 \text{ km.}}{8 \text{ Km}} \times ₹\ 160$$

= ₹ 11,52,000

3. Calculation of equivalent number of students per bus:

Seating capacity of a bus	30 students
Occupancy (80% of capacity)	24 students
Half fare students (50% of 24 students)	12 students
Full fare students (50% of 24 students)	12 students

RTP Sep 2024 – Q5 (MCQ)

5. A hotel has 200 rooms (120 Deluxe rooms and 80 Premium rooms). The normal occupancy in summer is 80% and winter 60%. The period of summer and winter is taken as 8 months and 4 months respectively. Assume 30 days in each month. Room rent of Premium room will be double of Deluxe room. Hotel is expecting a profit of 20% on total revenue, total cost for the year is 2,66,11,200. Calculate the room rent to be charged for Premium room.

(a) ₹ 450 per room day

(b) ₹ 900 per room day

(c) ₹ 380 per room day

(d) ₹ 760 per room day

RTP Sep 2024 – Q5 (MCQ)

5. (b) ₹ 900 per room day

Total Revenue (2,66,11,200/80%) = 3,32,64,000

Calculation of Room Days:

	Deluxe	**Premium**
Summer	120 rooms x 80% x 30 days x 8 months = 23,040	80 rooms x 80% x 30 days x 8 months = 15,360
Winter	120 rooms x 60% x 30 days x 4 months = 8,640	80 rooms x 60% x 30 days x 4 months = 5,760
Total room days	31,680	21,120

Let's assume the room rent of Deluxe room be 'x'

Then rent of Premium room will be '2x'

Therefore: 31,680x + 42,240x = 3,32,64,000

X = 450

Rent of Premium room will be 450 x 2 = ₹ 900 per room day

RTP Sep 2024 – Q6 (MCQ)

6. ALC Ltd. is a insurance company. It launched a new term insurance policy Names as Protection Plus. The total cost for the policy during the year is ₹ 1,60,00,000. Total number of policies sold is 410 and total insured value of policies is ₹ 920 crore.

What is the cost per rupee of insured value?

(a) ₹ 0.0017

(b) ₹ 0.18

(c) ₹ 575

(d) ₹ 2.24

6. (a) ₹ 0.0017

Cost per rupee of insured value

= Total Cost/ Total Insured Value

= 1.6 cr/920 cr = ₹ 0.0017

RTP May 2024 – Q9

9. A LMV Pvt. Ltd, operates cab/ car rental service in Delhi/NCR. It provides its service to the offices of Noida, Gurugram and Faridabad. At present it operates CNG fuelled cars but it is also considering to upgrade these into Electric vehicle (EV). The following details related with the owning of CNG & EV propelled cars are as tabulated below:

Particulars	CNG Car	EV Car
Car purchase price (₹)	9,20,000	15,20,000
Govt. subsidy on purchase of car (₹)	--	1,50,000
Life of the car	15 years	10 years
Residual value (₹)	95,000	1,70,000
Mileage	20 km/kg	240 km per charge
Electricity consumption per full charge	--	30 Kwh
CNG cost per Kg (₹)	60	--
Power cost per Kwh (₹)	--	7.60
Annual Maintenance cost (₹)	8,000	5,200
Annual insurance cost (₹)	7,600	14,600
Tyre replacement cost in every 5 - year (₹)	16,000	16,000
Battery replacement cost in every 8- year (₹)	12,000	5,40,000

RTP May 2024 – Q9

Apart from the above, the following are the additional information:

Particulars	
Average distance covered by a car in a month	1,500 km
Driver's salary (₹)	20,000 p.m
Garage rent per car (₹)	4,500 p.m
Share of Office & Administration cost per car (₹)	1,500 p.m

You have been approached by the management of A LMV Pvt. Ltd. for consultation on the two options of operating the cab service.

CALCULATE the operating cost of vehicle per month per car for both CNG & EV options.

RTP May 2024 – Q9

9. Workings:

1. Calculation of Depreciation per month:

	Particulars	CNG Car	EV Car
A	Car purchase price (₹)	9,20,000	15,20,000
B	Less: Govt. subsidy (₹)	--	(1,50,000)
C	Less: Residual value (₹)	(95,000)	(1,70,000)
D	Depreciable value of car (₹) [A-B-C]	8,25,000	12,00,000
E	Life of the car	15 years	10 years
F	Annual depreciation (₹) [D÷E]	55,000	1,20,000
G	**Depreciation per month (₹) [F÷12]**	**4,583.33**	**10,000**

