Lecture/ E-learning notes

 Course number: 13 CE 4103

 Course name: **Quantity Surveying & Valuation**

 Class: IV B. Tech

 Branch: Civil Engineering

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**UNIT- V**

 **VALUATION**

Valuation means fixation of cost or return expected of a building, engineering structure project (Govt. or private), at present days rates. The value of a structure may be more or less depending upon the present utility of a structure. For example, a house having a number of rooms but smaller in size will fetch less value than a house, may be smaller in area but having well planned and proper sized of rooms.

**Necessity of Valuation**

The following reasons necessitates the valuation of property:-

1. Rent fixation. It is generally taken as 6% of the valuation of the property.
2. For buying and selling.
3. Acquisition of property by Govt.
4. To be mortgaged with bank or any other society to raise loan.
5. For various taxes to be given and fixed, by the Municipal Committee.
6. Insurance: For taking out on insurance policies.

**Roll of an Engineer**

The roll of an Engineer in valuation is felt when an Engineering structure is

to be valued, if and when it is:-

1. To e acquired
2. To be divide
3. To be allotted to a claim holder.

The following factors require consideration for valuation:-

(i) **Locality:-**

In case a building is located in such an area, where there is easy access to market, schools and is located on road side. The Orientation of the building is according to Engineering rules. It will fetch more cost than a building which is in a neglected condition and is locate at unhealthy site.

(ii) **Structure:-**

The structure of a building is also an important consideration while evaluating a building. Workmanship I attractive and the building is properly maintained, it will fetch more cost than the building in a neglected form with poor quality of material used.

According to specifications a building is divided in four classes:-First Class



Second Class For Details, see chapter on specifications Third Class

Fourth Class

Value: Present day cost of a Engineering structure (Saleable value)

Cost: Original cost of construction. It is used to find out the loss of value of property due to various reasons.

**Net Income:** Total amount of the income received from a property during theyear, without deducting outgoing.

**Gross Income :** Total amount of the income received form a property during theyear, without deducting outgoing.

**Net income:** An amount left at the end of the year after deducting all usual

outgoings.

**Out goings:-** These are expenses which are incurred on a building so that it maygive back revenue. The following are-various outgoings.

1. **Taxes:-** These are annual taxes paid by the owner, such as wealth tax,property tax and municipal taxes (varies from 10% to 25% of net income).
2. **Management:-** Upto 10% of the gross revenue is kept aside for thisexpenses. This includes, chowkidar sweeper etc. this is applicable only for big buildings or apartments
3. **Repairs:-** For this 1 ½ % of the total construction is set aside for annualrepairs of the building. These repairs are must to maintain the building. It is also calculated as 10% of the gross income.
4. **Sinking fund:-** This is also taken as outgoings (For details seedefinition)
5. **Miscellaneous:-** This is again suitable for big buildings. Lighting ofcommon place, expenditure of liftman etc. are to be paid by the owner.
6. **Loss of Rent:-** This is also an outgoing in case a building in not fullyoccupied by the tenants. This has to be deducted from gross income.
7. **Insurance:-** Premium given against fire or for theft policy.

**Obsolescence:-** The value of property decreases if its style and design areoutdated i.e. rooms not properly set, thick walls, poor ventilation etc. the reasons of this is fast changing techniques of construction, design, ideas leading to more comfort etc.

**Free hold Property:-** Any property which is in complete possession f theowner is known as free hold property. The owner can use the property in an way he likes. But he will have to follow constraints fixed by town planners or Municipality before doing any construction.

**Lease hold Property:-** If a property is given to some person on yearly payment basisby the free holder, then the property is called „lease hold property‟ and the person who take s the property is called Lease-holder. In case of building, the lease is for 99 years to 9 years.

**Easement:-** An owner getting over the property of another person, thefollowing faculties is known as easements.

1. Facility of running water and sewer pipes through other‟s land.
2. Facility of air and light.
3. Facility of drainage of rain water.
4. Facility of access.
* The owner who gives facilities is known as Servant owner and who enjoys facilities is called **Dominant owner.**

**Scrap Value:-** If a building is to be dismantled after the period of its utilityis over, some amount can be fetched from the sale of old materials. The amount is known as Scrap Value of a building. If varies from 8% to 10% of the cost of construction according to the availability of the material.

