



A FEW EXERCISES ON VALUATION OF IMMOVABLE PROPERTIES

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PART - 2

Exercise 2.1 :

In 2008, Mr. X purchased a residential plot of 3,000 sq.ft. for Rs. 15,00,000/-. In the year 2010, he constructed a residential building of GF for 1,500 sq.ft. and in the year 2012, he constructed FF for 1,200 sq.ft. In 2018, a valuation report is required. Replacement cost of GF is Rs. 2,000/sq.ft. and FF is 1,600/sq.ft. Prevailing market rate of plot is Rs. 2,000/sq.ft. and the guide line rate is Rs. 2,500/sq.ft. Assume the life as 60 years and salvage value is 10%.

Questions :

1. What is the total replacement value of the building?
2. What is the total depreciation value of the entire building?
3. What is the total depreciated value of the entire building?
4. What is the prevailing market value of the plot?
5. What is the total value of the property as on date that can be certified?
6. What is the book value of the plot as on 2018?

Data :

Plot area	=	3,000 sq.ft.
Purchased cost of plot (2008)	=	Rs. 15,00,000/-
Area of building GF (2010)	=	1,500 sq.ft.
Area of building FF (2012)	=	1,200 sq.ft.
Replacement cost of building GF (2018)	=	Rs. 2,000/sq.ft.
Replacement cost of building FF (2018)	=	Rs. 1,600/sq.ft.
Prevailing market rate of plot	=	Rs. 2,000/sq.ft.
Guideline rate	=	Rs. 2,500/sq.ft.
Life of the building	=	60 years
Salvage value	=	10%
Date of valuation	=	2018

Calculations :

Value of GF

Built up area of Ground floor = 1,500 sq.ft.



Replacement rate of GF	=	Rs. 2,000/sq.ft.
Replacement value 1,500 x 2,000	=	Rs. 30,00,000
Age 2018 - 2010	=	8 years
Life	=	60 years
Salvage value	=	10%
Depreciation percentage $(8/60) \times 90$	=	12%
Depreciation value of GF	=	$0.12 \times 30,00,000$
	=	Rs. 3,60,000
Depreciated value of GF	=	$30,00,000 - 3,60,000$
	=	Rs. 26,40,000/-

Value of FF

Built up area of First floor	=	1,200 sq.ft.
Replacement rate of FF	=	Rs. 1,600/sq.ft.
Replacement value 1,200 x 1,600	=	Rs. 19,20,000
Age 2018 - 2012	=	6 years
Depreciation	=	$\frac{6}{60} \times 90 = 9\%$
		Depreciation of GF is adopted (i.e. 12%)
Depreciation value $0.12 \times 19,20,000$	=	Rs. 2,30,400
Depreciated value $19,20,000 - 2,30,400$	=	Rs. 16,89,600/-

Value of GF + FF

Total replacement value $30,00,000 + 19,20,000$	=	Rs. 49,20,000/-	(1)
Total depreciation value $3,60,000 + 2,30,400$	=	Rs. 5,90,400/-	(2)
Total depreciated value $26,40,000 + 16,89,600$	=	Rs. 43,29,600/-	(3)

Value of Plot

Extent of Plot	=	3,000 sq.ft.	
Prevailing market rate	=	Rs. 2,000/sq.ft.	
Value $3,000 \times 2,000$	=	Rs. 60,00,000/-	(4)

Total value

Value of Plot	=	Rs. 60,00,000	
Value of Building	=	Rs. 43,29,600	
Total value	=	Rs. 1,03,29,600/-	(5)



Book value

Book value of plot = **Rs. 15,00,000/-** (6)

Answers :

- | | | | |
|----|-----------------|----|-------------------|
| 1) | Rs. 49,20,000/- | 4) | Rs. 60,00,000/- |
| 2) | Rs. 5,90,400/- | 5) | Rs. 1,03,29,600/- |
| 3) | Rs. 43,29,600/- | 6) | Rs. 15,00,000/- |

Exercise 2.2 :

A doctor purchased a plot of 2,000 Sq.m. in a posh locality in a city in the year 1997 for a price of Rs. 50,00,000/-. In the year 1998, he constructed a hospital having 500 Sq.m. built up floor area at ground level and 200 Sq.m. built up area at first floor level at the cost of Rs. 20,00,000/-. Prevalent replacement cost of similar hospital as on 2018 is Rs. 35,000 per Sq.m. Prevalent land price in the locality at present is Rs.80,000 per Sq.m. Age of building is 20 years and the total life of the building is 60 years.

Questions :

1. What will be the depreciation amount of the hospital building by adopting straight line method of depreciation and considering scrap value at 10% ?
2. What will be the depreciation amount of the hospital building by adopting constant percentage method of depreciation?
3. What will be the total market value of the plot at present?
4. What will be the total market value of the hospital property for bank loan purpose?
5. What is the balance economic life of the building?
6. Which of the following will not be considered for the estimation of present value of building?

a)	Age	b)	Area of the building
c)	Replacement cost	d)	Land rate

**Data :**

Extent of plot	=	2,000 sq.m.
Year of purchase of plot	=	1997
Purchased amount	=	Rs. 50,00,000/-
Year of new construction	=	1998
Built up area of the building GF	=	500 sq.m.
Built up area of the building FF	=	200 sq.m.
Cost of building GF + FF (500 + 200)	=	Rs. 20,00,000/-
Replacement rate of the building	=	Rs. 35,000/sq.m.
Prevalent land rate	=	Rs. 80,000/sq.m.
Age of the building	=	20 years
Life of the building	=	60 years
Salvage value assumed	=	10%

Calculations :

1.	Total built up area	=	700 sq.m.
	Replacement rate / sq.m.	=	Rs. 35,000
	Replacement value - 700 x 35,000	=	Rs. 2,45,00,000
	Age	=	20 years
	Life	=	60 years
	Salvage value	=	10%
	Depreciation percentage	=	$\frac{20}{60} \times 90 = 30\%$
	Depreciation amount : 0.3x2,45,00,000=	=	Rs. 73,50,000/- (1)

2.	Life	=	60 years
	Rate of depreciation	=	$\frac{100}{60} = 1.66\%$
	Depreciation amount	=	$P \left[1 - \left(1 - \frac{1.66}{100} \right)^{20} \right]$
	$P \left[1 - \left(1 - \frac{r}{100} \right)^n \right]$	=	2,45,00,000 [1 - 0.7155]
		=	2,45,00,000 x 0.2845
		=	Rs. 69,70,250/- (2)

3.	Extent of plot	=	2,000 m ²
	Prevalent market rate	=	Rs. 80,000/m ²
	Market value of land - 2,000 x 80,000=	=	Rs. 16,00,00,000/- (3)



4.	Land value - 2,000 x 80,000	=	16,00,00,000	
	Depreciated value of the building	=	0.7 x 2,45,00,000	
		=	Rs. 1,71,50,000	
	Total value - Land + building	=	Rs.17,71,50,000/-	(4)

5.	Total economic life of building	=	60 years	
	Age of the building	=	20 years	
	Balance economic life is 60 - 20	=	40 years	(5)

6. While estimating the present market value of the building,
1. Age is to be considered.
 2. Area is to be considered.
 3. Replacement cost is to be considered.

