Costing in Service Sector

Ans. 7.

Total Room days =No of rooms x Days in a year = 300 rooms x 365 days
= 10,95,000 Rooms days
= Rs. 50-Rs.10 = Rs.40

Dally contribution required per room	**(Rs.)**
Desired profit after tax	600000
Add Income Tax (Rs.6,00,000X40/60)	400000
Desired profit before tax	10,00,000
Add: Fixed cost	7,50,000
Total Revenue to be earned	17,50,000

No. of room days to be rented = Rs.17,50,000 / Rs.40 = 43.750 Room days

No. of rooms to be rented to attain break- even = Rs.7,50,000 / Rs.40 = 18.750 Room days

Ans 8:

Room Occupancy days per annum

Single rooms	(180 rooms X 365days X85/100)	55845
Double rooms	(60 rooms X 365 days X 85/100)	18615

Variable and Fixed cost p.a.

Particulars	Single rooms	Double rooms	Total
Room occupancy days	55845	18615	
Variable cost per day	300	500	
Total Variable cost	16753500	9307500	26061000
Fixed cost per room day	500	780	
Total Fixed cost	27922500	14519700	42442200

Margin of Safety desired at 20% of total revenue. Therefore, Break even should be at 80% of total revenue.

Revenue at break even level = Variable cost + Fixed cost = 26061000+42442200 = Rs. 68503200

Desired total revenue to be = Rs. 68503200 X 100/80 = Rs. 85629000

(i) Computation of tariff per room day

Single room days occupancy	55845
Double room days occupancy equivalent to single room day (18615X160/100)	29784
Total single room days	85629

Rent per single room day	= Rs. 85620000/85629 room days	= Rs. 1000
Rent per double room day	= Rs. 1000 X 160/100	= Rs. 1600
Tariff per room for single room	= Rs. 1000 X 100/80	= Rs. 1250
Tariff per room for double room	= Rs. 1600 X 100/80	= Rs. 2000

(ii) Computation of increase in occupancy of the remaining single rooms days required to compensate the loss arising from the discount.

Number of single rooms intends to reserve for corporate customers = 12

Occupancy days for reserved rooms	= 12 rooms X 365 days X 85/100	= 3723
Discount given on room rent per day	= Rs. 1000 X 10/100	= Rs. 100
Amount of revenue lost due to discounting	= 3723 room days X 100	= Rs.372300
Contribution per day on a single room	= Rs. 1000- Rs. 300	= Rs. 700

Increase in occupancy days required in single rooms = Rs. 372300/Rs. 700 = 532 days

Ans. 9
Working Name:
Calculation of occupancy

(a) Single room occupancy p. a. (100 rooms X 365 days X 75/100)	27,375
(b) Double room occupancy p. a. (20 rooms X 365 X 75/1000) = 5475	
Conversion of double room to single room occupancy (5,475 X 1.20)	6,570
Total	33,945

Statement of Rent chargeable to single room and double room per day

Particulars		Single Room	Double room
No. of occupancy days	(a)	27,375	5,475
Costs per day		Rs.	Rs.
Variable cost		400	500
Fixed cost		200	250
	(b)	600	750
Total (Rs.)	(a) X (b)	1,64,25,000	41,06,250

		(Rs.)
Total Cost	(Rs.1,64,25,000 + Rs.41,06,250)	2,05,31,250
Add: 20% Margin safety on hire of room	(Rs.25% 0n cost)	51,32,812
Total rental charges to be received		2,56,64,062

Room rent per day to be collected

		(Rs.)
(a) Single Room	(Rs.2,56,64,062 / 33.945)	756
(b) Double Room	(Rs.756 X 1.20)	907

Profitability statement of restaurant **(Rs.)**

Sales Revenue	(Rs.1,00,000 X 365 days)	3,65,00,000
Contribution	(30% of Rs.365 Lakhs)	1,09,50,000
Less: Fixed cost p. a.		10,00,000
Profit		99,50,000

Profitability statement of sports centre

		(Rs.)
Contribution p. a.	(50 persons X Rs.50X 365 days)	9,12,500
Less: Fixed Cost p. a.		5,00,000
Profit		4,12,500

Profitability statement of shopping arcade

		(Rs.)
Contribution p. a.	(Rs.50,000 X 12 months)	6,00,000
Less: Fixed Cost p. a.		6,00,000
Profit		Nil

Ans. 10

(i) Income Statement of Kangan Resort for the next year

Rs.

