

## ASSIGNMENT

|                    |                                     |
|--------------------|-------------------------------------|
| <b>Course Code</b> | OMC451B                             |
| <b>Course Name</b> | Personal Finance                    |
| <b>Programme</b>   | B. Tech.                            |
| <b>Department</b>  | Computer Science & Engineering      |
| <b>Faculty</b>     | Faculty of Engineering & Technology |

|                            |                                       |
|----------------------------|---------------------------------------|
| <b>Name of the Student</b> | Subhendu Maji                         |
| <b>Reg. No</b>             | 18ETCS002121                          |
| <b>Semester/Year</b>       | 7 <sup>th</sup> semester / 2018 batch |
| <b>Course Leader/s</b>     | N. Suresh                             |

| Declaration Sheet  |                  |                                    |                                 |
|--|------------------|------------------------------------|---------------------------------|
| Student Name   | Subhendu Maji    |                                    |                                 |
| Reg. No  | 18ETCS002121     |                                    |                                 |
| Programme  | B. Tech.         | Semester/Year                      | 7 <sup>th</sup> sem /2018 batch |
| Course Code  | OMC451B          |                                    |                                 |
| Course Title   | Personal Finance |                                    |                                 |
| Course Date  |                  | to                                 |                                 |
| Course Leader  | N. Suresh        |                                    |                                 |
| <p><b>Declaration</b></p> <p>The assignment submitted herewith is a result of my own investigations and that I have conformed to the guidelines against plagiarism as laid out in the Student Handbook. All sections of the text and results, which have been obtained from other sources, are fully referenced. I understand that cheating and plagiarism constitute a breach of university regulations and will be dealt with accordingly.</p> |                  |                                    |                                 |
| Signature of the Student   |                  | Date                               |                                 |
| Submission date stamp<br>(by Examination & Assessment Section)   |                  |                                    |                                 |
| Signature of the Course Leader and date  |                  | Signature of the Reviewer and date |                                 |
|  |                  |                                    |                                 |

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|  |           |
|--|-----------|
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**Assessment (CE + SEE)**

|         |              |                     |               |
|---------|--------------|---------------------|---------------|
| Reg.No. | 18ETCS002121 | Name of the Student | Subhendu Maji |
|---------|--------------|---------------------|---------------|

**Component - 1:**

| Sections                          | Marking Scheme |   | Marks     |           |  |
|-----------------------------------|----------------|---|-----------|-----------|--|
|                                   |                |   | Max Marks |           |  |
| <b>Part-A<br/>(CO1, CO3, CO5)</b> |                | Prepare Personal Budget for the period of five years from 2022-2027 with the details assuming an income increment of 5-10% for each year which should include                                       |           |           |  |
|                                   | A.1            | Plan for Unexpected Expenditure, Fixed Expenses and Variable Expenses   | 5         |           |  |
|                                   | A.2            | Plan for Savings and Investments for retirement   | 5         |           |  |
|                                   | A.3            | Plan for Health and Property Insurance  | 5         |           |  |
|                                   | A.4            | Conclusion of the study with stance and justification   | 3         |           |  |
|                                   |                | Part-A, Max Marks   |           | 18        |  |
| <b>Part-B<br/>(CO2)</b>           |                | Prepare monthly Amortisation schedule for loan assuming rate of interest for  |           |           |  |
|                                   | B.1            | Short term/Medium for 1-6 Years   | 5         |           |  |
|                                   | B.2            | Long term for 10-15 years   | 5         |           |  |
|                                   | B.3            | Conclusion of the study with stance and justification   | 2         |           |  |
|                                   |                | Part-B, Max Marks   |           | 12        |  |
| <b>Part-C<br/>(CO4)</b>           | C.1            | Select two stocks of your choice listed in National stock exchange from different sector and collect previous fiveyear monthly data of share prices of selected stock and corresponding index data. | 6         |           |  |
|                                   | C.2            | Determine Systematic and Unsystematic risks of each stock   | 8         |           |  |
|                                   | C.3            | Determine the Expected return of the stocks using CAPM Model assuming risk free return as 6%.   | 4         |           |  |
|                                   | C.4            | Conclusion of the study with stance and justification   | 2         |           |  |
|                                   |                | Part-C, Max Marks   |           | 20        |  |
|                                   |                | <b>Total Component 1 (CE)</b>   |           | <b>50</b> |  |
|                                   |                |   |           |           |  |

| <b>Component - 2: Examination</b> |                  |                             |                              |
|-----------------------------------|------------------|-----------------------------|------------------------------|
| <b>Examination</b>                | <b>Max Marks</b> | <b>First Examiner Marks</b> | <b>Second Examiner Marks</b> |
| SEE                               | 50               |                             |                              |
| SEE marks reduced to 50 Marks     |                  |                             |                              |

|   |  |  |                      |  |      |  |
|---|--|--|----------------------|--|------|--|
| Component-1 (CE)Total 50  |  |  | Pass                 |  | Fail |  |
| Component-2: SE Examination - 50  |  |  | Pass                 |  | Fail |  |
| Course Marks (Max 100 )   |  |  | Pass                 |  | Fail |  |
| <p><b>IMPORTANT:</b> 1. Component 1 and 2 total marks have to be rounded off to the next higher integer and entered in the above fields.</p> <p>2. A minimum of 40% required for a pass in both components.</p> |  |  |                      |  |      |  |
| Signature of Course Leader  |  |  | Signature of Student |  |      |  |

### **Question No. 1**

Prepare Personal Budget for the period of five years from 2022-2027 with the details assuming an income increment of 5-10% for each year which should include

### **Solution to Question No. 1:**

To create personal budget, we need to follow the following steps:

1. Set your financial goals: example: Pay off car loan.
2. Estimate your income.
3. Budget for unexpected expenses.
4. Budget for fixed expenses.
5. Budget for variable expenses.
6. Record what you spend.
7. Review your spending and saving pattern.