In case where Wood & Steel are available, the scrap value is more than as R.C.C structure, as in the latter case, the material has less reuse value.

**Salvage Value**:- If property after being discarded at the end of the utility period is sold without being broken into pieces, the amount thus realized by sale is known as its Salvage Value.

For example, railway sleepers can be re-used as posts and even old iron rails taken out can be used as beams in a roof or sheds of a building.

**Building Cost Index:**

A building cost index indicates the increase and decrease of the cost above the cost above the cost at a certain base year and is expressed by a percentage rise & fall. For instance taking 1960 as abase year, the present 1980 as Building Cost Index may be taken 1.25% to 150% above the cost during the year 1960

This index depends upon cost of material, labour, transport etc.

**Capitalized value**:- It is defined as the amount of money whose annual interest at the highest prevailing rate will be equal to the net income received from the property. To calculate the capitalized value, it is necessary to know highest rate of interest prevailing on such properties and net income form the property.

**Sinking Fund**:- A fund which is gradually accumulated and aside to reconstruct the property after the expiry of the period of utility is known as

sinking Fund. The sinking funds may be found out by taking a sinking fund policy with any insurance company or depositing some amount in the bank. Generally while calculating the sinking fund, life of the building is considered. 90% of cost of construction is used for calculations & 10% is left out as scrap value.

|  |  |  |
| --- | --- | --- |
| *The forumula used to find out the annual* sin *king fund is I* | *Si* |  |
|  |  |  |
| (1  *i*) *n* 1 |  |

Where

I = Annual instalment required

N = Number of years required to creat sinking fund.

I = Rate of interest expressed in decimal i.e.5% as.05.

S = Amount of sinking fund.

**Example:**

**A printing machine is to be installed at a cost of 30000/- in a press. Assuming the life of the machine as 20 years. Calculate the amount of annual instalment of sinking fund to be deposited to accumulate the whole amount of 5% compound interest.**

The annual sinking fund

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | *I*  | *Si* |  | 30000 *x*.05 |  *Rs*.906.30 |  |
|  |  |  |  |  |  |  |  |
|  | (1  *i*) *n* 1 | (1 .05) 20 1 |  |
|  | 100  *rd* *n* |  |  |  |  |  |  |  |
| *D*  *P*  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  | 100  |  |  |  |  |  |  |  |

The owner will have to deposit Rs. 906.30 per year in 5% compound interest for 20 years to accumulate Rs. 30,000/-.

Note: In certain cases, old buildings are purchased and in that case scrap value into be deducted from the amount spent so as to calculate the amount of Sinking fund.

Example: **An old shop in the main market has been purchased by a** **person as a cost of Rs. 20000/-. Work out the amount of annual sinking fund at 3% interest assuming future life of the building as 15 years and scrap value of the building as 10% of the cost of purchase.**

**Solution:**

Cost of the shop = Rs. 20000/-

Less crape value = Rs. 2000/-

Net Rs. 18000/-

Amount of sinking found to be accumulated after 15 years = Rs. 18000/-Annual instalment of sinking fund.

|  |  |  |  |
| --- | --- | --- | --- |
|  | *I*  | *Si* |  |
|  |  |  |  |  |
|  | (1  *i*) *n* 1 |  |
| **=** | 18000 *x*.03 |  *Rs*.971.20 |  |
|  |  |
|  | (1 .03)15 1 |  |

**IMPORTANT TABLE**

**How to prepare Table I**

**Example:**

Find the amount of Annual Sinking found @ 3% to give Re1/- at the end of 10 years.