Land rate need not be considered. (6)

Answers :

- | | |
|-----------------------|--------------------------------------|
| 1) Rs. 73,50,000/- | 4) Rs. 17,71,50,000/- |
| 2) Rs. 69,70,250/- | 5) 40 years |
| 3) Rs. 16,00,00,000/- | 6) Land rate need not be considered. |

Exercise 2.3 :

Mr. 'X' is owning a vacant site of 8,000 sq.ft. near the bus stand. He wants to let out. The prevailing unit market rate is Rs. 1,000 and the guideline rate is Rs. 1,500/sq.ft. Mr. Y wants this site for parking vehicles. Mr. Z also wants this site and wishes to construct a shed. Assume rate of return of 4% & 5% for secured ground rent and unsecured ground rent respectively.

Questions :

1. What is the market value to determine the rent for Mr. Y?
2. What is the market value to determine the rent for Mr. Z?
3. What is the yearly ground rent that can be fixed for Mr. Y?
4. What is the monthly ground rent that can be fixed for Mr. Y?
5. What is the yearly ground rent that can be fixed for Mr. Z?
6. What is the monthly ground rent that can be fixed for Mr. Z?

**Data :**

Extent of site	=	8,000 sq.ft.
Market rate of site	=	Rs. 1,000/sq.ft.
Guideline rate	=	Rs. 1,500/sq.ft.
Rate of return for secured ground rent	=	4%
Rate of return for unsecured ground rent	=	5%

Calculations :

For Y & Z :

Extent of site	=	8,000 sq.ft.	
Prevailing unit rate	=	Rs. 1,000/sq.ft.	
Market value (for Y & Z)	=	Rs. 80,00,000/-	(1&2)
		8,000 x 1,000	

For Y :

Market value	=	Rs. 80,00,000	
Type of rent	=	Unsecured	
Rate of return assumed	=	5%	
Yearly ground rent	=	80,00,000 x (5/100)	
	=	Rs. 4,00,000/-	(3)
Monthly ground rent	=	4,00,000 / 12	
	=	Rs. 33,333/-	(4)

For Z :

Market value	=	Rs. 80,00,000	
Type of rent	=	Secured	
Rate of return assumed	=	4%	
Yearly ground rent	=	80,00,000 x (4/100)	
	=	Rs. 3,20,000/-	(5)
Monthly ground rent	=	3,20,000 / 12	
	=	Rs. 26,667/-	(6)



Answers :

- | | | | |
|----|---------------|----|--------------|
| 1) | Rs. 80,00,000 | 4) | Rs. 33,333 |
| 2) | Rs. 80,00,000 | 5) | Rs. 3,20,000 |
| 3) | Rs. 4,00,000 | 6) | Rs. 26,667 |

Exercise 2.4 :

In April 2012, Mr. 'X' has purchased a residential plot of 3,000 sq.ft. for an amount of Rs. 9,00,000/- and has paid Rs. 1,22,000 for the registration charges, stamp paper, brokerage expenses, etc. In this plot, he constructed a commercial building of 2,200 sq.ft. for an amount of Rs. 25,25,000. The construction was completed in February 2013. Calculation of book value is required for the purpose of income tax. Assume a depreciation of say, 10%.

Questions :

1. What is the book value of the property as on 31.03.2013?
2. What is the book value of the property as on 31.03.2014?
3. What is the book value of the property as on 31.03.2015?
4. What is the book value of the property as on 31.03.2016?
5. What is the book value of the property as on 31.03.2017?
6. What is the book value of the property as on 31.03.2018?

Data :

Purchased cost of plot 3,000 sq.ft. in April 2012	=	Rs. 9,00,000
Registration expenses stamp duty, brokerage	=	Rs. 1,22,000
Commercial building 2,200 sq.ft.	=	Rs. 25,25,000
Depreciation percentage	=	10%
Purpose of valuation	=	Income tax

Calculations :

Cost of the plot in April 2012 (i.e. 2012 - 13) 9,00,000 + 1,22,000	=	Rs. 10,22,000/-
Cost of the building in February 2013 (i.e. 2012 - 13)	=	Rs. 25,25,000/-



S.no.	As on	Land Rs.	Building Rs.	Book value Rs.	
1.	31.03.2013	10,22,000	25,25,000	35,47,000	(1)
2.	31.03.2014	10,22,000	$25,25,000 \times 0.9$ $= 22,72,500$	32,94,500	(2)
3.	31.03.2015	10,22,000	$22,72,500 \times 0.9$ $= 20,45,250$	30,67,250	(3)
4.	31.03.2016	10,22,000	$20,45,250 \times 0.9$ $= 18,40,725$	28,62,725	(4)
5.	31.03.2017	10,22,000	$18,40,725 \times 0.9$ $= 16,56,653$	26,78,653	(5)
6.	31.03.2018	10,22,000	$16,56,653 \times 0.9$ $= 14,90,988$	25,12,988	(6)

Answers :

- | | | | |
|----|-----------------|----|-----------------|
| 1. | Rs. 35,47,000/- | 4. | Rs. 28,62,725/- |
| 2. | Rs. 32,94,500/- | 5. | Rs. 26,78,653/- |
| 3. | Rs. 30,67,250/- | 6. | Rs. 25,12,988/- |

Exercise 2.5 :

In the year 2000, a plot of 4,800 sq.ft. was purchased by Mr. X for Rs. 4,80,000/-. In 2008, he constructed GF for an area of 1,400 sq.ft. In 2015, he constructed FF for an area of 1,200 sq.ft. It is a load bearing structure. The replacement rate of construction of GF & FF is Rs. 1,800 & Rs. 1,500 respectively. The guideline (circle) rate of plot is Rs. 1,540/sq.ft. and the prevailing market rate is Rs. 1,000/sq.ft. Assume a salvage value 10%, Date of valuation is 2018.

The questions are :

1. What is the land value in 2018?
2. What is the depreciated value of GF?
3. What is the depreciated value of FF?
4. What is the market value of the property assuming it is a marketable property?



5. What is the forced sale value of the property, assuming a reduction factor of 15%?
6. What is the book value of the plot in 2018?

Data :

Plot area	=	4,800 sq.ft.
Purchased cost (2000)	=	Rs. 4,80,000/-
Area of GF (2008)	=	1,400 sq.ft.
Area of FF (2015)	=	1,200 sq.ft.
Type of structure	=	Load bearing
Replacement rate of GF	=	Rs. 1,800/sq.ft.
Replacement rate of FF	=	Rs. 1,500/sq.ft.
Circle rate of plot	=	Rs. 1,540/sq.ft.
Market rate of plot	=	Rs. 1,000/-
Salvage value assumed	=	10%
Date of valuation	=	2018

Calculations :

$$\text{Value of land in 2018} - 4,800 \times 1,000 = \text{Rs. 48,00,000/-} \quad (1)$$

Plinth area of GF	=	1,400 sq.ft.
Age of GF - (2018 - 2008)	=	10 years
Economic life of load bearing structure	=	60 years
Salvage value	=	10%
Depreciation percentage $(10/60) \times 90$	=	15%
Replacement rate of GF	=	Rs. 1,800/-
Replacement value $1,400 \times 1,800$	=	Rs. 25,20,000/-
Depreciated value - $25,20,000 \times 0.85$	=	Rs. 21,42,000/- (2)

Age of FF (2018 - 2015)	=	3 years
Depreciation percentage	=	$\frac{3}{60} \times 90 = 4.5\%$
Depreciation percentage adopted	=	15% (as of GF)
Replacement rate of FF	=	Rs. 1,500/-
Replacement value $1,200 \times 1,500$	=	Rs. 18,00,000/-
Depreciated value - $18,00,000 \times 0.85$	=	Rs. 15,30,000/- (3)

Market value of the property (assuming it is marketable)