RTP May 2024 – Q9

2. Fuel/ Electricity consumption cost per month:

	Particulars	CNG Car	EV Car
A	Average distance covered in a month (KM)	1,500	1,500
B	Mileage (KM)	20	240
C	Qty. of CNG/ Full charge required [A÷B]	75 kg.	6.25
D	Electricity Consumption [C×30kwh]	-	187.5
E	Cost of CNG per kg (₹)	60	-
F	Power cost per Kwh (₹)	-	7.60
G	**CNG Cost per month (₹) [C×E]**	**4,500**	**-**
H	**Power cost per month (₹) [D×F]**	**-**	**1,425**

RTP May 2024 – Q9

3. Amortised cost of Tyre replacement:

	Particulars	CNG Car	EV Car
A	Life of vehicle	15 years	10 years
B	Replacement interval	5 years	5 years
C	No. of time replacement required	2 times	1 time
D	Cost of tyres for each replacement (₹)	16,000	16,000
E	Total replacement cost (₹) [C×D]	32,000	16,000
F	Amortised cost per year (₹) [E÷A]	2,133.33	1,600
E	**Cost per month (₹) [F÷12]**	**177.78**	**133.33**

RTP May 2024 – Q9

4. Amortised cost of Battery replacement:

	Particulars	CNG Car	EV Car
A	Life of vehicle	15 years	10 years
B	Replacement interval	8 years	8 years
C	No. of time replacement required	1 time	1 time
D	Cost of battery for each replacement (₹)	12,000	5,40,000
E	Total replacement cost (₹) [C×D]	12,000	5,40,000
F	Amortised cost per year (₹) [E÷A]	800	54,000
E	**Cost per month (₹) [F÷12]**	**66.67**	**4,500**

RTP May 2024 – Q9

Calculation of Operating cost per month

	Particulars	CNG Car (₹)	EV Car (₹)
A	**Running cost:**		
	Fuel cost/ Power consumption cost [Refer WN-2]	4,500	1,425
B	**Maintenance cost:**		
	Annual Maintenance cost [Annual cost ÷12]	666.67	433.33
	Annual Insurance cost [Annual cost ÷12]	633.33	1,216.67
	Amortised cost of Tyre replacement [Refer WN-3]	177.78	133.33
	Amortised cost of Battery replacement [Refer WN-4]	66.67	4,500
		1,544.45	6,283.33

RTP May 2024 – Q9

C	**Fixed cost:**		
	Depreciation [Refer WN-1]	4,583.33	10,000
	Driver's salary	20,000	20,000
	Garage rent	4,500	4,500
	Share of Office & Administration cost	1,500	1,500
		30,583.33	36,000
D	**Operating cost per month [A+B+C]**	**36,627.78**	**43,708.33**

RTP May 2021 – Q9

VPS is a public school having 25 buses each plying in different directions for the transport of its school students. In view of large number of students availing of the 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 has been so arranged that in the morning, the first trip picks up senior students and the second trip plying an hour later picks up junior students. Similarly, in the afternoon, the first trip takes the junior students and an hour later the second trip takes the senior students home.

The distance travelled by each bus, one way is 8 km. The school works 22 days in a month and remains closed for vacation in May and June. The bus fee, however, is payable by the students for all the 12 months in a year.

The details of expenses for a year are as under:

Driver's salary – payable for all the 12 in months	₹ 12,000 per month per driver
Cleaner's salary payable for all the 12 months	₹ 8,000 per month per cleaner
License fees, taxes etc.	₹ 8,400 per bus per annum
Insurance Premium	₹ 15,600 per bus per annum
Repairs and Maintenance	₹ 20,500 per bus per annum
Purchase price of the bus	₹ 20,00,000 each
Life of the bus	16 years
Scrap value	₹ 1,60,000
Diesel Cost	₹ 78.50 per litre

RTP May 2021 – Q9

Each bus gives an average of 5 km. per litre of diesel. The seating capacity of each bus is 40 students.

The school follows differential transportation fees based on distance travelled as under:

Students picked up and dropped within the range of distance from the school	Transportation fee	Percentage of students availing this facility
2 km.	25% of Full	15%
4 km.	50% of Full	30%
8 km.	Full	55%

Due to a pandemic, lockdown imposed on schools and the school remained closed from April 2020 to December 2020. Drivers and cleaners were paid 75% of their salary during the lockdown period. Repairing cost reduced to 75% for the year 2020.

Ignore the interest cost.

Required:

(i) PREPARE a statement showing the expenses of operating a single bus and the fleet of 25 buses for a year.

(ii) FIND OUT transportation fee per student per month in respect of:

(a) Students coming from a distance of upto 2 km. from the school.