Solution:

|  |  |  |
| --- | --- | --- |
| *Annual Sinking fund*  | *i* |  |
|  |  |  |
| (1  *i*) *n* 1 |  |

I = Rate of interest = 3% = 0.03

N = number of years = 10

|  |  |  |  |
| --- | --- | --- | --- |
|  | .03 |  *Rs*.0.0872 |  |
| (1 .03)10 1 |  |

**TABLE**

**ANNUAL SINKING FUND**

(Amount to be deposited annually at compound interest to return Re 1/ in number of years)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Years |  |  | % age Rates |  |  |  |
|  |  |  |  |  |  |  |
|  | 3% | 4% | 5% | 6% | 7% |  |
| 1 |  |  |  |  |  |  |
| 1.000 | 1.000 | 1.000 | 1.00 | 1.000 |  |
| 2 | 0.493 | 0.40 | 0.488 | 0.485 | 0.483 |  |
| 3 | 0.323 | 0.320 | 0.317 | 0.314 | 0.311 |  |
| 4 | 0.240 | 0.235 | 0.232 | 0.228 | 0.225 |  |
| 5 | 0.188 | 0.185 | 0.180 | 0.177 | 0.174 |  |
| 6 | 0.155 | 0.151 | 0.147 | 0.143 | 0.140 |  |
| 7 | 0.130 | 0.126 | 0.123 | 0.119 | 0.115 |  |
| 8 | 0.122 | 0.108 | 0.104 | 0.101 | 0.097 |  |
| 9 | 0.098 | 0.094 | 0.091 | 0.087 | 0.083 |  |
| 10 | 0.087 | 0.083 | 0.080 | 0.076 | 0.072 |  |
| 20 | 0.037 | 0.033 | 0.030 | 0.027 | 0.024 |  |
|  |  |  |  |  |  |  |

**Year‟s Purchase**: It may be defined as the figure which when multiplied by the net income from a property gives capitalized value of the property.

It can also be defined as “a certain amount of capital whose annuity of Re. 1/- at a certain rate of interest can be received”

1005 *Rs*.20 / *or* .051 *Rs*.20 /

*For* 6%int *erest Y* .*Ps* '.061 *Rs*.16.67

Where I = rate of interest in decimal.

**Example:**

To get 5% or Rs. 5/- as interest, one will have to deposit Rs. 100/- in the bank and to get Re 1/- per year as interest one will have to deposit.

**Annuity:-**

The return of capital investment in the shape of annual instalments (monthly, quarterly, half yearly & yearly) for a fixed number of years is known as annity.

**Market Value:**

It is defined as the value which a property can fetch when sold out in open market. This value is variable, depending upon the will to buy or sell.

**Book Value:**

It is the amount of a property shown in the books, after allowing necessary depreciations year-wise. The book value is independent of market-value.

**Deprecation:**

A structure, after sometimes gradually losses some of its value due to its constant use and some other similar reasons, such as

1. The property in neglected condition
2. The property being away from schools & market
3. Design being out of fashion
4. Poor specifications followed which requiring maintenance. The loss thus involve in the value of properties known as Depreciation.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | 100  *rd* *n* |  |
|  | *D*  *P*  |  |  |  |  |
|  |  |  |  |
|  |  |  | 100  |  |
| Where | D = Deprecated Value |  |  |  |  |
|  | P = Present Value |  |  |  |  |

Rd = Fixed percentage of deprecation

N = number of year the building has been constructed in existence

 **P = Present Value**

The present value of building can be found out using any of the following methods

1. Value depending upon Plinth Area.

This method has already been health with in details in the previous chapters.

The plain the area is multiplied with plinth area rate.

1. value from detailed measurement:

Detailed measurements of the building are taken and multiplied by current rates, sub-head-wise. The current rates are taken from schedule of rates and premium is added to it.

1. Value from records on M.B

The value of the total construction is found out from the records entered in the measurement book. In this method, old cost is noted and is multiplied by the

increase in price index i.e. percentage of increase. Rd = Fixed percentage of depreciation

Experience has also shown that the time passes, due to constant use, wear and tear, the cost of the building depreciates. This depreciation increases with the time. The following are the values of rd for different structures.

Structure with 80-100 years life rd = 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ” | ” | 70-75 | ” | ” | ” = 1.3 |
| ” | ” | 50 | ” | ” | ” = 2 |
| ” | ” | 25 | ” | ” | ” = | 4 |
| ” | ” | 20 | ” | ” | ” = | 5 |

**A = Life of Structure**

Experience has also shown that well contracted structure can last upto 100 years. This life depends upon the durability of various materials used. Thus by seeing specification the life of a structure can be found out. The following chart shown expected life of the various materials and constructions.