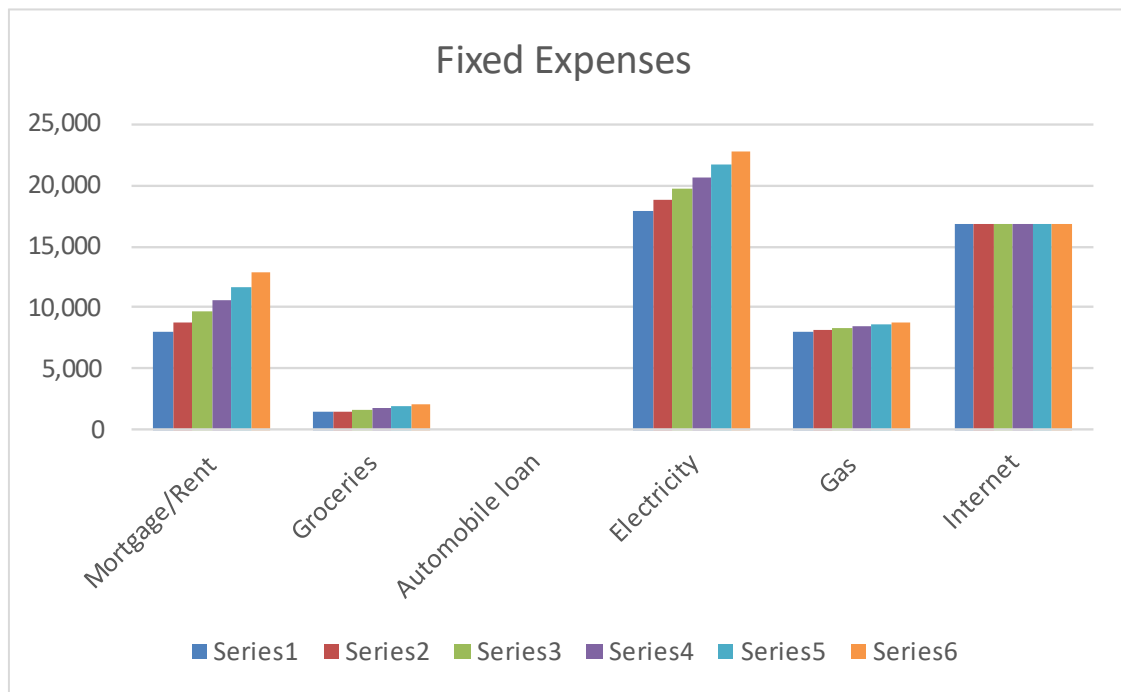
For this personal budget we are using income increment of 5%.



### **A.1 Plan for Unexpected Expenditure, Fixed Expenses and Variable Expenses**

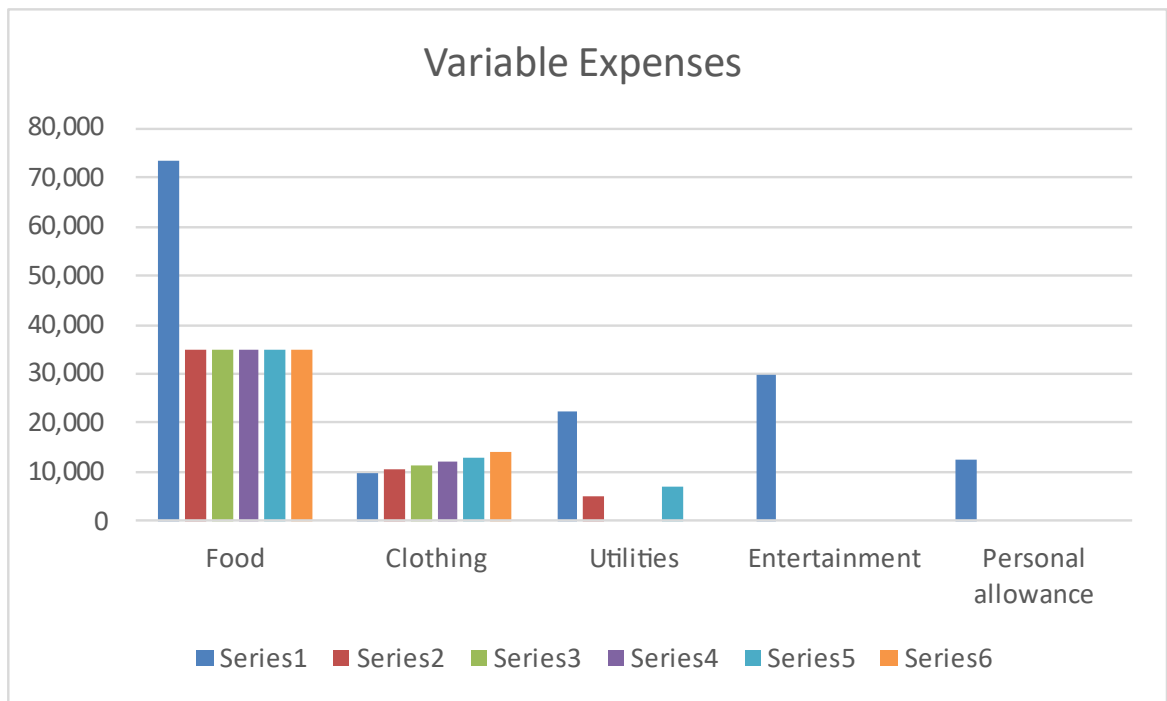
#### **Plan for Fixed expenses:**

These are the expenses you have that don't change month-to-month. Your mortgage or rent, car payment, and insurance are examples of fixed expenses. They may vary slightly from year-to-year (say, a rent increase) but overall, you can count on them to stay the same for at least a year at a time. That's why we have shown



#### Plan for Variable expenses:

Just as the name says, these are your expenses that will vary month-to-month and are probably the largest spending category. Variable expenses include such things as groceries, Food, utilities, entertainment expenses, and clothing. By keeping track of these expenses over time, you can get a better idea of how much you're spending each month and plan accordingly. Utilities can become a fixed expense if your service provider offers an "equalizer" plan. These plans average your usage over time and charge the same each month, rather than spiking during times of increased usage (think summer AC bills in hot climates).

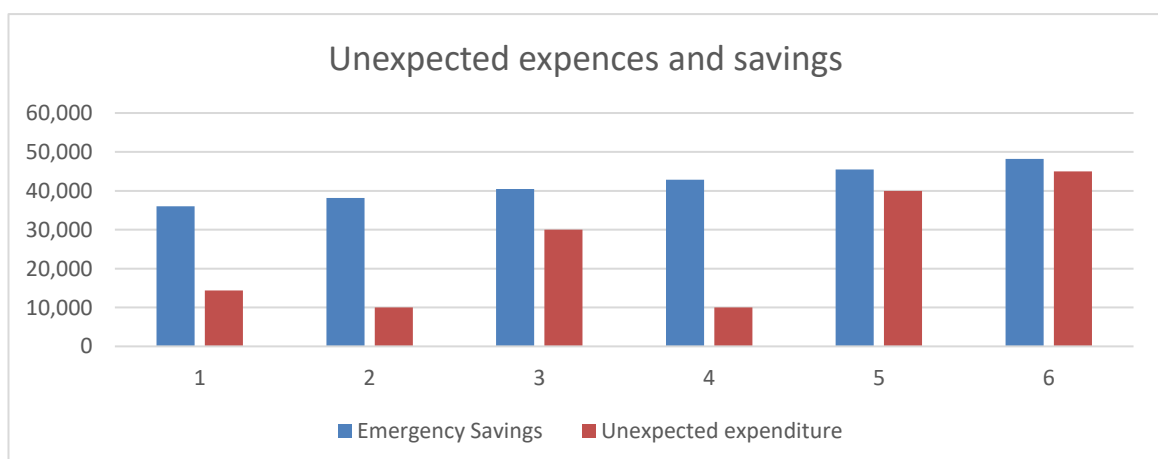


#### Unexpected expenses:

Your emergency fund should be used for expenses that fall outside the categories of annual bills, irregular maintenance, or predictable health costs. Truly unexpected expenses could be:

- Living expenses for several months after you lose your job
- Unusual medical bills that health insurance doesn't cover
- Plane tickets to attend an unexpected funeral

These expenses are not only irregular and unforeseen; they are related to unexpected or once-in-a-lifetime events, rather than more common activities.