Sales Revenue	
Lodging house room receipts (40 Rooms × 200 days Rs. 200 × 85%)	13,60,000
Shopping Arcade (40 Rooms × 2 persons × 200 days × Rs. 50 ×85%)	6,80,000
Restaurant (40 Rooms × 2 persons × 200 days) × Rs. 80 × 85%)	10,88,000
Total Sales Revenue	31,28,000
Less: Variable Cost	
Lodging house rooms (40 Rooms × 200 days × Rs. 30 × 85%)	2,04,000
Shopping Arcade (50% of Rs. 6,80,000)	3,40,000
Restaurant (60% of Rs. 10,88,000)	6,52,800
Total Variable Cost	11,96,800
Contribution (Total Sales Revenue – Total Variable Cost)	19,31,200
Less: Fixed Cost	10,00,000
Profit (Estimated)	9,31,200

(ii) Income Statement on the basis of reduced room rent

	Rs.
Sales Revenue	
Lodging house room receipts (40 Rooms × 200 days Rs. 150 × 95%)	11,40,000
Shopping Arcade (40 Rooms × 2 persons × 200 days × Rs. 50 ×95%)	7,60,000
Restaurant (40 Rooms × 2 persons × 200 days) × Rs. 80 × 95%)	12,16,000
Total Sales Revenue	31,16,000
Less: Variable Cost	
Lodging house rooms (40 Rooms × 200 days × Rs. 30 × 85%)	2,28,000
Shopping Arcade (50% of Rs. 7,60,000)	3,80,000
Restaurant (60% of Rs. 12,16,000)	7,29,600
Total Variable Cost	13,37,600
Contribution (Total Sales Revenue – Total Variable Cost)	17,78,400
Less: Fixed Cost	10,00,000
Profit	7,78,400

The profitability decreases by 9,31,200 – 7,78,400 = Rs. 1,52,800. Hence reducing room

rent proposal may not be accepted.

Ans. 11

Estimated Income Statement for the coming year **(Rs.)**

Revenue		
Hotel Room Rent	(100 rooms X 250 days X Rs.150 X 75/100)	28,12,500
Receipts from shop	(100 rooms X 2 persons X 250 days X Rs.30 X 75/100)	11,25,000
Receipts from Restaurant	(100 rooms X 2 persons X 250 days X Rs.60 X 75/100)	22,50,000
	(a)	61,87,500
Variable Cost		
Hotel Rooms	(100 rooms X 250 days X Rs.25 X 75/100)	4,68,750
Shops	(Rs.11,25,000 X 50/100)	5,62,500
Restaurant	(Rs.22,50,000 X 55/100)	12,37,500
	(b)	22,68,750
Contribution	(a) - (b)	39,18,750
Less: Fixed Costs		19,50,000
Estimated Profit		19,68,750

(a) Revised estimated income statement or the coming year (if room rent reduced to Rs.125 per day to enhance occupancy to 90%) (Rs.)

Revenue		
Hotel Room Rent	(100 rooms X 250 days X Rs.125 X 90/100)	28,12,500
Receipts from shop	(100 rooms X 2 persons X 250 days X Rs.30 X 90/100)	13,50,000
Receipts from Restaurant	(100 rooms X 2 persons X 250 days X Rs.60 X 90/100)	27,00,000
	(a)	68,62,500
Variable Cost		
Hotel Rooms	(100 rooms X 250 days X Rs.25 X 90/100)	5,62,500
Shops	(Rs.13,50,000 X 50/100)	6,75,000
Restaurant	(Rs.27,00,000 X 55/100)	14,85,000
	(b)	27,22,500
Contribution	(a) - (b)	41,40,000
Less: Fixed Costs		19,50,000
Estimated Profit		21,90,000

(b) Analysis: With the reduction in room rent from Rs.150 per day to Rs.125 the occupancy will increase to 90% which will result in increase of profit by Rs.2,21,250 (i.e, Rs.21,90,000-Rs.19,68,750).

Ans. 12

(i) Occupancy:

Single rooms 100 X 365 X 80/100=29,200

Double rooms 20 X 365 X 80/100 = 5,840

Variable costs:			
Single rooms	(29,200 X 220)	64,24,000	
Double rooms	(5,840 X 350)	20,44,000	84,68,000
Fixed Costs:			
Single rooms	(29,200 X 120)	35,04,000	
Double rooms	(5,840 X 250)	14,60,000	49,64,000
Total costs:			1,34,32,000

Margin of safety 20%, Break- even point 80%

Sales at BEP = Total Costs =Rs.1,34,32,000

Total revenue = $\frac{1,34,32,000 \times 100}{80}$ =Rs.1,67,90,000

(Rs.)