The following are the various methods of valuation:

1. Depreciation method of valuation
2. Valuation based on cost
3. Valuation based on profit
4. Valuation by Development method
5. Rental method of valuation

**a) Depreciation method of valuation**

In this method, the structure is divided into four parts for calculating depreciation:

1. Walls
2. Roofs
3. Floors
4. Doors and Windows

The measurement is done accurately and the cost is found out using current rates. Life of each portion is found out using Table A. to find out depreciated value, the formula used is

|  |  |  |
| --- | --- | --- |
|  | 100  *rd* *n* |  |
| *D*  *P*  |  |  |  |  |
|  |  |  |
|  |  | 100  |  |

where all the values are given, „D‟ can be calculated.

This value does not in clued cost of land, water supply, sanitary fitting, electric installations etc.

The cost of above items are added to get the total valuation of property. The table C gives calculate values of depreciation for different values of

„n‟ and „rd‟.

Table C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **rd**  |  |  |  |  |  |
|  | **1** | **1.3** | **2** | **4** | **5** |
| **n** |  |  |  |  |  |
|  |  |  |  |  |  |
| 20 | .818 | .770 | .668 | .442 | .358 |
|  |  |  |  |  |  |
| 30 | .740 | .675 | .546 | .294 | .214 |
|  |  |  |  |  |  |
| 40 | .670 | .593 | .446 | .195 | .125 |
|  |  |  |  |  |  |
| 50 | .605 | .520 | .364 | .130 | .077 |
|  |  |  |  |  |  |
| 60 | .547 | .456 | .298 | .086 | .046 |
|  |  |  |  |  |  |
| 70 | .495 | .400 | .243 | .057 | .027 |
|  |  |  |  |  |  |
| 80 | .447 | .351 | .199 | .038 | .016 |
|  |  |  |  |  |  |
| 100 | .366 | .270 | .133 | .017 | .006 |
|  |  |  |  |  |  |

**Problem I:**

The estimated cost of a building is Rs. 20,000. It is 20 years old & well maintained. The life of the structure is assumed to be 80 years. Work out the cost of building for acquisition solution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 100  *rd* | *n* |  |  |  |
|  | *D*  *P*  |  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  100 |  |  |  |  |
| where | P =Rs.20,000/-, rd = 1, n=20 |  |
|  |  |  |  |  |  | 20 |  |
|  | D = 2000  | 100 | 1 |  | = Rs.16400/- |  |
|  |  |  |  |
|  |  |  100 |  |  |  |
|  | Depreciated value = Rs.16400/- |  |

**Problem II**

A plot measures 500 sq.m. The built up area is 300 sq.m. The plinth area rate of this 1st class building is Rs.600/- per sw/metre. This rates includes cost of water supply, sanitary and electric installation. The age of the building is 40 years. The cost of the land is Rs.80/- per sq.m.

**Solution**

Cost of land = 500 x 80 = Rs.40,000/-

Cost of building = 300 x 600 = Rs. 1,80,000/-

Life of a building is given 40 years. So rd = 2. The depreciated value,

|  |  |  |  |
| --- | --- | --- | --- |
| 1,80, 000 | 100  2 | 40 |  |
|  |  |  |  |
| 100 |  |
|  |  |  |  |

= 1,80,000 x .466 = Rs. 80280/-

Total value of property = 50280 + 40000 = **Rs. 120,280/-**

**Second Method**

Assuming that a property loses its value by same amount every year, the formula for depreciation is as below:

D= Cn-S , where D=Depreciated value

C = Original cost, S=Scrap value n = life of the property

**Example**

A building is situated on Ambala-Kalka road and costs Rs.38,000/-, considering its scrap value as 10% of the cost and life as 80 years. Find out depreciated value if the life of the building is 20 years.