Plot value	=	Rs. 48,00,000
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Building - GF	=	Rs. 21,42,000	
Building - FF	=	Rs. 15,30,000	
Total value	=	Rs. 84,72,000/-	(4)

$$\text{Forced sale value } 0.85 \times 84,72,000 = \text{Rs. 72,01,200/-} \quad (5)$$

$$\text{Book value of the plot in 2018} = \text{Rs. 4,80,000/-} \quad (6)$$

Answers :

- | | | | |
|----|-----------------|----|-----------------|
| 1. | Rs. 48,00,000/- | 4. | Rs. 84,72,000/- |
| 2. | Rs. 21,42,000/- | 5. | Rs. 72,01,200/- |
| 3. | Rs. 15,30,000/- | 6. | Rs. 4,80,000/- |

Exercise 2.6 :

The plinth area of a RCC roofed load bearing residential building (16 years old) is 1,000 sq.ft. The life of the building as 60 years and a salvage value of 10%,

Questions :

- 1) Calculate the depreciated value if the unit replacement cost is Rs. 1,800/-.
- 2) For the above building, if the age of the first floor is 10 years, what will be the depreciated value of first floor of built up area 1,200 sq.ft. assuming the unit rate of construction as Rs. 1,400/-.

Data :

Type of structure	=	Load bearing
Plinth area	=	1,000 sq.ft.
Life	=	60 years
Age of the building	=	16 years
Salvage value	=	10%

Calculations :

GF		
Plinth area	=	1,000 sq.ft.
Replacement rate	=	Rs. 1,800/sq.ft.



Area of rear portion	=	1,200 sq.ft.
Age of rear portion	=	16 years
Replacement rate of construction	=	Rs. 1,600/sq.ft.
Life	=	80 years
Salvage value	=	10%

Calculations :

Rear portion :

Plinth area of rear portion	=	1,200 sq.ft.
Replacement rate	=	Rs. 1,600/sq.ft.
Replacement value	=	1,200 x 1,600
	=	Rs. 19,20,000
Age of the building	=	16 years
Life of the building	=	80 years
Salvage value assumed	=	10%
Depreciation percentage	=	$\frac{16}{80} \times 90 = 18\%$
Depreciation value	=	0.18 x 19,20,000
	=	Rs. 3,45,600
Depreciated value	=	19,20,000 - 3,45,600
	=	Rs. 15,74,400/- (1)

Front portion :

Plinth area of front portion	=	1,500 sq.ft.
Replacement rate	=	Rs. 1,600/sq.ft.
Replacement value	=	1,500 x 1,600
	=	Rs. 24,00,000
Age	=	24 years
Life	=	80 years
Salvage	=	10%
Depreciation	=	$\frac{24}{80} \times 90 = 27\%$
Depreciation value	=	0.27 x 24,00,000
	=	Rs. 6,48,000
Depreciated value	=	24,00,000 - 6,48,000
	=	Rs. 17,52,000/- (2)

Answers :

1) Rs. 15,74,400/-

2) Rs. 17,52,000/-



Exercise 2.8 :

A lessor leased his 3,000 sq.ft. of land to a lessee for 99 years on a monthly rent of Rs. 1,000 per month. Lease is renewable.

In this land, the lessee has constructed a residential building and rented out on a total rent of Rs. 5,500 / month. All outgoings are 40% of rental income.

Questions :

1. What is the value of lessor's interest? Rate of return is 7%.
2. What is the lessee's interest assuming a rate of return as 8%.

Data :

Period of lease	=	99 years - renewable
Month rent	=	Rs. 1,000
Rate of return	=	7%
Lessor's interest	=	?

Calculations :

Lessor :

Monthly rent	=	Rs. 1,000
Yearly rent = 1,000 x 12	=	Rs. 12,000
Type of lease	=	Perpetual. can be treated as free hold
Rate of return	=	7%
Value of lessor's right	=	$12,000 \times \frac{100}{7}$
	=	Rs. 1,71,428/- (1)

Lessee :

Month rent	=	Rs. 5,500
Yearly rent = 5,500 x 12	=	Rs. 66,000
Less outgoings 40%	= (-)	Rs. 26,400
Less ground rent 1,000 x 12	= (-)	Rs. 12,000
Net annual income	=	Rs. 27,600
Rate of return	=	8%
Value of lessee's interest	=	$27,600 \times \frac{100}{8}$
	=	Rs. 3,45,000/- (2)

**Answers :**

1) 1,71,428/-

2) Rs. 3,45,000/-

Exercise 2.9 :

It is a residential building of GF & FF. The age of GF is 16 years and FF is 8 years. Plinth area of each floor is 1,200 sq.ft. Replacement unit rate of GF & FF is Rs. 1,600 & 1,200 respectively. Assume life as 60 years and salvage value as 10%.

Questions :

1. What is the depreciated value of GF?
2. What is the depreciated value of FF?

Data :

Number of floors	=	GF & FF
Plinth area of ground floor	=	1,200 sq.ft.
Age of ground floor	=	16 years
Replacement rate of ground floor	=	Rs. 1,600/-
Plinth area of first floor	=	1,200 sq.ft.
Age of first floor	=	8 years
Replacement rate of first floor	=	Rs. 1,200/-
Life	=	60 years
Salvage value	=	10%

Calculations :

	GF	FF
Plinth area	= 1,200 sq.ft.	1,200 sq.ft.
Replacement rate	= Rs.1,600/sq.ft.	Rs.1,200/sq.ft.
Replacement value	= Rs.19,20,000	Rs.14,40,000
Age	= 16 years	8 years
Life	= 60 years	60 years
Salvage	= 10%	10%
Depreciation	= $\frac{16}{60} \times 90 = 24\%$	$\frac{8}{60} \times 90 = 12\%$
		But, 24% is adopted



Area of II belt	=	4,500 sq.ft.	(2)
Unit rate (2/3) x 600	=	Rs. 400/sq.ft.	
Value of II belt- 4,500 x 400	=	Rs. 18,00,000/-	

Size of III belt	=	50' x 50'	
Area of III belt	=	2,500 sq.ft.	(3)
Unit rate 50% of 600	=	Rs. 300/sq.ft.	
Value of III belt- 2,500 x 300	=	Rs. 7,50,000/-	

Total value of plot 50' x 200'	=	Rs. 43,50,000/-	(5)
18,00,000 + 18,00,000 + 7,50,000			

Marketability is the most important factor while certifying the market value for collateral security to bank purposes.

Answers :

- | | | | |
|----|--------------|----|-----------------|
| 1. | 3,000 sq.ft | 4. | Rs.18,00,000/- |
| 2. | 4,500 sq.ft. | 5. | Rs. 43,50,000/- |
| 3. | 2,500 sq.ft. | 6. | Marketability |

Exercise 2.11 :

A load bearing building (1,500 sq.ft.) of 20 years old is existing in a plot of 2,400 sq.ft. The unit land rate of plot is Rs. 2,000 and replacement unit rate of construction is Rs. 1,700 sq.ft. It is a collateral security. Salvage value = 10%.

Questions :

- 1) Determine the market value?
- 2) Determine the forced value (assume a reduction factor as 15%)?