Single rooms	(29,200 X 1)	29,200
Double rooms	(5,840 X 1.25)	7,300
National single rooms/days		3,500

Rent per day per Single room = $\frac{1,67,90,000}{36,500}$ = Rs.460

Rent per day per Double room =Rs.460 X 1.25 = Rs.575

(ii) Restaurant

(a) Sales /day Rs.25,000 Contribution 30%

Total contribution 25,000 X 30/100 = Rs.7,500 per day

(Rs.)

Contribution p. a.	(7,500 X 365)	27,37,500
Fixed cost p. a.		8,00,000
Profit		19,37,500

(b) Sports centre

(Rs.)

No. of persons /days		50
Average contribution per person / day		15
Total contribution/day	(50X 15)	750

(Rs.)

Total contribution/p. a.	(750X 365)	2,73,750
Fixed Overheads		4,00,000
Loss		1,26,250

(c) Shopping arcade

Average contribution p.m. Rs.35,000

(Rs.)

Average contribution p. a.	(Rs.35,000 X 12)	4,20,000
Fixed expenses		4,00,000
Profit		20,000

Profit Statement

(Rs.)

Hotel accommodation Rentals	1,67,90,000	
Less: Costs	1,34,32,00	33,58,000
Restaurant		19,37,500
Sports centre		(1,26,250)
Shopping arcade		20,000
Total		51,89,250

(III) Reservation = 10 rooms X 365 X 80 /100 = 2,920

Rent = 2,920 X 460 =Rs.13,43,200

Discount 10% =Rs. 1,34,320

Total contribution of remaining rooms
(Rs.)

Single	90 X 365 X 80/100 X (460-220)	63,07,200
Double	20 X 365 X 80/100 X (575-350)	13,14,000
Total		76,21,200

Increase in contribution required
76,21,200 + 1,34,320 = Rs.77,55,520

% occupancy = 77, 55,520 / 76, 21,200 = 81.41 =Say 81.5%

(IV) Total profit per annum = Rs.51, 89,250

Capital recovery factor 3.79
Discounted income for 5 years Rs.1, 96, 67,257
Lease rent Rs.1, 75, 00,000
Hence lease not acceptable

Ans 13: Calculation of variable cost:

	Distance X	*Distance Y*
One side distance	24 km	16 km
Round trip	48 km	32 km
Variable cost @ .80 per km	Rs.38.40	Rs.25.60

Calculation of fixed cost

	Distance X	*Distance Y*
Actual running time for round trip distance at the speed of 24 km per hour	120 Min	80 Min
Filling time	40 Min	30 Min

Empty time	40 Min	40 Min
Total time	200 Min	150 Min
Fixed cost @ Rs 7.50 per hour	Rs.25	18.75
Calculation of ton km		
Capacity	8 tons	8 tons
Full load	24 km	16 km
Tons km	192	128

Cost per ton km

$$\frac{38.40 + 25}{192}$$

=Rs.0.33

$$\frac{25.60 + 18.75}{128}$$

= Rs 0.347

Ans.14

Working notes:

(1) Total distance travelled (in 25 days)

= 60 km.(two sides) X 6 trips per day X 25 days = 9,000 km.

(2) Total passenger km.

= 9,000 km. X 20 seats = 1,80,000 passenger km.

(3) Depreciation p.a.

$$= \frac{\text{Purchase price – Scrap value}}{\text{5 Years}} = \frac{\text{(Rs.4,00,000-Rs.10,000)}}{\text{5 Years}} = \text{Rs.78,000}$$

Statement suggesting fare per passenger – km

(Rs.)