### Plan for Unexpected expenses:

When you plan your budget to include annual bills and irregular maintenance, you are able to save the money in your emergency fund for truly unexpected expenses.

At a minimum, you should have an emergency fund that can cover three to six months of:

- Rent or mortgage payments
- Utilities
- Emergency savings
- College savings
- Prescriptions

However, just because you have this amount set aside doesn't mean you should stop saving. If your monthly budget is set up to continue adding a small amount per month into your emergency savings, you will be able to plan and pay for unexpected expenses that come your way without falling into debt or missing important bills.

## **A.2 Plan for Savings and Investments for retirement**

Several retirement plans help in accumulating a considerable sum for your retired life. Some of them are listed below:

### National Pension System

National Pension System (NPS) is a government scheme which intends to provide social security to the working class. Employees working in the public, government, and private sectors can invest in this scheme. Moreover, even those employed in the unorganised sector can also invest in NPS.

Under this scheme, the employees will invest in a pension account at regular intervals.

### Public Provident Fund

Public Provident Fund (PPF) is a government savings scheme covered under Section 80C of the Income Tax Act, 1961. You can save up to Rs 46,800 a year in taxes by investing in PPF. You can invest up to Rs 1,50,000 a year, and these accounts come with a lock-in period of 15 years.

Investing in PPF is an excellent way of planning your retirement as it offers an attractive rate of return.

## Mutual Funds

Mutual funds are one of the best private schemes to plan your retirement. These are capable of offering returns in the range of 12% to 15% a year. Also, when you invest with a long-term horizon, you will unleash the power of compounding. Since retirement planning is done with a long-term horizon, you can initially invest aggressively in equity funds and then switch your investments to debt funds as you near your retirement. Doing this will ensure that you have accumulated a considerable sum on which you can fall back in your retired life.

### **A.3 Plan for Health and Property Insurance**

Health insurance provides financial protection in case you have a serious accident or illness. For example, a broken leg can cost up to \$7,500. Health coverage can help protect you from high, unexpected costs.

With Marketplace coverage, you'll get access to preventive services — like shots and screening tests — at no cost to you. Getting recommended preventive services is a key step to good health and well-being.

When you apply for insurance using the Health Insurance Marketplace, you'll find out if you qualify for savings that can make insurance less expensive. Before you apply, select your household size, state, and income range to see if you may qualify for financial help

|  | January | February | March  | April   | May     | June    | July    | August  | September | October | November | December | Total   | Monthly Average |
|--|---------|----------|--------|---------|---------|---------|---------|---------|-----------|---------|----------|----------|---------|-----------------|
| <b>INCOME</b>                          |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| Salary                                 | 50,000  | 50,000   | 50,000 | 50,000  | 50,000  | 50,000  | 50,000  | 50,000  | 50,000    | 50,000  | 50,000   | 50,000   | 600,000 | 50,000          |
| Other income sources                   | 5,000   | 5,000    | 5,000  | 5,000   | 5,000   | 5,000   | 5,000   | 5,000   | 5,000     | 5,000   | 5,000    | 5,000    | 60,000  | 5,000           |
| <b>Total Income</b>                    | 55,000  | 55,000   | 55,000 | 55,000  | 55,000  | 55,000  | 55,000  | 55,000  | 55,000    | 55,000  | 55,000   | 55,000   | 660,000 | 55,000          |
| <b>Fixed Expenses</b>                  |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| <b>Household Expenses</b>              |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| Mortgage/Rent                          | 8,000   | 8,000    | 8,000  | 8,000   | 8,000   | 8,000   | 8,000   | 8,000   | 8,000     | 8,000   | 8,000    | 8,000    | 96,000  | 8,000           |
| Groceries                              | 1,400   | 1,400    | 1,400  | 1,400   | 1,400   | 1,400   | 1,400   | 1,400   | 1,400     | 1,400   | 1,400    | 1,400    | 16,800  | 1,400           |
| Automobile loan                        |         |          |        |         |         |         |         |         |           |         |          |          | 0       | 0               |
| Electricity                            | 850     | 850      | 850    | 850     | 850     | 850     | 850     | 850     | 850       | 850     | 850      | 850      | 10,200  | 850             |
| Gas                                    | 380     | 380      | 380    | 380     | 380     | 380     | 380     | 380     | 380       | 380     | 380      | 380      | 4,560   | 380             |
| Internet                               | 800     | 800      | 800    | 800     | 800     | 800     | 800     | 800     | 800       | 800     | 800      | 800      | 9,600   | 800             |
| <b>Total Household Expenses</b>        | 11,430  | 11,430   | 11,430 | 11,430  | 11,430  | 11,430  | 11,430  | 11,430  | 11,430    | 11,430  | 11,430   | 11,430   | 137,160 | 11,430          |
| <b>Variable expenses</b>               |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| Food                                   | 3,500   | 3,500    | 3,500  | 3,500   | 3,500   | 3,500   | 3,500   | 3,500   | 3,500     | 3,500   | 3,500    | 3,500    | 42,000  | 3,500           |
| Clothing                               | 1,000   |          | 3,000  | 1,000   |         | 1,000   |         | 1,000   |           |         |          |          | 7,000   | 583             |
| Utilities                              | 2,500   | 2,700    | 2,500  | 2,500   |         |         |         | 2,700   |           | 2,700   |          |          | 15,600  | 1,300           |
| Entertainment                          | 1,420   | 1,420    | 1,420  | 1,420   | 1,420   | 1,420   | 1,420   | 1,420   | 1,420     | 1,420   | 1,420    | 1,420    | 17,040  | 1,420           |
| Personal allowance                     | 600     | 600      | 600    | 600     | 600     | 600     | 600     | 600     | 600       | 600     | 600      | 600      | 7,200   | 600             |
| <b>Total Variable expenses</b>         | 9,020   | 8,220    | 11,020 | 9,020   | 5,520   | 6,520   | 5,520   | 9,220   | 5,520     | 8,220   | 5,520    | 5,520    | 88,840  | 7,403           |
| <b>Insurance</b>                       |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| Health Insurance                       | 500     | 500      | 500    | 500     | 500     | 500     | 500     | 500     | 500       | 500     | 500      | 500      | 6,000   | 500             |
| Preventive Checkup                     | 200     | 200      | 200    | 200     | 200     | 200     | 200     | 200     | 200       | 200     | 200      | 200      | 2,400   | 200             |
| <b>Total Insurance</b>                 | 700     | 700      | 700    | 700     | 700     | 700     | 700     | 700     | 700       | 700     | 700      | 700      | 8,400   | 700             |
| <b>Savings and Investments</b>         |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| Stocks and Mutual Funds                | 2,000   | 2,000    | 2,000  | 2,000   | 2,000   | 2,000   | 2,000   | 2,000   | 2,000     | 2,000   | 2,000    | 2,000    | 24,000  | 2,000           |
| Gold                                   |         |          |        |         |         |         |         |         |           |         |          |          | 0       | 0               |
| <b>Savings and Investments</b>         | 2,000   | 2,000    | 2,000  | 2,000   | 2,000   | 2,000   | 2,000   | 2,000   | 2,000     | 2,000   | 2,000    | 2,000    | 24,000  | 2,000           |
| <b>Unexpected expenses and savings</b> |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| Emergency Savings                      | 3,000   | 3,000    | 3,000  | 3,000   | 3,000   | 3,000   | 3,000   | 3,000   | 3,000     | 3,000   | 3,000    | 3,000    | 36,000  | 3,000           |
| Unexpected expenditure                 | 1,200   | 1,200    | 1,200  | 1,200   | 1,200   | 1,200   | 1,200   | 1,200   | 1,200     | 1,200   | 1,200    | 1,200    | 14,400  | 1,200           |
| <b>Unexpected expenses and savings</b> | 4,200   | 4,200    | 4,200  | 4,200   | 4,200   | 4,200   | 4,200   | 4,200   | 4,200     | 4,200   | 4,200    | 4,200    | 50,400  | 4,200           |
| <b>Total Income</b>                    |         |          |        |         |         |         |         |         |           |         |          |          |         |                 |
| <b>Total Expenditure</b>               | 23,150  | 22,350   | 25,150 | 23,150  | 19,650  | 20,650  | 19,650  | 23,350  | 19,650    | 22,350  | 19,650   | 19,650   | 258,400 | 21,533          |
| <b>Income after expenses</b>           | 31,850  | 32,650   | 29,850 | 31,850  | 35,350  | 34,350  | 35,350  | 31,650  | 35,350    | 32,650  | 35,350   | 35,350   | 401,600 | 33,467          |
| <b>Balance</b>                         | 31,850  | 64,500   | 94,350 | 126,200 | 161,550 | 195,900 | 231,250 | 262,900 | 298,250   | 330,900 | 366,250  | 401,600  |         |                 |

