Unit - 5

✳️ **Q. Explain the concept of Time Value of Money (TVM).**

(7 Marks)

Meaning:

The **Time Value of Money (TVM)** is a basic financial concept which says that **money received today is more valuable than the same amount received in the future**.
This is because money has the **potential to earn interest or return** if it is invested.

💬 Example:
₹1000 today can earn interest and become ₹1040 after one year at 4% rate.
But ₹1000 received next year cannot earn any return in the meantime —
so money **today is worth more** than money **in future**.

Reasons Why Money Has Time Value:

1. **Earning Capacity:** Money can be invested to earn income.
2. **Inflation:** Future money buys less due to rise in prices.
3. **Risk and Uncertainty:** Future is uncertain; today's money is safer.
4. **Consumption Preference:** People prefer to spend now rather than wait.
5. **Investment Opportunity:** Money today can be used to start a business or project.

Concept	Meaning	Formula	Example
1. Future Value (Compounding)	Finding how much present money will become in future.	**FV = PV × (1 + r)^n**	₹1000 at 10% for 2 yrs → 1000 × $(1.10)^2$ = ₹1210
2. Present Value (Discounting)	Finding how much future money is worth today.	**PV = FV / (1 + r)^n**	₹1210 after 2 yrs @10% → 1210 / $(1.10)^2$ = ₹1000

Example 1 – Future Value (FV):

Virat deposits ₹1000 @ 12% compound interest for 8 years.

$$FV = 1000 \times (1 + 0.12)^8 = 1000 \times 2.476 = ₹2476$$

Example 2 – Present Value (PV):

You will get ₹1040 after one year at 4% interest.

$$PV = 1040/(1 + 0.04) = ₹1000$$

So, ₹1000 today = ₹1040 after 1 year.

Importance of TVM in Finance:

- Used in **investment decisions** (which project is better).
- Helps in **loan & EMI calculation**.
- Used in **retirement planning** and **savings**.
- Important for **valuation of shares and bonds**.

✳️ **Q. Explain the *Reasons for Preference of Money*.**

(7 Marks)

Meaning:

People prefer **money** over other forms of wealth (like land, gold, or goods) because **money is more useful, convenient, and easy to use** in daily life.
Money can be **used anytime, saved, invested, or exchanged**, which makes it more valuable and preferred by everyone.

Reasons for Preference of Money:

1️⃣ **Medium of Exchange**

- Money is accepted everywhere to buy goods and services.
- It removes the problem of barter system (where goods were exchanged for goods).

💬 *Example:* You can use ₹100 to buy fruits, recharge your mobile, or pay for transport — you don't have to carry goods to trade.

2️⃣ **Store of Value**

- Money can be saved and used in the future.
- It does not spoil like food or perishable goods.

💬 *Example:* If you earn ₹10,000 today and save it, you can use it next month when needed.

3️⃣ **Unit of Account**

- Money helps to **measure the value** of goods and services in a common unit.
- It makes calculation and comparison easy.

💬 *Example:* Pen ₹10, Shirt ₹500, Jeans ₹800 — you can make a budget easily.

4️⃣ Liquidity

- Money is the **most liquid asset** — it can be used immediately without converting it into anything else.

💬 *Example:* You can buy things directly using cash or UPI, unlike gold or land which must be sold first.

5️⃣ Standard of Deferred Payment

- Money is used to settle **future payments or debts**.
- It ensures fairness and clarity in credit transactions.

💬 *Example:* If you buy a phone on EMI, you agree to pay in rupees later — that's deferred payment.

6️⃣ Easy to Carry and Store

- Money is **light and portable**.
- It is convenient to handle and store compared to goods.

💬 *Example:* You can carry ₹5000 in your wallet easily, but you can't carry rice bags of equal value.

7️⃣ Legal Tender

- Government-recognized money (coins and notes) are **officially accepted** for payments.
- Everyone must accept it in exchange for goods or services.

💬 *Example:* A shopkeeper must accept a ₹20 note as payment — it's a legal tender.

✳️ Q. Explain the concept of Capital Recovery and Loan Amortization.

1️⃣ Meaning of Capital Recovery

- **Capital Recovery** means **getting back the money that was invested** in a project or asset over time.
- When you invest money (capital) in something — like machinery, business, or a house — you recover that investment gradually through **profits, rent, or regular payments**.
- In simple words, it is the **process of earning back the original amount of money you spent (capital)** along with **interest** or **returns**.

💬 **Example:**
If you invest ₹1,00,000 in a business, and it gives ₹25,000 every year for 5 years, you are recovering your capital through these yearly returns.

2️⃣ Meaning of Loan Amortization

- **Loan Amortization** means **repaying a loan through equal, regular payments (EMIs)** over a period of time.
- Each payment includes **two parts**:
    1. **Interest** on the remaining loan amount
    2. **Principal** (the actual amount you borrowed)
- At the start, most of the EMI goes toward **interest**, and later, more goes toward **principal**.
- This process continues until the full loan is paid off.

3️⃣ EMI (Equated Monthly Installment) Formula

$$\text{EMI} = P \times \frac{r(1+r)^n}{(1+r)^n - 1}$$

Where:

- **P** = Principal (loan amount)
- **r** = Monthly interest rate (annual rate ÷ 12)
- **n** = Total number of monthly payments

4️⃣ Example of Loan Amortization

💬 **Example:**
Mr. Ram takes a home loan of ₹25,00,000 at 7% p.a. for 5 years.

Using EMI formula,
EMI = ₹6,09,756 (approx. yearly payment)

Each year, his payment (EMI) remains **same**, but:

- The **interest portion** decreases every year.
- The **principal portion** increases every year.

This is shown in a **Loan Amortization Schedule** (like a loan passbook).

5️⃣ Importance of Capital Recovery & Loan Amortization

- Helps to **plan and manage debt** properly.
- Shows **how much loan is still unpaid** after each EMI.

- Useful for **banks and borrowers** to track payments.
- Ensures the **investment or loan is fully recovered** over time.

✳️ **Q. Discuss the *Rule of Doubling*.**

Meaning:

The **Rule of Doubling** helps to **estimate how many years it will take for your money to double** at a certain rate of interest.
It gives a **quick mental calculation** to understand the effect of **compound interest** without using long formulas.

In simple words —
➡️ *"It tells us how fast money will become double depending on the interest rate."*

Importance:

- It helps investors know **how long their investment will take to grow 2 times**.
- Useful for **financial planning, saving, and comparing investment options**.

Types of Doubling Rules (Based on PPT):

Rule	Formula	Used For	Example
Rule of 72	Years to double = 72 ÷ Interest rate	General / normal interest rates	At 8% → 72 ÷ 8 = **9 years**
Rule of 70	Years to double = 70 ÷ Interest rate	For **low interest or inflation rates**	At 5% → 70 ÷ 5 = **14 years**
Rule of 69	Years to double = 0.35 + (69 ÷ Interest rate)	**Most accurate**, used for continuous compounding	At 6% → 0.35 + (69 ÷ 6) = **11.85 years**

Example (from PPT):

If the interest rate is 10%,
→ By Rule of 72: 72 ÷ 10 = **7.2 years**
So, your investment will **double in about 7 years**.

If the interest rate is 15%,
→ 72 ÷ 15 = **4.8 years**
Your money will double in **less than 5 years**.

When to Use:

- **Rule of 72:** For medium or normal returns (6%–10%).

- **Rule of 70:** For small returns or inflation estimation.
- **Rule of 69:** For higher accuracy in professional financial analysis.