Fixed Expenses	Cost per annum	Cost per annum
Insurance	15,000	
Garage rent	9,000	
Road Tax	3,000	
Administrative charges	5,000	
Depreciation	78,000	
Interest on Loan	10,000	
	1,20,000	10,000
Running Expenses		
Repair and maintenance		1,250
Replacement of tyre-tube		300
Diesel and oil cost (9,000 km. X Rs.5		45,000
Driver and conductor's salary		5,000
Total cost (per month)		61,550.00
Add: Profit (20% of total revenue or 25% of total cost		15,387.50

Total Revenue		76,937.50

Rate per passenger – km =Rs.76,937.50/1,80,000 passenger km.=0.4274305 or 0.43 Paise

Ans.15

(i) Comparative cost sheet

Particulars	10 Tonne Capacity Trucks	8 Tonne Capacity Trucks
Total trips per day	5	5
No. of days per month	24	24
Total trips per month	120	120
Tonnes carried per truck	1,200	960
Capacity to be handed p.m. tones	24,000	24,000
No .of trucks required	20	25
No. of drivers (including relievers)	22	27
Total km. run per truck per month (120 X 12)	1,440	1,440
Total km. run by all trucks per month	28,800	36,000
Km. per litre of diesel	3	4
Diesel required (Litres)	9,600	9,000

Monthly Sheet

No. of Trucks	10 Tonne Capacity 20	10 Tonne Capacity 25
(a) Variable with km run Diesel		
@ Rs.10 per litre	96,000	90,000
Oil and sundries Rs.10 per 100 km.	2,880	3,600
Total	98,880	93,600
(b) Variable with No. of trucks run		
Repairs & Maintenance	78,500	80,000
Road Tax	4,000	5,000
Drivers Salary	35,200	43,200
Depreciation	1,16,000	1,50,000
Total	2,33,700	2,78,200
© Fixed		
Supervisor	3,200	3,200
Mechanic	2,000	2,000
Fitter	1,600	1,600
Miscellaneous Expenses	3,000	3,000
Total	9,800	9,800
Grand Total	3,42,380	3,81,600
Tonnage hauled	24,000	24,000
Cost / Tonne	14.27	15.90

Cost/Tonne:	10 Tonne Trucks	Rs.14.27
	8 Tonne Trucks	Rs.15.90
	Hire charges	Rs.18.00

Hence buy 10 tonne trucks.

(iii) Before taking final decision on purchase of trucks, on factor that may have to be given weight age is that we have assumed consistent operation of all the 20 trucks for 24 days in a month, transporting 24,000 tonnes without default for a period of five years. This aspect must be considered on the basis of past recorded of hiring

trucks on day to day basis over a three y3ear period so that optimum calculations on saving get properly weighed down.
Second issue that an immediate investment of Rs.86 lakhs in purchase of 20 tracks has to be made. This could be totally from own resources or totally out to borrowings or could be partly either way. For own investment technique of discounted cash flow is to be applied while is case of borrowings, recurrent interest cost as also initial cost of procuring the same has to be provided out of saving from year to year apart from meeting normal schedule of loan repayment. Net saving works out to Rs.10.74 lakhs per annum on hauling of 24,000 tonnes for 12 months in comparison to hiring of trucks.
Third issue is to compare return on investment of own funds made for procurement of trucks either fully or in part vis-à-vis return in alternate outlets. This is opportunity cost of capital will have to be given consideration. Decision will be made after considering all the above factors.

Ans.16
Working Notes:
(1) Calculation of requirement of trucks:
No. of Trips X No. of working days in a month X No. of tones

10 tonne	= 5 X 24 X 10	= 1,200 tonnes
8 tonne	= 5 X 24 x 8	= 960 tonnes

No. of trucks required to handle 24,000 tonnes

10 tonne trucks	=24,000 tonnes/1200 tonnes	= 20 trucks
8 tonne trucks	=24,000 tonnes/960 tonnes	=25 trucks

(2) No. of drivers required:

10 tonne	=20 trucks X 2 drivers	=40 Drivers
8 tonne	=25 trucks X 2drivers	=50 Drivers

(3) Total monthly depreciation:

10 tonne $= \frac{\text{20 trucks X Rs.10,00,000}}{\text{5 years}} \times \frac{1}{12}$ =Rs.3,33,333

8 tonne $= \frac{\text{25 trucks X Rs.8,50,000}}{\text{5 years}} \times \frac{1}{12}$ =Rs.3,54,167

(4) Diesel Required:
(No. of km. X No. of trips X No. of days in month X No. of trucks)
Diesel required =(6 km. X 10 trips X 24 days x 20 trucks)/No. km. per litre of diesel
10 tonne =(6 km. X 10 trips X 24 days x 20 trucks)/3. km. per litre
=9,600 litres
8 tonne =(6 km. X 10 trips X 24 days x 25 trucks)/4. km. per litre
=9,000 litres

Comparative Cost Sheet
(Rs.)