|  | 2,022              | 2,023              | 2,024              | 2,025              | 2,026              | 2,027              | Total              | Average            |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>INCOME</b>                          |                    |                    |                    |                    |                    |                    |                    |                    |
| Salary                                 | 1,050,000          | ₹ 1,102,500        | ₹ 1,157,625        | ₹ 1,215,506        | ₹ 1,276,282        | ₹ 1,340,096        | ₹ 7,142,008        | ₹ 1,190,335        |
| OTHER INCOME SOURCE                    | ₹ 60,000           | ₹ 63,000           | ₹ 66,150           | ₹ 69,458           | ₹ 72,930           | ₹ 76,577           | ₹ 408,115          | ₹ 68,019           |
| <b>Total</b>                           | <b>₹ 1,110,000</b> | <b>₹ 1,165,500</b> | <b>₹ 1,223,775</b> | <b>₹ 1,284,964</b> | <b>₹ 1,349,212</b> | <b>₹ 1,416,673</b> | <b>₹ 7,550,123</b> | <b>₹ 1,258,354</b> |
| <b>Fixed Expenses</b>                  |                    |                    |                    |                    |                    |                    |                    |                    |
| <b>Household Expenses</b>              |                    |                    |                    |                    |                    |                    |                    |                    |
| Mortgage/Rent                          | 8,000              | ₹ 8,800            | ₹ 9,680            | ₹ 10,648           | ₹ 11,713           | ₹ 12,884           | ₹ 61,725           | ₹ 10,287           |
| Groceries                              | 1,400              | ₹ 1,512            | ₹ 1,633            | ₹ 1,764            | ₹ 1,905            | ₹ 2,057            | ₹ 10,270           | ₹ 1,712            |
| Automobile loan                        | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                |
| Electricity                            | 17,850             | ₹ 18,743           | ₹ 19,680           | ₹ 20,664           | ₹ 21,697           | ₹ 22,782           | ₹ 121,414          | ₹ 20,236           |
| Gas                                    | 7,980              | ₹ 8,140            | ₹ 8,302            | ₹ 8,468            | ₹ 8,638            | ₹ 8,811            | ₹ 50,339           | ₹ 8,390            |
| Internet                               | 16,800             | ₹ 16,800           | ₹ 16,800           | ₹ 16,800           | ₹ 16,800           | ₹ 16,800           | ₹ 100,800          | ₹ 16,800           |
| <b>Total</b>                           | <b>₹ 52,030</b>    | <b>₹ 53,994</b>    | <b>₹ 56,095</b>    | <b>₹ 58,344</b>    | <b>₹ 60,752</b>    | <b>₹ 63,333</b>    | <b>₹ 344,548</b>   | <b>₹ 57,425</b>    |
| <b>Variable expenses</b>               |                    |                    |                    |                    |                    |                    |                    |                    |
| Food                                   | 73,500             | ₹ 35,000           | ₹ 35,000           | ₹ 35,000           | ₹ 35,000           | ₹ 35,000           | ₹ 248,500          | ₹ 41,417           |
| Clothing                               | 9,583              | ₹ 10,350           | ₹ 11,178           | ₹ 12,072           | ₹ 13,038           | ₹ 14,081           | ₹ 70,303           | ₹ 11,717           |
| Utilities                              | 22,300             | ₹ 5,000            | ₹ 0                | ₹ 0                | ₹ 7,000            | ₹ 0                | ₹ 34,300           | ₹ 5,717            |
| Entertainment                          | 29,820             | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 29,820           | ₹ 4,970            |
| Personal allowance                     | 12,600             | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 12,600           | ₹ 2,100            |
| <b>Total</b>                           | <b>₹ 147,803</b>   | <b>₹ 50,350</b>    | <b>₹ 46,178</b>    | <b>₹ 47,072</b>    | <b>₹ 55,038</b>    | <b>₹ 49,081</b>    | <b>₹ 395,523</b>   | <b>₹ 65,920</b>    |
| <b>Health Insurance</b>                |                    |                    |                    |                    |                    |                    |                    |                    |
| Health Insurance                       | 10,500             | ₹ 3,600            | ₹ 3,600            | ₹ 3,600            | ₹ 3,600            | ₹ 3,600            | ₹ 28,500           | ₹ 4,750            |
| Preventive Checkup                     | 4,200              | ₹ 4,620            | ₹ 5,082            | ₹ 5,590            | ₹ 6,149            | ₹ 6,764            | ₹ 32,406           | ₹ 5,401            |
| <b>Total</b>                           | <b>₹ 14,700</b>    | <b>₹ 8,220</b>     | <b>₹ 8,682</b>     | <b>₹ 9,190</b>     | <b>₹ 9,749</b>     | <b>₹ 10,364</b>    | <b>₹ 60,906</b>    | <b>₹ 10,151</b>    |
| <b>Savings and Investments</b>         |                    |                    |                    |                    |                    |                    |                    |                    |
| Stocks and Mutual Funds                | ₹ 2,000            | ₹ 2,000            | ₹ 2,000            | ₹ 2,000            | ₹ 2,000            | ₹ 2,000            | ₹ 12,000           | ₹ 2,000            |
| Gold                                   | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                | ₹ 0                |
| <b>Total</b>                           | <b>₹ 2,000</b>     | <b>₹ 2,000</b>     | <b>₹ 2,000</b>     | <b>₹ 2,000</b>     | <b>₹ 2,000</b>     | <b>₹ 2,000</b>     | <b>₹ 12,000</b>    | <b>₹ 2,000</b>     |
| <b>Unexpected expenses and savings</b> |                    |                    |                    |                    |                    |                    |                    |                    |
| Emergency Savings                      | 36,000             | ₹ 38,160           | ₹ 40,450           | ₹ 42,877           | ₹ 45,449           | ₹ 48,176           | ₹ 202,935          | ₹ 33,823           |
| Unexpected expenditure                 | 14,400             | ₹ 10,000           | ₹ 30,000           | ₹ 10,000           | ₹ 40,000           | ₹ 45,000           | ₹ 149,400          | ₹ 24,900           |
| <b>Total</b>                           | <b>₹ 50,400</b>    | <b>₹ 48,160</b>    | <b>₹ 70,450</b>    | <b>₹ 52,877</b>    | <b>₹ 85,449</b>    | <b>₹ 93,176</b>    | <b>₹ 352,335</b>   | <b>₹ 58,723</b>    |
| <b>Savings (Income-Expense)</b>        | <b>₹ 943,867</b>   | <b>₹ 1,099,096</b> | <b>₹ 1,181,270</b> | <b>₹ 1,221,234</b> | <b>₹ 1,307,122</b> | <b>₹ 1,385,070</b> | <b>₹ 7,089,482</b> | <b>₹ 1,181,580</b> |