Data :

Type of structure	=	Load bearing
Plinth area	=	1,500 sq.ft.
Age	=	20 years
Plot area	=	2,400 sq.ft.
Land rate	=	Rs. 2,000/-
Replacement rate of construction	=	Rs. 1,700/sq.ft.
Salvage value	=	10%



Purpose = Collateral security to bank

Calculations :

Land value = 2,400 x 2,000	=	Rs. 48,00,000	
Building area	=	1,500 sq.ft.	
Replacement rate	=	Rs. 1,700/sq.ft.	
Age of the building	=	20 years	
Life of the building	=	60 years	
Salvage value	=	10%	
Depreciation percentage	=	$\frac{20}{60} \times 90 = 30\%$	
Depreciated value of building	=	0.7 x 1,500 x 1,700	
	=	Rs. 17,85,000	
Total market value	=	Rs. 65,85,000/-	(1)
48,00,000 + 17,85,000			
Forced sale value 0.85x65,85,000=		Rs. 55,97,250/-	(2)

Answers :

1) Rs. 65,85,000/- 2) Rs. 55,97,250/-

Exercise 2.12 :

A business man purchased a plot of 1000 Sq.mt. in a posh locality of a city in the year 1987 for a price of Rs. 30,00,000. In the year 1988, he constructed a residential bungalow having 300 Sq.mt. built up floor area at ground level and 100 sq.mt. built up area at first floor level at the cost of Rs. 14,00,000. Prevalent replacement cost of similar bungalow as on today is Rs. 30,000 per sq.mt. Prevalent land price in the locality at present is Rs. 60,000 per sq.mt. Age of building is 30 years and the total life of the building is 60 years.

Questions :

1. What will be the depreciation amount of the bungalow by adopting straight line method of depreciation and considering scrap value at 10 % ?
2. What will be the depreciation amount of the bungalow by adopting constant percentage method of depreciation?



3. What will be the market value of the land at present?
4. What will be the total market value of the bungalow property for the bank loan purpose?
5. What is the balance economic life of the building?
6. Which of the following will not be considered for the estimation of present market value of above property?

Data :

Extent of plot	=	1,000 sq.m.
Year of purchase of plot	=	1987
Purchased amount	=	Rs. 30,00,000/-
Year of new construction	=	1988
Built up area of the building GF	=	300 sq.m.
Built up area of the building FF	=	100 sq.m.
Cost of building GF + FF (300 + 100)	=	Rs. 14,00,000/-
Replacement cost	=	Rs. 30,000/sq.m.
Prevalent land rate	=	Rs. 60,000/sq.m.
Age of the building	=	30 years
Life of the building	=	60 years
Salvage value assumed	=	10%

Calculations :

1.	Total built up area	=	400 sq.m.	
	Replacement rate / sq.m.	=	Rs. 30,000	
	Replacement value - 400 x 30,000	=	Rs. 1,20,00,000	
	Age of the building	=	30 years	
	Life of the building	=	60 years	
	Salvage value	=	10%	
	Depreciation percentage	=	$\frac{30}{60} \times 90 = 45\%$	
	Depreciation amount : 0.45x1,20,00,000=		Rs. 54,00,000/-	(1)
2.	Life	=	60 years	
	Rate of depreciation	=	$\frac{100}{60} = 1.66\%$	



$$\begin{aligned}
 \text{Depreciation amount} &= P \left[1 - \left(1 - \frac{1.66}{100} \right)^{30} \right] \\
 \boxed{P \left[1 - \left(1 - \frac{r}{100} \right)^n \right]} &= 1,20,00,000 \times 0.3948 \\
 &= \text{Rs. 47,37,600/-} \quad (2)
 \end{aligned}$$

$$\begin{aligned}
 3. \quad \text{Extent of plot} &= 1,000 \text{ m}^2 \\
 \text{Prevalent market rate} &= \text{Rs. 60,000/m}^2 \\
 \text{Market value of land - } 1,000 \times 60,000 &= \text{Rs. 6,00,00,000/-} \quad (3)
 \end{aligned}$$

$$\begin{aligned}
 4. \quad \text{Land value - } 1,000 \times 60,000 &= 6,00,00,000 \\
 \text{Depreciated value of the building} &= 0.55 \times 1,20,00,000 \\
 &= \text{Rs. 66,00,000} \\
 \text{Total value - Land + building} &= \text{Rs. 6,66,00,000/-} \quad (4)
 \end{aligned}$$

$$\begin{aligned}
 5. \quad \text{Total economic life of building} &= 60 \text{ years} \\
 \text{Age of the building} &= 30 \text{ years} \\
 \text{Balance economic life } 60 - 30 &= \text{30 years} \quad (5)
 \end{aligned}$$

6. While estimating the present market value of the property,
1. Depreciation is to be considered.
 2. Replacement cost is to be considered.
 3. Current land rate is to be considered.

Economic obsolescence need not be considered. (6)

Answers :

- | | |
|----------------------|---|
| 1) Rs. 54,00,000/- | 4) Rs. 6,66,00,000/- |
| 2) Rs. 47,37,600/- | 5) 30 years |
| 3) Rs. 6,00,00,000/- | 6) Economic obsolescence
need not be considered. |

Exercise 2.13 :

Twenty years back, Mr. X purchased a plot of 3,000 sq.ft. for 4 lakhs. In this plot, he constructed a residential building of 1,000 sq.ft. 16 years back. The replacement rate of construction including services today is 1,800/sq.ft. Assume the life as 80 years and salvage value as 10%. The prevalent rate of plot as Rs. 1,500/sq.ft.



- 1) What is the value of the property (Land + building) as on date?
- 2) What is the depreciation amount for the building as on date? (by adopting straight line method)
- 3) What is the forced sale value of the property assuming 15% as the reduction factor?
- 4) What is the auction value of the property assuming 30% as the reduction factor?
- 5) What will be the upset price if the bank fixes 10% as the reduction factor?
- 6) What is the cost of the plot for balance sheet purpose?

Data :

Plot (3,000) purchased cost	=	Rs. 4,00,000
Plinth area of building	=	1,000 sq.ft.
Age of the building	=	16 years
Replacement rate of building	=	Rs. 1,800/sq.ft.
Life	=	80 years
Salvage value	=	10%
Prevalent land rate	=	Rs. 1,500/sq.ft.

Calculations :

a.	Extent of plot	=	3,000 sq.ft.	
	Prevalent market rate	=	Rs. 1,500/sq.ft.	
	Value of plot	=	Rs. 45,00,000/-	
b.	Plinth area of building	=	1,000 sq.ft.	
	Replacement rate	=	Rs. 1,800/sq.ft.	
	Replacement value	=	Rs. 18,00,000	
	Age of the building	=	16 years	
	Life of the building	=	80 years	
	Salvage value	=	10%	
	Depreciation percentage	=	$(16/80) \times 90 = 18\%$	
	Depreciation value	=	Rs. 3,24,000	
			$0.18 \times 18,00,000$	
	Depreciated value	=	Rs. 14,76,000/-	
			$(18,00,000 - 3,24,000)$	
c.	Value of the property	=	Rs. 59,76,000/-	(1)
			$45,00,000 + 14,76,000$	



The depreciation amount of the building = **Rs. 3,24,000/-** (2)

Value of the property = Rs. 59,76,000
 Forced sale value = 0.85 x 59,76,000
 = **Rs. 50,79,600/-** (3)

Value of the property = Rs. 59,76,000
 Auction value = 0.7 x 59,76,000
 = **Rs. 41,83,200/-** (4)

Auction value certified by the valuer = Rs. 41,83,200
 Less 10% = (-) 4,18,320
 Upset price fixed by the bank = **Rs. 37,64,880/-** (5)

The purchased amount of plot will be the cost for balance sheet purpose.
 Cost is **Rs. 4,00,000/-**.