Particulars	10 tonne	8 tonne
Fixed charges (p.m.)		
Drivers salary(@ Rs.3,000 p.m)	1,20,000	1,50,000
Staff Expenses	9,000	9,000
Other fixed expenses	5,000	3,000

	(i)	1,34,000	1,62,000
Operating and Maintenance charges			
Depreciation		3,33,333	3,54,167
Diesel Cost		1,44,000	1,35,000
Lubricants & Sundries		5,760	7,200
Repairs & Maintenance		1,00,000	1,00,000
		5,83,093	5,96,367
(ii) Total Operating Cost	(i)	7,17,093	7,58,367
+ (ii)		24,000	24,000
Tonnage carried (tonnes)		Rs.29.88	Rs.31.60
Cost per tonne			

Analysis : From the above analysis it is observed that cost per tonne is lowest if 10 tonne trucks are used, and the cost of Rs.50 per tonne presently incurring is highest and it can be reduced to Rs.29.88 by using 10 tonne trucks.

Ans.17

(a) Statement of operating Income of Modern Airways operating between EXETOWN and WYETOWN (on each one-way flight) (Rs.)

Revenue from fares	(200 X Rs.5,000)	(a)	10,00,000
Variable cost	(per flight)		
Commission	(Rs.10,00,000 X 8/100)		80,000
Food	(200 X Rs.200)		40,000
Fuel			1,40,000
	Total		2,60,000
(b)			7,40,000
Contribution per flight		(a) - (b)	
Fixed costs (per Flight)			
Lease charges			
5,30,000			6,40,000
Baggage handling			1,00,000
70,000			
Salaries to flight crew			
40,000			
Operating income per flight			

(b) Whether to lower the fare to Rs.4,800? (Increase in Passengers per flight expected to 212) (Rs.)

Fare revenue	(212 x Rs.4,800)		10,17,600
Variable cost			
Commission	(Rs.10,17,600 X 8/100)		
81,408			
Food	(212 X Rs.200)	42,400	2,63,808
Fuel		1,40,000	7,53,792
Contribution per flight			

Excess contribution due to lowering of fare =Rs.7,53,792-Rs.7,40,000
=Rs.13,792

Analysis : The lowering of fare to Rs.4,800 will increase the profit by Rs.13,792 and hence it is suggested to decrease the fare.

© Whether to charter its plane to Zed tours and Travels under option (B) (Rs.)

Contribution under Option (b)	7,53,792
Revenue from chartering	7,50,000
Reduction in contribution	3,792

Analysis: From the above analysis it is observed that the profit will decrease by Rs.3,792 if the plane is chartered than if the reductions in fare is implemented. Hence lowering of the fare is suggested.

Ans.18

Working Notes:

Calculation operating capacity of a single aircraft=160 seats X 60/100 =96 passengers per flight

(i) Calculation of net operating income per flight (Rs.)

Fare collection	(96 X 7000)		6,72,000
Variable costs:			
Fuel			95,000
Food	(96 X 130)		12,480
Commission @ 5%			33,600
Total Variable costs			1,41,080
Contribution per flight			5,30,920
Fixed Costs:	Lease	3,50,000	
	Crew	72,000	4,22,000
Net Income per flight			1,08,920

(ii) Evaluation of proposal if Occupancy increases to 108 passengers per flight and the fare reduced to Rs.6,720

(Rs.)

Fare collection	(108 X 6720)	7,25,760
Variable costs:		
Fuel		95,000
Food	(108 X 130)	14,040
Commission @ 5%		36,288
		1,45,328
Contribution		5,80,432

Analysis: The contribution will increase by Rs.49,512 (i.e Rs.5,80,432-Rs.5,30,920). Hence, it is suggested to accept the proposal

(iii) Evaluation of proposal to charter the aircraft

Current contribution	5,30,920
Less: Fixed charge	5,00,000
Loss:	30,920

Analysis: if the aircraft is given on charter, it will cause loss of contribution by Rs.30,920. Hence the proposal is not suggested.