#### A.4 Conclusion of the study with stance and justification

Importance of building budget:

A budget is a plan for using money to meet wants and needs. Having a budget is necessary for successful financial planning. By using a budget, you will learn how to live within your income and how to spend your money wisely. You will also develop good money management skills that will help you reach your financial goals.

## Question No. 2

Prepare monthly Amortization schedule for loan assuming rate of interest for

### Solution to Question No. 2:

Short-term and long-term loans may refer to the time period in which a loan is paid back. Short term loans are generally to be repaid within a few months or a year or so. Long-term loan repayments can last for a few years up to several years (such as 10-15) years.

Short-term loans are generally associated with a need for quick money in small amounts. Examples of these are cash advance loans and loans derived from peer-to-peer lending. Long-term loans are generally required for larger amounts or for dealing with bigger transactions such as a home purchase loan.

Some loans can either be short term loans or long terms loans, or somewhere in-between. An example of this is with car loans, which can either be for larger amounts or smaller amounts depending on the arrangement.

### **B.1 Short term/Medium for 1-6 Years**

Let us consider short term loan for purchasing a laptop the loan amount that we need is 50,000 rupees with interest rate of 8%. The loan period taken in consideration is 5 years.

|                      |              |                            |                 |                 |                   |                        |
|----------------------|--------------|----------------------------|-----------------|-----------------|-------------------|------------------------|
| <b>Prinipal:</b>     | 50000        | <b>Number of Payments:</b> | 60              |                 |                   |                        |
| <b>Term:</b>         | 5            | <b>Monthly Rate:</b>       | 0.006666667     |                 |                   |                        |
| <b>Annual Rate:</b>  | 8%           | <b>Mortgage Payment:</b>   | \$1,013.82      |                 |                   |                        |
| <b>Initial Date:</b> | 7/1/2021     |                            |                 |                 |                   |                        |
|                      |              |                            |                 |                 |                   |                        |
| <b>Months:</b>       | <b>Date:</b> | <b>Beginning Balance:</b>  | <b>Payment:</b> | <b>Intrest:</b> | <b>Principal:</b> | <b>Ending Balance:</b> |
| 1                    | 7/1/2021     | ₹50,000.00                 | ₹1,013.82       | ₹333.33         | ₹680.49           | ₹49,319.51             |
| 2                    | 8/1/2021     | ₹49,319.51                 | ₹1,013.82       | ₹328.80         | ₹685.02           | ₹48,634.49             |
| 3                    | 9/1/2021     | ₹48,634.49                 | ₹1,013.82       | ₹324.23         | ₹689.59           | ₹47,944.90             |
| 4                    | 10/1/2021    | ₹47,944.90                 | ₹1,013.82       | ₹319.63         | ₹694.19           | ₹47,250.71             |
| 5                    | 11/1/2021    | ₹47,250.71                 | ₹1,013.82       | ₹315.00         | ₹698.81           | ₹46,551.90             |
| 6                    | 12/1/2021    | ₹46,551.90                 | ₹1,013.82       | ₹310.35         | ₹703.47           | ₹45,848.43             |
| 7                    | 1/1/2022     | ₹45,848.43                 | ₹1,013.82       | ₹305.66         | ₹708.16           | ₹45,140.26             |
| 8                    | 2/1/2022     | ₹45,140.26                 | ₹1,013.82       | ₹300.94         | ₹712.88           | ₹44,427.38             |
| 9                    | 3/1/2022     | ₹44,427.38                 | ₹1,013.82       | ₹296.18         | ₹717.64           | ₹43,709.74             |
| 10                   | 4/1/2022     | ₹43,709.74                 | ₹1,013.82       | ₹291.40         | ₹722.42           | ₹42,987.32             |
| 11                   | 5/1/2022     | ₹42,987.32                 | ₹1,013.82       | ₹286.58         | ₹727.24           | ₹42,260.08             |
| 12                   | 6/1/2022     | ₹42,260.08                 | ₹1,013.82       | ₹281.73         | ₹732.09           | ₹41,527.99             |
| 13                   | 7/1/2022     | ₹41,527.99                 | ₹1,013.82       | ₹276.85         | ₹736.97           | ₹40,791.03             |
| 14                   | 8/1/2022     | ₹40,791.03                 | ₹1,013.82       | ₹271.94         | ₹741.88           | ₹40,049.15             |
| 15                   | 9/1/2022     | ₹40,049.15                 | ₹1,013.82       | ₹266.99         | ₹746.83           | ₹39,302.32             |
| 16                   | 10/1/2022    | ₹39,302.32                 | ₹1,013.82       | ₹262.02         | ₹751.80           | ₹38,550.52             |
| 17                   | 11/1/2022    | ₹38,550.52                 | ₹1,013.82       | ₹257.00         | ₹756.82           | ₹37,793.70             |