Answers :

- | | |
|--------------------|--------------------|
| 1) Rs. 59,76,000/- | 4) Rs. 41,83,200/- |
| 2) Rs. 3,24,000/- | 5) Rs. 37,64,880/- |
| 3) Rs. 50,79,600/- | 6) Rs. 4,00,000/- |

Exercise 2.14 :

Plinth area is 1,000 sq.ft. Replacement rate of construction is Rs. 2,000/sq.ft. Age is 20 years. Life is 60 years. Salvage value 10%.

Questions :

- 1) What is replacement value?
- 2) What is depreciation percentage by straight line method?
- 3) What is the net present value?
- 4) What is the depreciation percentage by constant percentage method assuming a rate of depreciation as 1.5%.
- 5) What is the balance economic life?

Data :

Plinth area = 1,000 sq.ft.
 Replacement rate of construction = Rs. 2,000/sq.ft.



Age of the building	=	20 years
Life of the building	=	60 years
Salvage value	=	10%

Calculations :

Plinth area	=	1,000 sq.ft.
Replacement rate	=	Rs. 2,000/sq.ft.
Replacement value	=	Rs. 20,00,000/- (1)

Age of the building	=	20 Years
Life of the building	=	60 Years
Salvage value	=	10%
Depreciation	=	$(20/60) \times 90 = \mathbf{30\%}$ (2)

Depreciation value	=	$0.3 \times 20,00,000 = 6,00,000$
Net present value	=	$20,00,000 - 6,00,000$
	=	Rs. 14,00,000/- (3)

Depreciation percentage by constant %age method	=	$1 - \left(1 - \frac{r}{100}\right)^n$
	=	$1 - \left(1 - \frac{r}{100}\right)^n$
	=	$1 - \left(1 - \frac{1.5}{100}\right)^{20}$
	=	$1 - (0.985)^{20}$
Depreciation factor	=	0.26087
Depreciation percentage	=	$0.26087 \times 100 = \mathbf{26.09\%}$ (4)
Balance economic life	=	$60 - 20 = \mathbf{40 Years}$ (5)

Answers :

1)	Rs. 20,00,000/-	4)	26.09%
2)	30%	5)	40 Years
3)	Rs. 14,00,000/-		

Exercise 2.15 :

Ground floor of a residential bungalow was constructed in 1985 at a cost of Rs. 3,50,000. First floor was constructed in 1990 at the cost of Rs. 6,00,000/-. Work out Replacement



cost of bungalow for the year 2003 by Book value method. The building cost multiplier factor with 1960 as base year for year 1985, 1990 and 2003 were 14.16, 27.08 and 87.50 respectively.

Questions :

1. What is the Replacement cost of ground floor by book value method?
2. What is the Replacement cost of first floor by book value method?
3. What is the Total replacement cost of the building by book value method?

Data :

Year of construction of GF	=	1985
Cost invested for GF	=	Rs. 3,50,000/-
Year of construction of FF	=	1990
Cost invested for FF	=	Rs. 6,00,000/-
Cost multiplier factor (1960 as base year) for the year 1985	=	14.16
Cost multiplier factor (1960 as base year) for the year 1990	=	27.08
Cost multiplier factor (1960 as base year) for the year 2003	=	87.50

Calculations :

1.	Ground floor cost in 1985	=	Rs. 3,50,000/-	
	Cost factor for 1985	=	14.16	
	Cost factor for 2003	=	87.50	
	Replacement cost of GF in 2003 by Book value method	=	$\frac{3,50,000}{14.16} \times 87.50$	
		=	Rs. 21,62,782/-	(1)
2.	First floor cost in 1990	=	Rs. 6,00,000/-	
	Cost factor for 1990	=	27.08	
	Cost factor for 2003	=	87.50	
	Replacement cost of FF by Book value method	=	$\frac{6,00,000}{27.08} \times 87.50$	
		=	Rs. 19,38,700/-	(2)
3.	Total Replacement cost	=	21,62,782 + 19,38,700	
		=	Rs. 41,01,482/-	(3)

**Answers :**

- | | | | |
|----|-----------------|----|-----------------|
| 1. | Rs. 21,62,782/- | 3. | Rs. 41,01,482/- |
| 2. | Rs. 19,38,700/- | | |

Exercise 2.16 :

A load bearing building having 1,000 sq.m. built-up floor area is constructed in the year 1992. Total area of the plot is 5,000 sq.m. Replacement cost of building in March 2012 is Rs. 7,500/sq.m. Prevalent Land rate is Rs. 1,200/sq.m. in the locality.

Questions :

1. What is the value of the plot?
2. What is the replacement value of building?
3. What is the depreciation percentage by adopting straight line method assuming the life as 60 years and salvage value as 10%?
4. What is the depreciation value?
5. What is the depreciated value?
6. What is the total value?

Data :

Building type	=	RCC roofed load bearing
Builtup area of the building	=	1,000 sq.m.
Year of construction	=	1992
Replacement cost of building 2012	=	Rs. 7,500/sq.m.
Plot area	=	5,000 sq.m.
Prevalent land rate	=	Rs. 1,200/sq.m.
Value to be calculated as on	=	2012

Calculations :

Plot area	=	5,000 sq.m.	
Prevalent land rate	=	Rs. 1,200/sq.m.	
Land value	=	5,000 x 1,200	
	=	Rs. 60,00,000/-	(1)
Building area	=	1,000 sq.m.	
Replacement rate	=	Rs. 7,500	



Replacement value	=	1,000 x 7,500	
	=	Rs. 75,00,000/-	(2)
Age of the building	=	2012 - 1992 = 20 years	
Life assumed	=	60 years	
Depreciation percentage	=	(20 / 60) x 90 = 30%	(3)
Depreciation value	=	0.3 x 75,00,000	
	=	Rs. 22,50,000/-	(4)
Net present value or Depreciated value	=	75,00,000 - 22,50,000	
	=	Rs. 52,50,000/-	(5)
Total value of the property	=	60,00,000 + 52,50,000	
	=	Rs. 1,12,50,000/-	(6)

Answers :

- | | | | |
|----|-----------------|----|-------------------|
| 1. | Rs. 60,00,000/- | 4. | Rs. 22,50,000/- |
| 2. | Rs. 75,00,000/- | 5. | Rs. 52,50,000/- |
| 3. | 30% | 6. | Rs. 1,12,50,000/- |

Exercise 2.17 :

A residential load bearing structure having 280 sq.m. built-up floor area is constructed in 1961 at Delhi. Area of plot is 650 sq.m. Calculate value of property as on 01.04.1981, if prevalent land rate in 1981 in that locality was Rs. 800 per sq.m. Cost index for Delhi in 1981 was 176 with base year 01.10.1976 as 100. Rate for bungalow in 1976 was Rs. 325/sq.m. Plumbing cost/unit was Rs. 6,000 and electrification cost was Rs. 5,700/unit as per C.P.W.D. memorandum of 01.10.1976. Life is 60 years & salvage value is 10%.

Questions :

1. What is the value of the plot as on 1981?
2. What is the replacement value of the building as on 1981?
3. What is the depreciation percentage by adopting straight line method assuming life as 60 years & salvage value as 10%?
4. What is the depreciation value as on 1981?
5. What is the Net present value of the building?
6. What is the total value of the property as on 1981?