Ans.19

Calculation of variable cost per student of last year

(Rs.lakhs)

Revenue	

1. Students tuition-75%	(Rs.3,600 X 12,000 students)	432
2. Endowment & contribution-25%	(Rs.432 lakhs X 25/75)	144
Total revenue		576
Less: Fixed cost		300
Variable cost		276

Variable cost per student =Rs.2,76,00,000 / 12,000 students =Rs.2,300 per student

(i) Calculation of amount available in the first year for capital improvements and building (Rs.lalhs)

Revenue		
1. Tuition Fee	(Rs.4,200 X 11,200 students)	470.40
2. Endowment & contribution		144.00
3. Grant		50.00
Total revenue		664.40
Less: Variable cost	(2,300 X 1.10 X 11200 students)	283.36
Contribution		381.04
Less: Fixed cost	(Rs.300 lakhs + Rs.30 lakhs)	330.00
Balance available for capital improvements and building		51.04

Calculation of break-even if the grant is received and costs increases as predicted for the coming year

(Rs.lakhs)

Variable cost	(Rs.2,300 X 1.10 X 12,000 students)		303.60
Fixed Cost	(Rs.300 lakhs + Rs. 30 lakhs)		330.00
Capital improvement			40.40
Total cost			674.00
Less: Endowment and contribution		144.00	
Grant		50.00	194.00
Balance amount to be collected as tuition fee			480.00

Tuition fee to be collected per student = Rs.4,80,00,000 / 12,000 students =Rs.4,000 per student

Ans.20

Working Notes:

(i) Expected Variable cost this year

(Re.per ride)

Variable cost last year	0.80
Add: Expected increase this year (25% of Re.0.80)	0.20
Expected variable cost this year	1.00

(ii) Expected fixed costs this year

(Rs.)

Fixed cost last year	32,00,000
Add: Expected increase this year (10% of Rs.32,00,000)	3,20,000
Expected variable cost this year	35,20,000

(1) Rides which DD Amusement park sell last year

(No. of rides DD sell last year) = Total Sales of rides last year =Rs.48,00,000
=12,00,000 rides
Charges per ride last year Rs.4

(2) Expected net income for the year if price increase if not implemented (Rs.)

Charges per ride	4
Less: Expected Variable cost per ride	1
Contribution per ride	3
No. of rides	12,00,000
Total expected contribution	36,00,000
Less: Expected fixed costs	35,20,000
Expected net income	80,000

(3)Price indifference point for the new ride
Price indifference point is a point at which the expected profits remains the same irrespective of sales price and costs.
(Rs.)

New ride price	5.00
Less: Variable cost	1.00
Contribution per ride	4.00
Fixed Costs of this year	35,20,000
Net Income of last year	6,40,000
Contribution require	41,60,000

Price- Indifference point = Rs.41,60,000 / Rs.4 =10,40,000 rides

(4) Break –even point for this year using the old price and the new price

Break-even point = Fixed costs / Contribution per ride

At old price = Rs.35,20,000 / Rs.4-Re.1 =11,73,334 rides

At New price = Rs.35,20,000 / Rs.5-Re.1 =8,80,000 rides

(5) Expected net income if the price increase will reduce ride volume by 10% from the last year's levels
(Rs.)

Charges per ride		5.00
Less: Variable cost		1.00
Contribution per ride:	(a)	4.00
No. of rides (12,00,000-1,20,000):	(b)	10,80,000
Total contribution for all rides:	(a) X (b)	43,20,000
Less: fixed costs		35,20,000
Expected net income		80,000

Justification: Since the increase in price of a ride will increase the net income by Rs.1,60,000(Rs.8,00,000-Rs.6,40,000) the management should raise the price of a ride.

Ans 21: (1) Total number of patients attended

Number of patients attended per day by a physician:	20
Number of physicians employed	6
Number of days in week	6
Number of weeks in a year	52

Total number of patients attended = 20 × 6 × 6 × 52

= 37,440. (2) Patient Mix:

Adults (50%)	37,440 × 50/100	=	18,720
Children (40%)	37,440 × 40/100	=	14,976
Senior Citizens (10%)	37,440 × 10/100	=	3,744
			37,440

(3) Patient Appointments:

No treatment required (70%)	37,440 × 70/100	=	26,208
Minor treatment (20%)	37,440 × 20/100	=	7,488
Major treatment (10%)	37,440 × 10/100	=	3,744
			37,440

(4) Income from Insurance Companies:

	Number of patients	*Rs.*	*Rs.*
	(A)	(B)	(A × B)
No treatment patients	26,208	60	
	15,72,480		
Minor treatment patients	7,488	250	18,72,000
Major treatment patients	3,744	500	18,72,000
	Total		53,16,480

(5) Co-payment from adult patients:

	Number of patients	*Payment (Rs.)*	*Total payment (Rs.)*
Total number of adult patients	18,720		
No treatment patients (70%)	13,104	60	7,86,240
Minor treatment (20%)	3,744	250	9,36,000
Major treatment (10%)	1,872	500	9,36,000
Total			26,58,240

(6) Net income:

	Rs.	*Rs.*
Payment from Insurance companies	53,16,480	
Co-payment from adult patients	26,58,240	
Total	79,74,720	
Other Income (fixed)	2,25,280	
Total Income (A)		82,00,000
Less: Expenditure		
Variable expenses:		
Material and consumables	22,32,000	
Fixed expenses:		

Physician's salary (6 × 4,50,000)	27,00,000
Assistants salary (7 × 1,50,000)	10,50,000

Administrative staff's salary (2 × 90,000)	1,80,000	
Establishment and other operating	16,00,000	55,30,000
Total Expenditure (B)		77,62,000
Net Income (A – B)		4,38,000

(ii) 1. Contribution Analysis:

	(Rs.)
Total Fees from Insurance Companies and adult patients	79,74,720
Less: Variable costs	22,32,000
Contribution	57,42,720
Average contribution per patient	$\frac{57,42,720}{37,440}$ □ 153.38

2. Break-even patients:

	(Rs.)
Fixed costs	55,30,000
Less: Fixed income	2,25,280
Net Fixed costs	53,04,720

Break-even patients = $\frac{\text{Net fixed costs}}{\text{Contribution per patient}}$ $\frac{53,04,720}{153.38}$ □ 34,585

3. Percentage of maximum capacity required to be utilized in order to break-even

Present utilization = $\frac{20 \text{ patients}}{24 \text{ patients}}$ □ 83.33% □ 37,440

100% patient capacity is $\frac{37,440}{0.8333}$ □ 44,930 patients

Percentage of maximum capacity required to be utilized in order to break-even

$$= \frac{\text{Break - even patients}}{\text{100\% patient capacity}} \times 100$$

$$= \frac{34,585}{44,930} \times 100 = 76.98\% \text{ say } 77\%.$$

Assumption: Patient mix and mix of patient appointments will be same in the next year.

Ans 22

(a) Statement of Total Cost

Total cost	**Amount (Rs)**	
Salary of Supervisor , Nurses, Ward boys	4,25,000	
Repairs and Maintenance	90,000	
Salary of doctors	13,50,000	
Food supplied to patients	40,000	
Laundry charges for their bed linens	80,500	
Medicines supplied	74,000	
Cost of oxygen, X ray etc, other than directly borne for treatment of patients	49,500	
General administration charges	63,000	Rs 21,72,000
Building rent	(10 × 12,000)	Rs 1,20,000
Additional building rent on takings		5% on Total Taking
Hire charges extra beds		Rs 12,000
Fees to heart specialists	(3 × 15,000)	Rs 45,000
Total cost		Rs 23,49,000 + 5% on Total Taking
Profit		20% on Total Taking
Total takings		Rs 23,49,000 + 25% of Total Taking
Total taking(assuming X to be the rent per day)		1,05,000 × X

Rent to be charged

1,05,000 × X = 23,49,000 +25% (1,05,000 × X) = 78750 X = 23,49,000 or X = 29.83(Rounded Off)

No of beds with Equivalent Rent

Nature of wards	Occupancy	Weight of rent	Ward Days
General ward	100 × 360 × 100%	36,000 × 1	36,000

Additional general ward	$\frac{12,000}{20}$	600 × 1	600
Cottage ward	50 × 360 × 80%	14,400 × 2.5	36,000
Deluxe ward	50 × 360 × 60%	6,480 × 5	32,400
Total			1,05,000

Rent to be charged

Particulars	Basic	Service tax	Total
General ward	29.83	2.39	32.22
Cottage ward	74.58	5.97	80.55
Deluxe ward	149.15	11.93	161.08

Note : You may assume Total Taking to include Service Tax also.

Rent = 23,49,000 + 25% × (1,05,000 X × 1.08) + 0.08 × (1,05,000X) = 1,05,000X × 1.08

= 23,49,000 + 28350X + 8400X = 1,13,400X

Therefore X = Rs 30.65

Rent to be charged

Particulars	Basic	Service tax	Total
General ward	30.65	2.45	33.10
Cottage ward	76.63	6.13	82.76
Deluxe ward	153.25	12.26	165.51