|    |           |            |            |            |             |            |
|----|-----------|------------|------------|------------|-------------|------------|
| 18 | 12/1/2022 | ₹37,793.70 | ₹1,013.82  | ₹251.96    | ₹761.86     | ₹37,031.84 |
| 19 | 1/1/2023  | ₹37,031.84 | ₹1,013.82  | ₹246.88    | ₹766.94     | ₹36,264.90 |
| 20 | 2/1/2023  | ₹36,264.90 | ₹1,013.82  | ₹241.77    | ₹772.05     | ₹35,492.85 |
| 21 | 3/1/2023  | ₹35,492.85 | ₹1,013.82  | ₹236.62    | ₹777.20     | ₹34,715.65 |
| 22 | 4/1/2023  | ₹34,715.65 | ₹1,013.82  | ₹231.44    | ₹782.38     | ₹33,933.26 |
| 23 | 5/1/2023  | ₹33,933.26 | ₹1,013.82  | ₹226.22    | ₹787.60     | ₹33,145.67 |
| 24 | 6/1/2023  | ₹33,145.67 | ₹1,013.82  | ₹220.97    | ₹792.85     | ₹32,352.82 |
| 25 | 7/1/2023  | ₹32,352.82 | ₹1,013.82  | ₹215.69    | ₹798.13     | ₹31,554.68 |
| 26 | 8/1/2023  | ₹31,554.68 | ₹1,013.82  | ₹210.36    | ₹803.46     | ₹30,751.23 |
| 27 | 9/1/2023  | ₹30,751.23 | ₹1,013.82  | ₹205.01    | ₹808.81     | ₹29,942.42 |
| 28 | 10/1/2023 | ₹29,942.42 | ₹1,013.82  | ₹199.62    | ₹814.20     | ₹29,128.21 |
| 29 | 11/1/2023 | ₹29,128.21 | ₹1,013.82  | ₹194.19    | ₹819.63     | ₹28,308.58 |
| 30 | 12/1/2023 | ₹28,308.58 | ₹1,013.82  | ₹188.72    | ₹825.10     | ₹27,483.49 |
| 31 | 1/1/2024  | ₹27,483.49 | ₹1,013.82  | ₹183.22    | ₹830.60     | ₹26,652.89 |
| 32 | 2/1/2024  | ₹26,652.89 | ₹1,013.82  | ₹177.69    | ₹836.13     | ₹25,816.76 |
| 33 | 3/1/2024  | ₹25,816.76 | ₹1,013.82  | ₹172.11    | ₹841.71     | ₹24,975.05 |
| 34 | 4/1/2024  | ₹24,975.05 | ₹1,013.82  | ₹166.50    | ₹847.32     | ₹24,127.73 |
| 35 | 5/1/2024  | ₹24,127.73 | ₹1,013.82  | ₹160.85    | ₹852.97     | ₹23,274.76 |
| 36 | 6/1/2024  | ₹23,274.76 | ₹1,013.82  | ₹155.17    | ₹858.65     | ₹22,416.11 |
| 37 | 7/1/2024  | ₹22,416.11 | ₹1,013.82  | ₹149.44    | ₹864.38     | ₹21,551.73 |
| 38 | 8/1/2024  | ₹21,551.73 | ₹1,013.82  | ₹143.68    | ₹870.14     | ₹20,681.58 |
| 39 | 9/1/2024  | ₹20,681.58 | ₹1,013.82  | ₹137.88    | ₹875.94     | ₹19,805.64 |
| 40 | 10/1/2024 | ₹19,805.64 | ₹1,013.82  | ₹132.04    | ₹881.78     | ₹18,923.86 |
| 41 | 11/1/2024 | ₹18,923.86 | ₹1,013.82  | ₹126.16    | ₹887.66     | ₹18,036.20 |
| 42 | 12/1/2024 | ₹18,036.20 | ₹1,013.82  | ₹120.24    | ₹893.58     | ₹17,142.62 |
| 43 | 1/1/2025  | ₹17,142.62 | ₹1,013.82  | ₹114.28    | ₹899.54     | ₹16,243.09 |
| 44 | 2/1/2025  | ₹16,243.09 | ₹1,013.82  | ₹108.29    | ₹905.53     | ₹15,337.55 |
| 45 | 3/1/2025  | ₹15,337.55 | ₹1,013.82  | ₹102.25    | ₹911.57     | ₹14,425.98 |
| 46 | 4/1/2025  | ₹14,425.98 | ₹1,013.82  | ₹96.17     | ₹917.65     | ₹13,508.34 |
| 47 | 5/1/2025  | ₹13,508.34 | ₹1,013.82  | ₹90.06     | ₹923.76     | ₹12,584.57 |
| 48 | 6/1/2025  | ₹12,584.57 | ₹1,013.82  | ₹83.90     | ₹929.92     | ₹11,654.65 |
| 49 | 7/1/2025  | ₹11,654.65 | ₹1,013.82  | ₹77.70     | ₹936.12     | ₹10,718.53 |
| 50 | 8/1/2025  | ₹10,718.53 | ₹1,013.82  | ₹71.46     | ₹942.36     | ₹9,776.17  |
| 51 | 9/1/2025  | ₹9,776.17  | ₹1,013.82  | ₹65.17     | ₹948.65     | ₹8,827.52  |
| 52 | 10/1/2025 | ₹8,827.52  | ₹1,013.82  | ₹58.85     | ₹954.97     | ₹7,872.55  |
| 53 | 11/1/2025 | ₹7,872.55  | ₹1,013.82  | ₹52.48     | ₹961.34     | ₹6,911.21  |
| 54 | 12/1/2025 | ₹6,911.21  | ₹1,013.82  | ₹46.07     | ₹967.74     | ₹5,943.47  |
| 55 | 1/1/2026  | ₹5,943.47  | ₹1,013.82  | ₹39.62     | ₹974.20     | ₹4,969.27  |
| 56 | 2/1/2026  | ₹4,969.27  | ₹1,013.82  | ₹33.13     | ₹980.69     | ₹3,988.58  |
| 57 | 3/1/2026  | ₹3,988.58  | ₹1,013.82  | ₹26.59     | ₹987.23     | ₹3,001.35  |
| 58 | 4/1/2026  | ₹3,001.35  | ₹1,013.82  | ₹20.01     | ₹993.81     | ₹2,007.54  |
| 59 | 5/1/2026  | ₹2,007.54  | ₹1,013.82  | ₹13.38     | ₹1,000.44   | ₹1,007.11  |
| 60 | 6/1/2026  | ₹1,007.11  | ₹1,013.82  | ₹6.71      | ₹1,007.11   | ₹0.00      |
|    |           |            | ₹60,829.18 | ₹10,829.18 | ₹500,000.00 |            |

## B.2 Long term for 10-15 years

For long term loan we are considering long term loan to purchase my house. To buy a house we are taking loan of 10 lakhs with interest rate of 10%.

