Subject Name: **Transportation Engineering**

Subject Code: **CE-5001**

Semester: **5th**

Unit: - 5

Valuation: Purposes, depreciation, sinking fund, scrap value, year's purchase, gross and net income, dual rate interest, methods of valuation, rent fixation of building.

1. **Valuation**
   Valuation is the technique of estimating or determining the fair price or value of a property such as building, a factory, other engineering structure of various types, land…etc.

2. **Salvage value**
   It is the value of end of utility period without being dismantled.

3. **Sinking fund**
   The fund is gradually accumulated by way of periodic on annual deposit for the replacement of the building or structure at the end of its useful life.

4. **Depreciation**
   Depreciation is the gradual exhaustion of a usefulness of a property. Decrease or loss in the value of a property due to its structural deterioration use, life wear and tear, decay and obsolescence.

5. **Scrap value**
   Scrap value is the value of dismantled materials. For a building when the life is over the end of utility period of dismantled materials as steel, bricks, timber.
   Etc. will fetch certain amount which is scrap value of a building.

6. **Specifications**
   Describes the nature and class of work, materials to be used in the work, workmanship etc. is very important for the execution of work.

7. **General specifications**
   It give a general idea of the whole work or structure and are useful for preparing the estimate.

8. **Detailed specifications**
   It specifies the qualities and quantities of materials, the proportion of mortar, workmanship, the method of preparation and execution and the methods of measurement.

9. **Task**
   Capacity of doing work by an artisan or skilled lab our in the form of quantity of per day in known.

Objects of valuation

It is the technique of estimating and determining the fair price or value of a property such as a building, a factory or other engineering structures of various types, land etc.

Six important Purposes of Valuation:-

The main purposes of valuation are as follows:-

1. Buying or Selling Property When it is required to buy or sell a property, its valuation is required.
2. Taxation to assess the tax of a property, its valuation is required. Taxes may be municipal tax, wealth tax, Property tax etc., and all the taxes are fixed on the valuation of the property.

3. Rent Function In order to determine the rent of a property, valuation is required. Rent is usually fixed on the certain percentage of the amount of valuation which is 6% to 10% of valuation.
4. Security of loans or Mortgage When loans are taken against the security of the property, its valuation is required.
5. Compulsory acquisition whenever a property is acquired by law; compensation is paid to the owner. To determine the amount of compensation, valuation of the property is required.
6. Valuation of a property is also required for Insurance, Betterment charges, speculations etc.

Valuation of Building:-

Valuation of a building depends on the type of the building, its structure and durability, on the situation, size, shape, frontage, width of roadways, the quality of materials used in the construction and present day prices of materials. Valuation also depends on the height of the building, height of the plinth, thickness of the wall, nature of the floor, roof, doors, windows etc.

The valuation of a building is determined on working out its cost of construction at present day rate and allowing a suitable depreciation.

Six Methods of Valuation

1. Rental Method of Valuation
2. Direct Comparisons of the capital value
3. Valuation based on the profit
4. Valuation based on the cost
5. Development method of Valuation
6. Depreciation method of Valuation

1. Rental Method of Valuation

In this method, the net income by way of rent is found out by deducting all outgoing from the gross rent. A suitable rate of interest as prevailing in the market is assumed and Year's purchase is calculated. This net income multiplied by Year's Purchase gives the capitalized value or valuation of the property. This method is applicable only when the rent is known or probable rent is determined by enquiries.

2. Direct comparison with the capital Value

This method may be adopted when the rental value is not available from the property concerned, but there are evidences of sale price of properties as a whole. In such cases, the capitalized value of the property is fixed by direct comparison with capitalized value of similar property in the locality.

3. Valuation based on profit

This method of Valuation is suitable for buildings like hotels, cinemas, theatres etc for which the capitalized value depends on the profit. In such cases, the net income is worked out after deducting gross income; all possible working expense, outgoings, interest on the capital invested etc. The net profit is multiplied by Year's Purchase to get the capitalized value. In such cases, the valuation may work out to be high in comparison with the cost of construction.

4. Valuation based on cost

In this method, the actual cost incurred in constructing the building or in possessing the property is taken as basis to determine the value of property. In such cases, necessary depreciation should be allowed and the points of obsolescence should also be considered.

5. Development Method of Valuation

This method of Valuation is used for the properties which are in the underdeveloped stage or partly developed and partly underdeveloped stage. If a large place of land is required to be divided into plots after providing for roads, parks etc, this method of valuation is to be adopted. In such cases, the probable selling price of the divided plots, the area required for roads, parks etc and other expenditures for development should be known.

If a building is required to be renovated by making additional changes, alterations or improvements, the development method of Valuation may be used.

6. Depreciation Method of Valuation

According to this method of Valuation, the building should be divided into four parts:

Walls
Roofs
Floors
Doors and Windows
And the cost of each part should first be worked out on the present day rates by detailed measurements.

The present value of land and water supply, electric and sanitary fittings etc should be added to the valuation of the building to arrive at total valuation of the property.