**Data :**

Structure	=	Load bearing
Builtup area	=	280 sq.m.
Year of construction	=	1961
Place	=	Delhi
Area of plot	=	650 sq.m.
Land rate prevailing (1981)	=	Rs. 800/sq.m.
Cost index for Delhi with base year 01.10.1976	=	100
Cost index for Delhi (1981)	=	176
Rate of bungalow 1976	=	Rs. 325/sq.m.
Plumbing cost/unit	=	Rs. 6,000/unit
Electrification	=	Rs. 5,700/unit

Calculations :

Area of plot	=	650 sq.m.
Rate in 1981	=	Rs. 800/sq.m.
Value of plot in 1981	=	650 x 800
	=	Rs. 5,20,000/- (1)

Building replacement cost in 1976

Basic rate	=	Rs. 325/sq.m.
Builtup area	=	280 sq.m.
Building cost	=	280 x 325
	=	Rs. 91,000
Add for plumbing	=	Rs. 6,000
Add for electrification	=	Rs. 5,700
Total replacement cost in 1976	=	Rs. 1,02,700
This is for cost index of	=	100
Cost index in Delhi in 1981	=	176
∴ Replacement cost of building in 1981	=	$\frac{1,02,700}{100} \times 176$
	=	Rs. 1,80,752/- (2)

Age of the building	=	1981 - 1961 = 20 years
Life assumed	=	60 years
Salvage value	=	10%
Depreciation percentage	=	$\frac{20}{60} \times (100 - 10) = 30\%$ (3)



$$\begin{aligned} \text{Depreciation value} &= 0.3 \times 1,80,752 \\ &= \text{Rs. } 54,225/- \end{aligned} \quad (4)$$

$$\begin{aligned} \text{Net present value or} &= 1,80,752 - 54,225 \\ \text{Depreciated value} &= \text{Rs. } 1,26,527/- \end{aligned} \quad (5)$$

$$\begin{aligned} \text{Total value of the property} &= 5,20,000 + 1,26,527 \\ \text{as on 1981} &= \text{Rs. } 6,46,527/- \end{aligned} \quad (6)$$

Answers :

- | | | | |
|----|----------------|----|----------------|
| 1. | Rs. 5,20,000/- | 4. | Rs. 54,225/- |
| 2. | Rs. 1,80,752/- | 5. | Rs. 1,26,527/- |
| 3. | 30% | 6. | Rs. 6,46,527/- |

Exercise 2.18 :

A bungalow having G + 2 upper floor is for sale. Area of plot is 500 sq.m. Ground floor having 200 sq.m. built-up area was built in 1975. 1st and 2nd floor having total 300 sq.m. built-up area were raised in 1995. Prevalent land rate in locality, in 2012, is Rs. 46,000/ sq.m. and replacement cost is Rs. 18,000/- per sq.m. Date of valuation is 2012.

Questions :

1. What is the value of the plot as on 2012?
2. What is the replacement value of the building?
3. What is the depreciation percentage that can be adopted for entire building by adopting straight line method assuming life as 60 years and salvage value as 10%?
4. What is the depreciation value of the building?
5. What is the Net present value of the building?
6. What is the total value that can be certified for the entire property?

Data :

Area of plot	=	500 sq.m.
Area of GF	=	200 sq.m.
Year of construction of GF	=	1975
Area of FF & SF	=	300 sq.m.
Year of construction of FF & SF	=	1995



Land rate in 2012	=	Rs. 46,000/sq.m.
Replacement cost of building	=	Rs. 18,00,000/sq.m.

Calculations :

Area of plot	=	500 sq.m.
Land rate	=	Rs. 46,000/sq.m.
Value of plot	=	500 x 46,000
	=	Rs. 2,30,00,000/- (1)

Area of GF	=	200 sq.m.
Area of FF & SF	=	300 sq.m.
Total area	=	500 sq.m.
Replacement rate	=	Rs. 18,000/sq.m.
Replacement value	=	500 x 18,000
	=	Rs. 90,00,000/- (2)

Year of construction of GF	=	1975
Valuation as on	=	2012
Age as on 2012	=	2012 - 1975 = 37 years
Life assumed	=	60 years
Salvage value assumed	=	10%
Depreciation of GF	=	$\frac{37}{60} \times (100 - 10) = 55.5\%$ (3)

Depreciation of FF & SF	=	Adopted same as GF
Depreciation value	=	0.555 x 90,00,000
	=	Rs. 49,95,000/- (4)

Depreciated value or	=	90,00,000 - 49,95,000
Net present value for the building	=	Rs. 40,05,000/- (5)

Present value of the property	=	Land value + Building value
	=	2,30,00,000 + 40,05,000
	=	Rs. 2,70,05,000/- (6)



Answers :

- | | | | |
|----|-------------------|----|-------------------|
| 1. | Rs. 2,30,00,000/- | 4. | Rs. 49,95,000/- |
| 2. | Rs. 90,00,000/- | 5. | Rs. 40,05,000/- |
| 3. | 55.5% | 6. | Rs. 2,70,05,000/- |

Exercise 2.19 :

The property specified below is to be insured against fire.

- | | | | |
|----|--|---|--------------------------|
| a) | Plinth area of a timber framed structure with floor of wooden joint, mangalore tiled roof, teak wood doors & windows | = | 1000 m ² |
| b) | Age of the building | = | 20 years |
| c) | Future life of the building | = | 35 years |
| d) | Estimate cost of construction of a similar new structure | = | Rs 10,500/m ² |
| e) | Depreciation | = | 30% |
| f) | Assume cost of foundation | = | 15% |

Question :

Calculate the insurable value of this property.

Calculations :

Value of building as if new	=	1,000 x 10,500
	=	Rs. 1,05,00,000/-
Deduct value of foundation	=	15%
	=	1,05,00,000 - 15,75,000
	=	Rs. 89,25,000/-
Deduct depreciation 30%	=	Rs. 26,78,000/-
Insurable value	=	Rs. 62,47,000/-
		say Rs. 62.50 lakhs.

Answers :

Rs. 62,50,000/-

**Exercise 2.20 :**

An existing two storeyed framed structure stands on land measuring 2 grounds (1 ground = 2,400 sq.ft.). The ground floor and first floor each has an area of 1,000 sq.ft. The ground floor was constructed 20 years ago and the first floor 12 years ago. The prevailing land market value of a similar adjacent vacant plot was Rs. 90,000 per ground. The replacement cost of new similar construction (including foundation) is Rs. 300 per sq.ft. for ground floor and Rs. 250 per sq.ft. for the first floor. External services, amenities, boundary wall, etc. provided can be taken at 15% of the depreciated cost of the structure. Value the property. Assume life as 80 years & salvage value as 10%.

Questions :

1. What is the value of plot?
2. What is the net present value of ground floor?
3. What is the depreciation percentage of first floor?
4. What is the net present value of first floor?
5. What is the value of services?
6. What is the total value of property?