|                      |               |                            |                 |                 |                   |                        |
|----------------------|---------------|----------------------------|-----------------|-----------------|-------------------|------------------------|
| <b>Principal:</b>    | ₹1,000,000.00 | <b>Number of Payments:</b> | 120             |                 |                   |                        |
| <b>Term:</b>         | 10            | <b>Monthly Rate:</b>       | 0.008333333     |                 |                   |                        |
| <b>Annual Rate:</b>  | 10%           | <b>Mortgage Payment:</b>   | ₹13,215.07      |                 |                   |                        |
| <b>Initial Date:</b> | 7/1/2021      |                            |                 |                 |                   |                        |
|                      |               |                            |                 |                 |                   |                        |
| <b>Months:</b>       | <b>Date:</b>  | <b>Beginning Balance:</b>  | <b>Payment:</b> | <b>Intrest:</b> | <b>Principal:</b> | <b>Ending Balance:</b> |
| 1                    | 7/1/2021      | ₹1,000,000.00              | ₹13,215.07      | ₹8,333.33       | ₹4,881.74         | ₹995,118.26            |
| 2                    | 8/1/2021      | ₹995,118.26                | ₹13,215.07      | ₹8,292.65       | ₹4,922.42         | ₹990,195.84            |
| 3                    | 9/1/2021      | ₹990,195.84                | ₹13,215.07      | ₹8,251.63       | ₹4,963.44         | ₹985,232.40            |
| 4                    | 10/1/2021     | ₹985,232.40                | ₹13,215.07      | ₹8,210.27       | ₹5,004.80         | ₹980,227.59            |
| 5                    | 11/1/2021     | ₹980,227.59                | ₹13,215.07      | ₹8,168.56       | ₹5,046.51         | ₹975,181.08            |
| 6                    | 12/1/2021     | ₹975,181.08                | ₹13,215.07      | ₹8,126.51       | ₹5,088.56         | ₹970,092.52            |
| 7                    | 1/1/2022      | ₹970,092.52                | ₹13,215.07      | ₹8,084.10       | ₹5,130.97         | ₹964,961.55            |
| 8                    | 2/1/2022      | ₹964,961.55                | ₹13,215.07      | ₹8,041.35       | ₹5,173.73         | ₹959,787.82            |
| 9                    | 3/1/2022      | ₹959,787.82                | ₹13,215.07      | ₹7,998.23       | ₹5,216.84         | ₹954,570.98            |
| 10                   | 4/1/2022      | ₹954,570.98                | ₹13,215.07      | ₹7,954.76       | ₹5,260.32         | ₹949,310.66            |
| 11                   | 5/1/2022      | ₹949,310.66                | ₹13,215.07      | ₹7,910.92       | ₹5,304.15         | ₹944,006.51            |
| 12                   | 6/1/2022      | ₹944,006.51                | ₹13,215.07      | ₹7,866.72       | ₹5,348.35         | ₹938,658.16            |
| 13                   | 7/1/2022      | ₹938,658.16                | ₹13,215.07      | ₹7,822.15       | ₹5,392.92         | ₹933,265.24            |
| 14                   | 8/1/2022      | ₹933,265.24                | ₹13,215.07      | ₹7,777.21       | ₹5,437.86         | ₹927,827.37            |
| 15                   | 9/1/2022      | ₹927,827.37                | ₹13,215.07      | ₹7,731.89       | ₹5,483.18         | ₹922,344.19            |
| 16                   | 10/1/2022     | ₹922,344.19                | ₹13,215.07      | ₹7,686.20       | ₹5,528.87         | ₹916,815.32            |
| 17                   | 11/1/2022     | ₹916,815.32                | ₹13,215.07      | ₹7,640.13       | ₹5,574.95         | ₹911,240.38            |
| 18                   | 12/1/2022     | ₹911,240.38                | ₹13,215.07      | ₹7,593.67       | ₹5,621.40         | ₹905,618.97            |
| 19                   | 1/1/2023      | ₹905,618.97                | ₹13,215.07      | ₹7,546.82       | ₹5,668.25         | ₹899,950.72            |
| 20                   | 2/1/2023      | ₹899,950.72                | ₹13,215.07      | ₹7,499.59       | ₹5,715.48         | ₹894,235.24            |
| 21                   | 3/1/2023      | ₹894,235.24                | ₹13,215.07      | ₹7,451.96       | ₹5,763.11         | ₹888,472.13            |
| 22                   | 4/1/2023      | ₹888,472.13                | ₹13,215.07      | ₹7,403.93       | ₹5,811.14         | ₹882,660.99            |
| 23                   | 5/1/2023      | ₹882,660.99                | ₹13,215.07      | ₹7,355.51       | ₹5,859.57         | ₹876,801.42            |
| 24                   | 6/1/2023      | ₹876,801.42                | ₹13,215.07      | ₹7,306.68       | ₹5,908.40         | ₹870,893.03            |
| 25                   | 7/1/2023      | ₹870,893.03                | ₹13,215.07      | ₹7,257.44       | ₹5,957.63         | ₹864,935.39            |
| 26                   | 8/1/2023      | ₹864,935.39                | ₹13,215.07      | ₹7,207.79       | ₹6,007.28         | ₹858,928.12            |
| 27                   | 9/1/2023      | ₹858,928.12                | ₹13,215.07      | ₹7,157.73       | ₹6,057.34         | ₹852,870.78            |
| 28                   | 10/1/2023     | ₹852,870.78                | ₹13,215.07      | ₹7,107.26       | ₹6,107.82         | ₹846,762.96            |
| 29                   | 11/1/2023     | ₹846,762.96                | ₹13,215.07      | ₹7,056.36       | ₹6,158.72         | ₹840,604.24            |
| 30                   | 12/1/2023     | ₹840,604.24                | ₹13,215.07      | ₹7,005.04       | ₹6,210.04         | ₹834,394.20            |
| 31                   | 1/1/2024      | ₹834,394.20                | ₹13,215.07      | ₹6,953.29       | ₹6,261.79         | ₹828,132.42            |
| 32                   | 2/1/2024      | ₹828,132.42                | ₹13,215.07      | ₹6,901.10       | ₹6,313.97         | ₹821,818.45            |
| 33                   | 3/1/2024      | ₹821,818.45                | ₹13,215.07      | ₹6,848.49       | ₹6,366.59         | ₹815,451.86            |
| 34                   | 4/1/2024      | ₹815,451.86                | ₹13,215.07      | ₹6,795.43       | ₹6,419.64         | ₹809,032.22            |
| 35                   | 5/1/2024      | ₹809,032.22                | ₹13,215.07      | ₹6,741.94       | ₹6,473.14         | ₹802,559.08            |