(c) Students coming from a distance of upto 8 km. from the school.

(iii) CALCULATE the minimum bus fare that has to be recovered from the students for the year 2020.

RTP May 2021 – Q9

9. (i) Statement showing the expenses of operating a single bus and the fleet of 25 buses for a year

Particulars	Per bus per annum (₹)	Fleet of 25 buses per annum (₹)
Running costs : (A)		
Diesel (Refer to working note 1)	2,21,056	55,26,400
Repairs & maintenance costs: (B)	20,500	5,12,500
Fixed charges:		
Driver's salary (₹ 12,000 × 12 months)	1,44,000	36,00,000
Cleaners salary (₹ 8,000 × 12 months)	96,000	24,00,000
Licence fee, taxes etc.	8,400	2,10,000
Insurance	15,600	3,90,000
Depreciation $\left(\frac{₹\ 20,00,000 - ₹1,60,000}{16\ \text{years}}\right)$	1,15,000	28,75,000

RTP May 2021 – Q9

Total fixed charges: (C)	3,79,000	94,75,000
Total expenses: (A+B+C)	6,20,556	1,55,13,900

(ii) Average cost per student per month in respect of students coming from a distance of:

(a)	2 km. from the school {₹ 6,20,556 / (236 students × 12 months)} (Refer to Working Note 2)	₹ 219.12
(b)	4 km. from the school (₹ 219.12 × 2)	₹ 438.24
(c)	8 km. from the school (₹ 219.12 × 4)	₹ 876.48

Calculation of minimum bus fare to be recovered from the students during the year 2020:

Statement showing the expenses of operating a single bus in year 2020

Particulars	Per bus per annum (₹)
Running costs : (A)	
Diesel (Refer to working note 3)	66,316.80
Repairs & maintenance costs: (B) (₹ 20,500 x 0.75)	15,375

RTP May 2021 – Q9

Fixed charges:	
Driver's salary {₹ 12,000 × 3 months + (75% of ₹ 12,000 × 9 months)}	1,17,000
Cleaners salary {₹ 8,000 × 3 months + (75% of ₹ 8,000 × 9 months)}	78,000
Licence fee, taxes etc.	8,400
Insurance	15,600
Depreciation $\left(\frac{₹\ 20,00,000 - ₹1,60,000}{16\ \text{years}}\right)$	1,15,000
Total fixed charges: (C)	3,34,000
Total expenses: (A+B+C)	4,15,691.80

Minimum bus fare to be recovered:

(a)	2 km. from the school {₹ 4,15,691.8 / (236 students × 12 months)} (Refer to Working Note 2)	₹ 146.78
(b)	4 km. from the school (₹ 146.78 × 2)	₹ 293.56
(c)	8 km. from the school (₹146.78 × 4)	₹ 587.12

RTP May 2021 – Q9

Working Notes:

1. Calculation of diesel cost per bus:

No. of trips made by a bus each day	4
Distance travelled in one trip both ways (8 km. × 2 trips)	16 km.
Distance travelled per day by a bus (16 km. × 4 shifts)	64 km.
Distance travelled during a month (64 km. × 22 days)	1,408 km.
Distance travelled per year (1,408 × 10 months)	14,080 km.
No. of litres of diesel required per bus per year (14,080 km. ÷ 5 km.)	2,816 litres
Cost of diesel per bus per year (2,816 litres × ₹ 78.50)	₹ 2,21,056

RTP May 2021 – Q9

2. Calculation of equivalent number of students per bus:

Bus capacity of 2 trips (40 students × 2 trips)	80 students
$^1/_4{}^{th}$ fare students (15% × 80 students)	12 students
½ fare students (30% × 80 students × 2) (equivalent to $^1/_4{}^{th}$ fare students)	48 students
Full fare students (55% × 80 students × 4) (equivalent to $^1/_4{}^{th}$ fare students)	176 students
Total students equivalent to $^1/_4{}^{th}$ fare students	236 students

3. Calculation of diesel cost per bus in Year 2020:

Distance travelled during a month (64 km. × 22 days)	1,408 km.
Distance travelled during the year 2020 (1,408 × 3 months)	4,224 km.
No. of litres of diesel required per bus per year (4,224 km. ÷ 5 km.)	844.8 litres
Cost of diesel per bus per year (844.8 litres × ₹ 78.50)	₹ 66,316.80