Data :

Structure	=	Framed structure
Plot area	=	2 grounds
Plinth area of GF	=	1,000 sq.ft.
Age of GF	=	20 years
Plinth area of FF	=	1,000 sq.ft.
Age of FF	=	12 years
Replacement cost of GF	=	Rs. 300/sq.ft.
Replacement cost of FF	=	Rs. 250/sq.ft.
Prevailing market rate of plot	=	Rs. 90,000/sq.ft.
Services	=	15%

Calculations :

Area of plot	=	2 ground
Prevailing market rate of plot	=	Rs. 90,000/ground
Value of plot	=	2 x 90,000
	=	Rs. 1,80,000/- (1)



Plinth area of GF	=	1,000 sq.ft.	
Replacement rate	=	Rs. 300/sq.ft.	
Replacement value	=	1,000 x 300	
	=	Rs. 3,00,000	
Age of the building	=	20 years	
Life assumed	=	80 years	
Salvage value	=	10%	
Depreciation percentage	=	$\frac{20}{80} \times 90 = 22.5\%$	
Depreciation value	=	$0.225 \times 3,00,000 = 67,500$	
Depreciated value or	=	$3,00,000 - 67,500$	
Net Present Value	=	Rs. 2,32,500/-	(2)
Plinth area of FF	=	1,000 sq.ft.	
Replacement rate	=	Rs. 250/sq.ft.	
Replacement value	=	1,000 x 250	
	=	Rs. 2,50,000	
Depreciation percentage of FF	=	Same as GF (i.e. 22.5%)	(3)
Depreciation value	=	$0.225 \times 2,50,000 = 56,250$	
Depreciated value or	=	$2,50,000 - 56,250$	
Net Present Value	=	Rs. 1,93,750/-	(4)
Total value of building (GF + FF)	=	$2,32,500 + 1,93,750$	
	=	Rs. 4,26,250/-	
External services 15%	=	$0.15 \times 4,26,250$	
	=	Rs. 63,938/-	(5)
Total value of property	=	$1,80,000 + 4,26,250 + 63,938$	
(Plot + Building + Services)	=	Rs. 6,70,188/-	(6)

Answers :

- | | | | |
|----|----------------|----|----------------|
| 1) | Rs. 1,80,000/- | 4) | Rs. 1,93,750/- |
| 2) | Rs. 2,32,500/- | 5) | Rs. 63,938/- |
| 3) | 22.5% | 6) | Rs. 6,70,188/- |

**Exercise 2.21 :**

A load bearing residential family house was built in year 1969 at Nagpur. Built-up floor area is 200 sq.m. on ground floor and 100 sq.m./floor on each of 1st and 2nd floor. Total plot area is 1,200 sq.m. Calculate sale value of property as in March 1989 if Building Cost Index of Nagpur was 394 in 1989 with Delhi base year 01.10.1976 as 100. Building cost for base year was Rs. 385/sq.m. and plumbing and electrification costs were Rs. 6,000/unit and Rs. 5,700/unit respectively. Prevalent land rate in 1989 was Rs. 800/sq.m. Building is wholly provided with marble floor. Marble cost was Rs. 250/sq.m. and mosaic tile cost was Rs. 60/sq.m. in 1989.

Questions :

1. What is the value of land as on 1989?
2. What is the replacement cost of the building?
3. What is the depreciation percentage by adopting straight line method assuming economic life as 60 years and salvage value as 10%?
4. What is the depreciation value of the building?
5. What is the depreciated value of the building?
6. What is the total value of the property?

Data :

Place	=	Nagpur
Year of construction	=	1969
GF area	=	200 sq.m.
FF area	=	100 sq.m.
SF area	=	100 sq.m.
Plot area	=	1,200 sq.m.
Cost index in Delhi for base year 01.10.1976	=	100
Building cost index for Nagpur in 1989	=	394
Building cost for base year (1976)=		Rs. 385/sq.m.
Plumbing cost for base year (1976)=		Rs. 6,000/unit
Electrification cost for base year	=	Rs. 5,700/unit
Flooring cost in 1989	=	While marble Rs. 250/sq.m.
Mosaic tile cost in 1989	=	Rs. 60/sq.m.
Prevalent land rate in 1989	=	Rs. 800/sq.m.



Calculations :

Area of plot	=	1,200 sq.m.	
Unit rate of plot (1989)	=	Rs. 800/sq.m.	
Value of plot in 1989	=	1,200 x 800	
	=	Rs. 9,60,000/-	(1)

Area of ground floor	=	200 sq.m.	
Area of first floor	=	100 sq.m.	
Area of second floor	=	100 sq.m.	
Total area of all floors	=	400 sq.m.	
Unit rate of building (1976)	=	Rs. 385/sq.m.	
Civil work cost (1976)	=	400 x 385	
	=	Rs. 1,54,000	
Plumbing 3 floors x 6,000	=	Rs. 18,000	
Electrification 3 floors x 5,700	=	Rs. 17,100	
Replacement cost at Delhi (1976)	=	Rs. 1,89,100	
This is for cost index for	=	100	
Cost index at Nagpur (1989)	=	394	
Replacement cost in Nagpur	=	$\frac{1,89,100}{100} \times 394$	
	=	Rs. 7,45,054/-	

Add for difference of marble & Mosaic
Rs. 250 - 60 = 190/sq.m.

Carpet area	=	85% of plot area	
	=	0.85 x 400 = 340 sq.m.	
Extra cost of marble	=	340 x 190	
	=	Rs. 64,600	
Total building cost	=	7,45,054 + 64,600	
	=	Rs. 8,09,654/-	(2)

Age	=	1989 - 1969 = 20 years	
Life assumed	=	60 Years	
Salvage assumed	=	10%	
Depreciation percentage	=	$\frac{20}{60} \times 90 = 30\%$	(3)



Depreciation value	=	$0.3 \times 8,09,654$	
	=	Rs. 2,42,896/-	(4)
Net present value	=	$8,09,654 - 2,42,896$	
	=	Rs. 5,66,758/-	(5)
Total value of the property	=	$9,60,000 + 5,66,758$	
	=	Rs. 15,26,758/-	(6)

Answers :

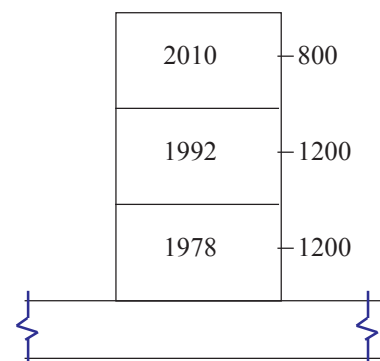
- | | | | |
|----|----------------|----|-----------------|
| 1. | Rs. 9,60,000/- | 4. | Rs. 2,42,896/- |
| 2. | Rs. 7,45,054/- | 5. | Rs. 5,66,758/- |
| 3. | 30% | 6. | Rs. 15,26,758/- |

Exercise 2.22 :

The ground floor of an RCC Frame residential building was constructed in 1978. The first floor of the building was constructed in 1992 and second floor was in 2010. A major structural renovation took place in 2015. The areas of ground floor, first floor and second floor are 1200 sq ft., 1200 sq. ft and 800 sq ft respectively. The cost of construction of similar type of building in 2015 as per CPWD Plinth Area Rare method is INR 1600 per sq ft. The Cost Index in 2018 is 114. The remaining economic life of the building in 2018 is another 65 years.

Questions :

- 1) What is the physical age of first floor as on date?
- 2) What is the effective age of the building?
- 3) What is the replacement value of the building in 2018?
- 4) What is the depreciation of the first floor in 2018?
- 5) What is the depreciated value of the building in 2018?

**Data :**

The year of construction of GF	=	1978
The year of construction of FF	=	1992
The year of construction of SF	=	2010
Year of major renovation	=	2015
Plinth area of GF	=	1,200 sq.ft.