**Solution**

*D*  *D*  *S n*

\*C=Rs.38,000/-, S=10% or Rs.3,800/-, n = 80 years.

|  |  |  |  |
| --- | --- | --- | --- |
| *D*  | 38000 3800 |  *Rs*.428 / *per year* |  |
| 80 |  |
|  |  |  |

* In 20 years = 428 x 20 = Rs. 8560/-
* Value of property = 38000 – 8560/-
	+ **Rs.29440/-**

**b) Valuation based on cost**

In this method, the actual cost of the construction is found out and valuation is done after considering depreciations and also caring for type of construction and design of the construction.

**c) Valuation based on profit**

Under this sub-head, valuation of cinemas, theatres, hotels, banks, big shop etc. Located at sui9table places is done where profit is of capitalized value. The capitalized value is calculated by multiplying year‟s purchase with net profit. The net profit is worked out after deducting all possible outgoings and expenditures from the gross income. In such cases the cost will be too high as compared with the cost of construction actually incurred.

**d) Valuation by development method**

This method is also used for working out the value of a building. In certain cases, some additions, alterations and improvements are carried out which increases the cost of the building. The valuator should be careful while doing evaluation about this.

In cases, when the building is still under development. In this case the future development of the building and profits from it should be anticipated while evaluating.

**e) Rental method of valuation**

Rent of a building is used as a base for calculating value of a building. In this method the net income by the war of way of rent is found out after deducting all out goings from the gross income. A suitable rate of interest prevailing in the

market is also to be assumed of such type of buildings. Based on the above rate of interest, the Y‟ P. is obtained. The net income is multiplied with Y‟s P. to obtain capitalized value.

***FIXATION OF RENT***

**a) Government residential bungalows or quarters**

Every govt official occupying govt. accommodation has to pay rent which is called standard rent or 10% of his pay, whichever is less. The practice in

P.W.D. is that when a net residential building is constructed, a ren … I statement is attached with the estimate, which will give the calculations of rent to be fixed. The total expenditure incurred on the construction i.e., cost of the building, cost of water supply, sanitary and electric installations etc. are calculated @6% interest and divided it by 12, which will give rent per month. This is also known as Standard Rent.

**Note:** If a land is purchased for the construction of the building, its cost shouldalso be added while calculating the Rental statement.

**b) Private property or Building**

In case of private properties, the Net income is worked out by dividing the capitalized value by a proper figure or year‟s purchase. To get the gross rent, outgoings such as annual repairs, municipal which will give rent per month. This is also known as standard rent.

In case of private properties, the rent depends upon the situation, demand,

type of construction, accommodation and facilities provided. For example a

property used for Hotel, Cinema, Bank or Shop, located in the main market will

fetch more rent than actually calculated.

**Problem I**

The present value of a property is 20,000/-, Calculate the standard rent. The

rate of interest may be assumed as 6%.

**Solution**

Annual rent @ 6%  20, 000 6 100

* + *Rs*.1200 /
* Standard rent per month  120012  *Rs*.100 /

**Problem II**

A residence is to be constructed over a plot of land measuring 600 sq.m.

The byelaws permit a 30% of covered area. The constructions to be done is of A

class specifications. Also add for services @30% of the total cost. The water

supply is from a common source. Prepare rental statement also.

**Solution**

Covered area = 30% of 600 sq.m. = 180 sq.m.

Rough cost estimate = 180 x 500 = Rs.90,000/-

(Rs.500-Rate per sq.m) Add for services @ 30% = Rs.27,000/-

Total = 90,000 + 27,000 = Rs.1,17,000/-

**RENTAL STATEMENT**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Average** | **Cost of** | **Cost of** |  |  |  |  |  |  |  | **Rent @** |  | **Rent to be** |  |  |
| **Salary of** | **Total** |  | **Rent @ 6%** |  |  |  |  |  |
| **Building** | **Service** |  |  | **10%** |  | **charged** |  |  |
| **the tenant** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Rs. 1200.00 | Rs. | Rs. | Rs. | 1,17, 000 6 | = | 1200 |  | Standard | rent | or |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| per month | 90,000/- | 27,000/- | 1,17,000 | 100 |  | 10 |  | 10% of the Salary, |  |
|  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  | Rs.7020/- |  | =Rs.120/- | whichever | is | less. |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | standard rent | = |  |  |  | In | this |  | case |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | 7020 | = Rs. 585/- |  |  |  |  | Rs.120/- |  |  |  |
|  |  |  |  | 12 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Loss = Rs. 585 – Rs. 120 = Rs.465/-