RTP Nov 2020 – Q11

11. A transport company has 20 vehicles, the capacities are as follows:

No. of Vehicles	Capacity per vehicle
5	9 MT
6	12 MT
7	15 MT
2	20 MT

The company provides the goods transport service between stations 'A' to station 'B'. Distance between these stations is 100 kilometers. Each vehicle makes one round trip per day on an average. Vehicles are loaded with an average of 90 per cent of capacity at the time of departure from station 'A' to station 'B' and at the time of return back loaded with 70 per cent of capacity. 10 per cent of vehicles are laid up for repairs every day. The following information is related to the month of August, 2020:

Salary of Transport Manager	₹ 60,000
Salary of 30 drivers	₹ 20,000 each driver
Wages of 25 Helpers	₹ 12,000 each helper
Loading and unloading charges	₹ 850 each trip
Consumable stores (depends on running of vehicles)	₹ 1,35,000
Insurance (Annual)	₹ 8,40,000
Road Licence (Annual)	₹ 6,00,000
Cost of Diesel per litre	₹ 78

RTP Nov 2020 – Q11

Kilometres run per litre each vehicle	5 Km.
Lubricant, Oil etc.	₹ 1,15,000
Cost of replacement of Tyres, Tubes, other parts etc. (on running basis)	₹ 4,25,000
Garage rent (Annual)	₹ 9,00,000
Routine mechanical services	₹ 3,00,000
Electricity charges (for office, garage and washing station)	₹ 55,000
Depreciation of vehicles (on time basis)	₹ 6,00,000

There is a workshop attached to transport department which repairs these vehicles and other vehicles also. 40 per cent of transport manager's salary is debited to the workshop. The transport department has been apportioned ₹88,000 by the workshop during the month. During the month operation was for 25 days.

You are required:

(i) CALCULATE per ton-km operating cost.

(ii) DETERMINE the freight to be charged per ton-km, if the company earned a profit of 25 per cent on freight.

RTP Nov 2020 – Q11

11. (i) Operating Cost Sheet for the month of August, 2020

	Particulars	Amount (₹)
A.	**Fixed Charges:**	
	Manager's salary (₹60,000 × 60%)	36,000
	Drivers' Salary (₹20,000 × 30 drivers)	6,00,000
	Helpers' wages (₹12,000 × 25 helpers)	3,00,000
	Insurance (₹8,40,000 ÷ 12 months)	70,000
	Road licence (₹6,00,000 ÷ 12 months)	50,000
	Garage rent (₹9,00,000 ÷ 12 months)	75,000
	Routine mechanical services	3,00,000
	Electricity charges (for office, garage and washing station)	55,000
	Depreciation of vehicles	6,00,000
	Apportioned workshop expenses	88,000
	Total (A)	21,74,000

RTP Nov 2020 – Q11

B.	**Variable Charges:**	
	Loading and unloading charges (Working Note 1)	7,65,000
	Consumable Stores	1,35,000
	Cost of diesel (Working Note 2)	14,04,000
	Lubricant, Oil etc.	1,15,000
	Replacement of Tyres, Tubes & other parts	4,25,000
	Total (B)	28,44,000
C.	**Total Cost (A + B)**	**50,18,000**
D.	Total Ton-Kms. (Working Note 3)	9,43,200
E.	**Cost per ton-km. (C ÷ D)**	**5.32**

(ii) Calculation of Chargeable Freight

Cost per ton-km.	₹ 5.32
Add: Profit @ 25% on freight or 33⅓% on cost	₹ 1.77
Chargeable freight per ton-km.	**₹ 7.09**

RTP Nov 2020 – Q11

Working Notes:

1. **Wages paid to loading and unloading labours**

   Numbers of vehicles available per day × No. of days × trips × wages per trip

   (20 vehicles × 90%) × 25 days × 2 trips × ₹850

   18 × 25 × 2 × 850 = ₹7,65,000

2. **Cost of Diesel:**

   Distance covered by each vehicle during August, 2020

   = 100 k.m. × 2 × 25 days × 90% = 4,500 km.

   $$\text{Consumption of diesel} = \frac{4{,}500\,\text{k.m.} \times 20\,\text{vehicles}}{5\,\text{k.m.}} = 18{,}000\ \text{litres.}$$

   Cost of diesel = 18,000 litres × ₹ 78 = ₹14,04,000.