Plinth area of FF	=	1,200 sq.ft.
Plinth area of SF	=	800 sq.ft.
Replacement rate of construction in 2015	=	Rs. 1,600/sq.ft.
Cost index in 2018	=	Rs. 114/-
Remaining economic life as on 2018	=	65 years

Calculations :

1)	Year of construction of FF	=	1992
	Age of FF	=	2018 - 1992 = 26 years
	Year of construction of GF	=	1978
	Age of the GF	=	2018 - 1978 = 40 years

For the purpose of calculating the depreciation of upper floors, the age of GF is mainly considered.

$$\therefore \text{the physical age of FF} = 2018 - 1978 = \mathbf{40 \text{ years}} \quad (1)$$

2)	Age of GF	=	40 years
	Remaining economic life	=	65 years
	Effective life of the building	=	65 + 40 = 105 years

3)	Replacement rate of construction in 2015	=	Rs. 1,600/sq.ft.	(2)
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	Cost index in 2018	=	Rs. 114/-	
	Replacement rate in 2018	=	$\frac{1,600}{100} \times 1.14 = \text{Rs. } 1,824/-$	
	Plinth area of GF	=	1,200 sq.ft.	
	Plinth area of FF	=	1,200 sq.ft.	
	Plinth area of SF	=	800 sq.ft.	
	Total plinth area of the building	=	3,200 sq.ft.	
	Replacement value of the building in 2018	=	1,824 x 3,200	
		=	Rs. 58,36,800/-	(3)

4)	Age of GF	=	40 years
	Life of GF	=	105 years
	Salvage value assumed as	=	10%



$$\text{Depreciation percentage} = \frac{40}{105} \times 90 = \mathbf{34.29\%} \quad (4)$$

This %age is assumed as %age of depreciation for FF also.

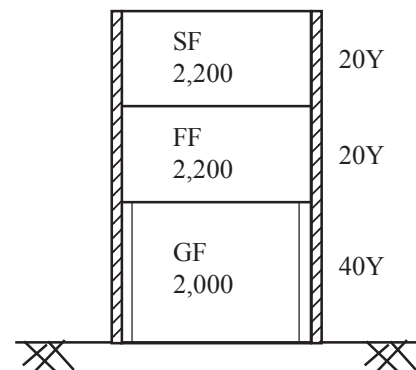
$$\begin{aligned} 5) \quad \text{Replacement value of building} &= \text{Rs. } 58,36,800/- \\ \\ \text{Depreciation value} &= 0.3429 \times 58,36,800 \\ &= \text{Rs. } 20,01,439/- \\ \\ \text{Depreciated value} &= 58,36,800 - 20,01,439 \\ &= \mathbf{\text{Rs. } 38,35,361/-} \quad (5) \end{aligned}$$

Answers :

- | | | | |
|----|-----------------|----|-----------------|
| 1) | 40 years | 4) | 34.29% |
| 2) | 105 years | 5) | Rs. 38,35,361/- |
| 3) | Rs. 58,36,800/- | | |

Exercise 2.23 :

There is a commercial building of GF + 2 in a busy commercial locality. GF (2,000 sq.ft.) is a load bearing structure of age 40 years. The economic life can be assumed as 60 years with a salvage value of 10%. The FF (2,200 sq.ft.) & SF (2,200 sq.ft.) is a framed structure of age 20 years which rest on independent separate foundation. The economic life of this new structure can be assumed as 80 years. The replacement cost of load bearing structure is Rs. 1,600/sq.ft. and the average replacement cost of FF & SF is Rs. 1,800/sq.ft. The external services is 10% for all the floors. The plot area is 4,000 sq.ft. and the prevalent rate of land is Rs. 5,000/sq.ft.



Questions :

- 1) What is the value of the plot?
- 2) What is the depreciated value of GF?
- 3) What is the depreciated value of FF & SF?
- 4) What is the value of the entire building?
- 5) What is the value of the building for the purpose of fire insurance assuming 20% as the value of foundation?
- 6) What is the value of property?

**Data :**

Plot area	=	4,000 sq.ft.
Rate for land	=	Rs. 5,000/sq.ft.
Plinth area of GF	=	2,000 sq.ft.
Age of GF	=	40 years
Type of structure	=	Load bearing
Economic life	=	60 years
Replacement cost	=	Rs. 1,600/-
External service	=	10%
Plinth area of FF & SF	=	2,200 sq.ft. & 2,200 sq.ft.
Age of FF & SF	=	20 years
Economic life of FF & SF	=	80 years
Type of structure	=	RCC framed with independent foundation
Replacement rate	=	Rs. 1,800/-
External services	=	10%

Calculations :

Plot area	=	4,000 sq.ft.
Rate of plot	=	Rs. 5,000/sq.ft.
Value of plot	=	4,000 x 5,000
	=	Rs. 2,00,00,000/- (1)

GF

Plinth area	=	2,000 sq.ft.
Replacement rate	=	Rs. 1,600/-
Replacement value	=	2,000 x 1,600
	=	Rs. 32,00,000
Add 10% for external services	=	Rs. 3,20,000
Total	=	Rs. 35,20,000/-
Age of ground floor	=	40 years
Life of ground floor	=	60 years
Salvage value	=	10%
Depreciation percentage	=	$\frac{40}{60} \times 90 = 60\%$
Depreciation value	=	0.6 x 35,20,000
	=	Rs. 21,12,000/-



$$\begin{aligned} \text{Depreciated value of GF} &= 35,20,000 - 21,12,000 \\ &= \text{Rs. 14,08,000/-} \quad (2) \end{aligned}$$

FF & SF

$$\begin{aligned} \text{Built up area of first floor} &= 2,200 \text{ sq.ft.} \\ \text{Built up area of second floor} &= 2,200 \text{ sq.ft.} \\ \text{Total built up area} &= 4,400 \text{ sq.ft.} \\ \text{Replacement rate} &= \text{Rs. 1,800} \\ \text{Add 10\% for External services} &= \text{Rs. 180} \\ \text{Rate \& Service} &= \text{Rs. 1,980/-} \\ \text{Replacement value} &= 4,400 \times 1,980 \\ &= \text{Rs. 87,12,000/-} \\ \text{Age of FF \& SF} &= 20 \text{ years} \\ \text{Life of FF \& SF} &= 80 \text{ years} \\ \text{Salvage value} &= 10\% \\ \text{Depreciation percentage} &= \frac{20}{80} \times 90 = 22.5\% \\ \text{Depreciation value} &= 0.225 \times 87,12,000 \\ &= \text{Rs. 19,60,200/-} \\ \text{Depreciated value of FF \& SF} &= 87,12,000 - 19,60,200 \\ &= \text{Rs. 67,51,800/-} \quad (3) \end{aligned}$$

Total value of building

$$\begin{aligned} \text{GF - load bearing - 2,000 sq.ft.} &= \text{Rs. 14,08,000} \\ \text{FF \& SF - Framed structure - 4,400 sq.ft.} &= \text{Rs. 67,51,800} \\ \text{Value of building} &= \text{Rs. 81,59,800/-} \quad (4) \end{aligned}$$

$$\begin{aligned} \text{Depreciated value of building} &= \text{Rs. 81,59,800} \\ \text{Less value of foundation (-20\%)} &= (-) \text{Rs. 16,31,960} \\ \text{Value for the purpose of insurance} &= \text{Rs. 65,27,840} \quad (5) \end{aligned}$$

$$\begin{aligned} \text{Value of plot} &= \text{Rs. 2,00,00,000} \\ \text{Value of building} &= \text{Rs. 81,59,800} \\ \text{Total value} &= \text{Rs. 2,81,59,800/-} \quad (6) \end{aligned}$$

Answers :

- | | | | |
|----|-------------------|----|-------------------|
| 1) | Rs. 2,00,00,000/- | 4) | Rs. 81,59,800/- |
| 2) | Rs. 12,80,000/- | 5) | Rs. 65,27,840/- |
| 3) | Rs. 67,51,800/- | 6) | Rs. 2,81,59,800/- |