Definitions

- **Market Value**

  The market value of a property is the amount which can be obtained at any particular time from the open market if the property is put for sale. The market value will differ from time to time according to demand and supply.

  The market value also changes from time to time for various miscellaneous reasons such as changes in industry, changes in fashions, means of transport, cost of materials and labor etc.

- **Book Value**

  Book value is the amount shown in the account book after allowing necessary depreciations. The book value of a property at a particular year is the original cost minus the amount of depreciation allowed per year and will be gradually reduced year to year and at the end of the utility period of the property, the book value will be only scrap value.

- **Capital cost**

  Capital cost is the total cost of construction including land, or the original total amount required to possess a property. It is the original cost and does not change while the value of the property is the present cost which may be calculated by methods of Valuation.

  Capitalized Value of a Property

  The capitalized value of a property is the amount of money whose annual interest at the highest prevailing rate of interest will be equal to the net income from the property. To determine the capitalized value of a property, it is required to know the net income from the property and the highest prevailing rate of interest.

  Therefore, Capitalized Value = Net income x year's purchase

  Year's Purchase

  Year's purchase is defined as the capital sum required to be invested in order to receive a net receive a net annual income as an annuity of rupee one at a fixed rate of interest.

  The capital sum should be 1×100/rate of interest.

  Thus to gain an annual income of Rs x at a fixed rate of interest, the capital sum should be x(100/rate of interest).

  But (100/rate of interest) is termed as Year's Purchase.

  The multiplier of the net annual income to determine the capital value is known as the
  Year's Purchase (YP) and it is useful to obtain the capitalized value of the property.

Sinking Fund Method

In this method, the depreciation of a property is assumed to be equal to the annual sinking fund plus the interest on the fund for that year, which is supposed to be invested on interest bearing investment. If A is the annual sinking fund and b, c, d, etc. represent interest on the sinking fund for subsequent years and C = total original cost, then –

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Depreciation is the gradual exhaustion of the usefulness of a property. This may be defined as the decrease or loss in the value of a property due to structural deterioration, life wear and tear, decay and obsolescence.

Methods for calculating depreciation

1. Straight line Method
2. Constant percentage method
3. Sinking Fund Method

4. Quantity Survey Method

In this method, it is assumed that the property losses its value by the same amount every year. A fixed amount of the original cost is deducted every year, so that at the end of the utility period, only the scrap value is left.

For example, a vehicle that depreciates over 5 years, is purchased at a cost of US$17,000, and will have a salvage value of US$2000, will depreciate at US$3,000 per year:-

($17,000? $2,000)/ 5 years = $3,000 annual straight-line depreciation expense. In other words, it is the depreciable cost of the asset divided by the number of years of its useful life.

Constant Percentage Method or Declining balance Method

In this method, it is assumed that the property will lose its value by a constant percentage of its value at the beginning of every year.

Annual Depreciation, D = 1-(scrap value/original value)1/life in year

Quantity Survey Method

In this method, the property is studied in detail and loss in value due to life, wear and tear, decay, and obsolescence etc, worked out. Each and every step is based is based on some logical grounds without any fixed percentage of the cost of the property. Only experimental valuer can work out the amount of depreciation and present value of a property by this method.

Sinking Fund: - The fund which is gradually accumulated by way of periodic on annual deposit for replacement of the building at the end of its useful life is termed as sinking fund.

Fixation of rent Capitalized value of the property can be known by any of the methods discussed earlier and suitable value of year's purchase is adopted according to the admissible rate of interest (8% or any other fair rate).

Then,

Net income = capitalized value / year's purchase

All possible outgoings are added to this net income which will give gross income from the property. Gross income or gross rent = Net rent + outgoings

The standard rent = (Gross Income / 12) per month

Calculation of standard rent of a govt. property

(In Punjab / Haryana), standard rent is calculated on the capital cost of the residence and shall be either:-

1. (a) A percentage equal to the rate of interest on the capital (which includes the cost on sanitary, water supply and electrical installation, fencing, boundary walls and service roads etc. as fixed from time to time) value of a building. In addition, municipal and other taxes and the expenditure for the maintenance of building are also realized, or

(b) 6%per annum of the capital value of a building constructed/ occupied after 1992 whichever is less.

2. Municipal taxes etc. levied on the occupant will be payable to the occupant direct to the authorities concerned in addition to the above rent calculations.
3. Generally the value of the land is excluded. If value of land to be considered a little less percentage says 1 to 2 % on value of land be taken for calculation of standard rent.

Gross and net income

Gross income includes all of the **income** your business earns during the year.

Net income includes only the profit your business earns after you subtract business expenses and other allowable deductions from your gross income.

Dual rate interest

When someone takes a dual rate home loan from a bank, he has to pay a fixed interest rate for the first few years. Most of the banks ask for a fixed interest rate of 11.5% for first 3 years. The rate can be fixed at 10.5% too if the loan amount is higher.