3. **Calculation of total ton-km:**

   Total Ton-Km. = Total Capacity × Distance covered by each vehicle × Average Capacity Utilisation ratio.

   $$= \left[(5 \times 9\,\text{MT}) + (6 \times 12\text{MT}) + (7 \times 15\,\text{MT}) + (2 \times 20\,\text{MT})\right] \times 4{,}500\,\text{k.m.} \times \frac{(90\% + 70\%)}{2}$$

RTP Nov 2020 – Q11

$$= (45 + 72 + 105 + 40) \times 4{,}500 \text{ k.m.} \times 80\%$$

$$= 262 \times 4{,}500 \times 80\%.$$

$$= 9{,}43{,}200 \text{ ton-km.}$$

RTP Nov 2019 – Q10

10. A transport company has a fleet of four trucks of 10 tonne capacity each plying in different directions for transport of customer's goods. The trucks run loaded with goods and return empty. The distance travelled, number of trips made and the load carried per day by each truck are as under:

Truck No.	One way Distance Km	No. of trips per day	Load carried per trip / day tonnes
1	48	4	6
2	120	1	9
3	90	2	8
4	60	4	8

The analysis of maintenance cost and the total distance travelled during the last two years is as under

Year	Total distance travelled	Maintenance Cost ₹
1	1,60,200	1,38,150
2	1,56,700	1,35,525

RTP Nov 2019 – Q10

The following are the details of expenses for the year under review:

Diesel	₹ 60 per litre. Each litre gives 4 km per litre of diesel on an average.
Driver's salary	₹ 22,000 per truck per month
Licence and taxes	₹ 15,000 per annum per truck
Insurance	₹ 80,000 per annum for all the four trucks
Purchase Price per truck	₹30,00,000, Life 10 years. Scrap value at the end of life is ₹1,00,000.
Oil and sundries	₹ 525 per 100 km run.
General Overhead	₹ 1,10,840 per annum

The trucks operate 24 days per month on an average.

Required

(i) PREPARE an Annual Cost Statement covering the fleet of four trucks.

(ii) CALCULATE the cost per km. run.

(iii) DETERMINE the freight rate per tonne km. to yield a profit of 30% on freight.

RTP Nov 2019 – Q10

10. (i) Annual Cost Statement of four vehicles

	(₹)
Diesel {(4,21,632 km. ÷ 4 km) × ₹ 60) (Refer to Working Note 1)	63,24,480
Oil & sundries {(4,21,632 km. ÷ 100 km.) × ₹ 525}	22,13,568
Maintenance {(4,21,632 km. × ₹ 0.75) + ₹ 18,000} (Refer to Working Note 2)	3,34,224
Drivers' salary {(₹22,000 × 12 months) × 4 trucks}	10,56,000
Licence and taxes (₹ 15,000 × 4 trucks)	60,000
Insurance	80,000
Depreciation {(₹29,00,000 ÷ 10 years) × 4 trucks}	11,60,000
General overhead	1,10,840
Total annual cost	**1,13,39,112**

(ii) Cost per km. run

$$\text{Cost per kilometer run} = \frac{\text{Total annual cost of vehicles}}{\text{Total kilometre travelled annually}}$$ (Refer to Working Note 1)

RTP Nov 2019 – Q10

$$= \frac{₹1,13,39,112}{4,21,632\ \text{Kms}} = ₹\ 26.89$$

(iii) Freight rate per tonne km (to yield a profit of 30% on freight)

$$\text{Cost per tonne km.} = \frac{\text{Total annual cost of three vehicles}}{\text{Total effective tonnes kms. per annum}} \text{ (Refer to Working Note 1)}$$

$$= \frac{₹1,13,39,112}{16,10,496\ \text{kms}} = ₹\ 7.04$$

$$\text{Freight rate per tonne km.} \left(\frac{₹7.04}{0.7}\right) \times 1 = ₹\ 10.06$$

RTP Nov 2019 – Q10

Working Notes:

1. Total kilometre travelled and tonnes kilometre (load carried) by four trucks in one year

Truck number	One way distance in kms	No. of trips	Total distance covered in km per day	Load carried per trip / day in tonnes	Total effective tonnes km
1	48	4	384	6	1,152
2	120	1	240	9	1,080
3	90	2	360	8	1,440
4	60	4	480	8	1,920
Total			1,464		5,592

Total kilometre travelled by four trucks in one year

(1,464 km. × 24 days × 12 months) = 4,21,632

Total effective tonnes kilometre of load carried by four trucks during one year

(5,592 tonnes km. × 24 days × 12 months) = 16,10,496

RTP Nov 2019 – Q10

2. Fixed and variable component of maintenance cost:

$$\text{Variable maintenance cost per km} = \frac{\text{Difference in maintenance cost}}{\text{Difference in distance travelled}}$$

$$= \frac{₹\ 1,38,150 - ₹\ 1,35,525}{1,60,200\ \text{kms} - 1,56,700\ \text{kms}}$$

$$= ₹\ 0.75$$

Fixed maintenance cost = Total maintenance cost – Variable maintenance cost

= ₹1,38,150 – 1,60,200 kms × ₹ 0.75 = ₹ 18,000