**Problem III**

An R.C.C framed structure building having estimated future life of 80 years, fetches a gross annual rent of Rs.2200/- per month. Work out its capitalized value on the basis of 6% net yield. The rate of compound interest for sinking fund may be 4%. The plot measures 400 sq.m. & cost of land may be taken as Rs.120/-per sq.m. The other out goings are:

1. Repair & maintenance = 121 of gross income
2. Municipal & property taxes = 25% gross income
3. Management & miscellaneous = 7% gross income

The plinth area of the building is 800 sq.m. & cost per sq.m. may be taken as Rs.500/- per sq.m.

**Solution**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Gross annual rent = 2200 x 12 = Rs. 26400/- |  |  |
|  | Rate of compound interest = 4% |  |  |
|  | Life of the building = 80 years |  |  |
|  | Cost of the building = 800 x 500 | = Rs. 4,00,000/- |  |
| **Out goings:** |  |  |
| i) | Repair & maintenance = | 1 |  26400 | = Rs. 2200/- |  |
|  |  |
|  | 12 |  |  |  |
| ii) | Municipal Taxes  | 25 |  26400 | = Rs. 6600/- |  |
|  |  |
|  | 100 |  |  |  |  |  |

iii) Management & Miscellaneous  1007  26400 = Rs. 1848/-

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | iv) Sinking Fund | 4, 00, 000 .04 |  | = Rs. 731/- |  |
|  |  |  | 80 1 |  |
|  |  | 1 .4 |  |  |  |
|  |  |  |  |  |  |
|  | Total Outgoings (i+ii+iii+iv) | = Rs. 11379/- |  |
|  | Net income = Rs. 26400 – 11379 |  |  |
|  | = Rs. 15021/- |  |  |
|  | Capitalized Value = Y‟s.P. x Net income |  |  |
|  | Where Y‟s P. = 6% |  |  |  |  |  |
|  | Capitalized value | 100 | 15021 | **= Rs. 250350** |  |
|  |  |
|  | 6 |  |  |  |  |  |

**Problem IV**

Calculate the annual rent of a building with the following data:

Cost of Land = Rs. 20,000/-

|  |  |  |
| --- | --- | --- |
| Cost of building | = | Rs. 80,000/- |
| Estimate life | = | 80 years |
| Return expected | = | 5% on land |
|  |  | 6% on building |

Annual repairs are expected to be 0.8% of the cost construction and other out goings will be 25% of the gross rent. There is no proposal to set up a sinking

|  |  |  |  |
| --- | --- | --- | --- |
| fund. |  | *(Haryana 1975)* |  |
| **Solution** |  |  |  |
| Amount of return required on land @ 5% of Rs.20,000/- | = Rs. 1000/- |  |
| Amount of return required on building@ 6% of Rs.80,000/- | = Rs. 4800/- |  |
|  Net Income |  | = Rs. 5800/- |  |
| Let gross rent per annum = x |  |  |  |
| Amount of annual repairs 8% of Rs. 80,000/- | = Rs. 640/- |  |
| Amount for other repairs = .25x |  |  |  |
| Net income = Gross income – Outgoings. |  |  |
|  |  | 5800 = x – 640 - .25x |  |  |
| 5800+640=.75 x |  |  |  |
|  x x= | 6440 | =Rs.8586 per annum |  |  |  |
|  |  |  |  |
| .75 |  |  |  |  |  |  |
|  Rent per month  | 8586 |  | = Rs. 715.50 |  |  |
|  |  |  |
| 12 |  |  |  |  |

**Problem V**

Calculate standard rent of a building with the following data:

i) Cost of land = Rs. 40,000/-

ii) Cost of building = Rs. 50,000/-

iii) Expected life of building = 60 years

iv) Return expected = 5% on land

8% on building

v) Annual repairs = @ 10% on the cost of building

vi) Sinking fune = @ 30 of the return from building