|    |           |             |            |           |           |             |
|----|-----------|-------------|------------|-----------|-----------|-------------|
| 36 | 6/1/2024  | ₹802,559.08 | ₹13,215.07 | ₹6,687.99 | ₹6,527.08 | ₹796,032.00 |
| 37 | 7/1/2024  | ₹796,032.00 | ₹13,215.07 | ₹6,633.60 | ₹6,581.47 | ₹789,450.52 |
| 38 | 8/1/2024  | ₹789,450.52 | ₹13,215.07 | ₹6,578.75 | ₹6,636.32 | ₹782,814.20 |
| 39 | 9/1/2024  | ₹782,814.20 | ₹13,215.07 | ₹6,523.45 | ₹6,691.62 | ₹776,122.58 |
| 40 | 10/1/2024 | ₹776,122.58 | ₹13,215.07 | ₹6,467.69 | ₹6,747.39 | ₹769,375.20 |
| 41 | 11/1/2024 | ₹769,375.20 | ₹13,215.07 | ₹6,411.46 | ₹6,803.61 | ₹762,571.58 |
| 42 | 12/1/2024 | ₹762,571.58 | ₹13,215.07 | ₹6,354.76 | ₹6,860.31 | ₹755,711.27 |
| 43 | 1/1/2025  | ₹755,711.27 | ₹13,215.07 | ₹6,297.59 | ₹6,917.48 | ₹748,793.79 |
| 44 | 2/1/2025  | ₹748,793.79 | ₹13,215.07 | ₹6,239.95 | ₹6,975.13 | ₹741,818.67 |
| 45 | 3/1/2025  | ₹741,818.67 | ₹13,215.07 | ₹6,181.82 | ₹7,033.25 | ₹734,785.42 |
| 46 | 4/1/2025  | ₹734,785.42 | ₹13,215.07 | ₹6,123.21 | ₹7,091.86 | ₹727,693.55 |
| 47 | 5/1/2025  | ₹727,693.55 | ₹13,215.07 | ₹6,064.11 | ₹7,150.96 | ₹720,542.59 |
| 48 | 6/1/2025  | ₹720,542.59 | ₹13,215.07 | ₹6,004.52 | ₹7,210.55 | ₹713,332.04 |
| 49 | 7/1/2025  | ₹713,332.04 | ₹13,215.07 | ₹5,944.43 | ₹7,270.64 | ₹706,061.40 |
| 50 | 8/1/2025  | ₹706,061.40 | ₹13,215.07 | ₹5,883.85 | ₹7,331.23 | ₹698,730.17 |
| 51 | 9/1/2025  | ₹698,730.17 | ₹13,215.07 | ₹5,822.75 | ₹7,392.32 | ₹691,337.85 |
| 52 | 10/1/2025 | ₹691,337.85 | ₹13,215.07 | ₹5,761.15 | ₹7,453.92 | ₹683,883.93 |
| 53 | 11/1/2025 | ₹683,883.93 | ₹13,215.07 | ₹5,699.03 | ₹7,516.04 | ₹676,367.89 |
| 54 | 12/1/2025 | ₹676,367.89 | ₹13,215.07 | ₹5,636.40 | ₹7,578.67 | ₹668,789.21 |
| 55 | 1/1/2026  | ₹668,789.21 | ₹13,215.07 | ₹5,573.24 | ₹7,641.83 | ₹661,147.38 |
| 56 | 2/1/2026  | ₹661,147.38 | ₹13,215.07 | ₹5,509.56 | ₹7,705.51 | ₹653,441.87 |
| 57 | 3/1/2026  | ₹653,441.87 | ₹13,215.07 | ₹5,445.35 | ₹7,769.72 | ₹645,672.14 |
| 58 | 4/1/2026  | ₹645,672.14 | ₹13,215.07 | ₹5,380.60 | ₹7,834.47 | ₹637,837.67 |
| 59 | 5/1/2026  | ₹637,837.67 | ₹13,215.07 | ₹5,315.31 | ₹7,899.76 | ₹629,937.91 |
| 60 | 6/1/2026  | ₹629,937.91 | ₹13,215.07 | ₹5,249.48 | ₹7,965.59 | ₹621,972.32 |
| 61 | 7/1/2026  | ₹621,972.32 | ₹13,215.07 | ₹5,183.10 | ₹8,031.97 | ₹613,940.35 |
| 62 | 8/1/2026  | ₹613,940.35 | ₹13,215.07 | ₹5,116.17 | ₹8,098.90 | ₹605,841.44 |
| 63 | 9/1/2026  | ₹605,841.44 | ₹13,215.07 | ₹5,048.68 | ₹8,166.39 | ₹597,675.05 |
| 64 | 10/1/2026 | ₹597,675.05 | ₹13,215.07 | ₹4,980.63 | ₹8,234.45 | ₹589,440.60 |
| 65 | 11/1/2026 | ₹589,440.60 | ₹13,215.07 | ₹4,912.01 | ₹8,303.07 | ₹581,137.53 |
| 66 | 12/1/2026 | ₹581,137.53 | ₹13,215.07 | ₹4,842.81 | ₹8,372.26 | ₹572,765.27 |
| 67 | 1/1/2027  | ₹572,765.27 | ₹13,215.07 | ₹4,773.04 | ₹8,442.03 | ₹564,323.24 |
| 68 | 2/1/2027  | ₹564,323.24 | ₹13,215.07 | ₹4,702.69 | ₹8,512.38 | ₹555,810.86 |
| 69 | 3/1/2027  | ₹555,810.86 | ₹13,215.07 | ₹4,631.76 | ₹8,583.32 | ₹547,227.55 |
| 70 | 4/1/2027  | ₹547,227.55 | ₹13,215.07 | ₹4,560.23 | ₹8,654.84 | ₹538,572.70 |
| 71 | 5/1/2027  | ₹538,572.70 | ₹13,215.07 | ₹4,488.11 | ₹8,726.97 | ₹529,845.73 |
| 72 | 6/1/2027  | ₹529,845.73 | ₹13,215.07 | ₹4,415.38 | ₹8,799.69 | ₹521,046.04 |
| 73 | 7/1/2027  | ₹521,046.04 | ₹13,215.07 | ₹4,342.05 | ₹8,873.02 | ₹512,173.02 |
| 74 | 8/1/2027  | ₹512,173.02 | ₹13,215.07 | ₹4,268.11 | ₹8,946.97 | ₹503,226.05 |
| 75 | 9/1/2027  | ₹503,226.05 | ₹13,215.07 | ₹4,193.55 | ₹9,021.52 | ₹494,204.53 |
| 76 | 10/1/2027 | ₹494,204.53 | ₹13,215.07 | ₹4,118.37 | ₹9,096.70 | ₹485,107.83 |
| 77 | 11/1/2027 | ₹485,107.83 | ₹13,215.07 | ₹4,042.57 | ₹9,172.51 | ₹475,935.32 |
| 78 | 12/1/2027 | ₹475,935.32 | ₹13,215.07 | ₹3,966.13 | ₹9,248.95 | ₹466,686.37 |



|     |           |             |               |             |               |             |
|-----|-----------|-------------|---------------|-------------|---------------|-------------|
| 79  | 1/1/2028  | ₹466,686.37 | ₹13,215.07    | ₹3,889.05   | ₹9,326.02     | ₹457,360.35 |
| 80  | 2/1/2028  | ₹457,360.35 | ₹13,215.07    | ₹3,811.34   | ₹9,403.74     | ₹447,956.61 |
| 81  | 3/1/2028  | ₹447,956.61 | ₹13,215.07    | ₹3,732.97   | ₹9,482.10     | ₹438,474.51 |
| 82  | 4/1/2028  | ₹438,474.51 | ₹13,215.07    | ₹3,653.95   | ₹9,561.12     | ₹428,913.39 |
| 83  | 5/1/2028  | ₹428,913.39 | ₹13,215.07    | ₹3,574.28   | ₹9,640.80     | ₹419,272.60 |
| 84  | 6/1/2028  | ₹419,272.60 | ₹13,215.07    | ₹3,493.94   | ₹9,721.14     | ₹409,551.46 |
| 85  | 7/1/2028  | ₹409,551.46 | ₹13,215.07    | ₹3,412.93   | ₹9,802.14     | ₹399,749.32 |
| 86  | 8/1/2028  | ₹399,749.32 | ₹13,215.07    | ₹3,331.24   | ₹9,883.83     | ₹389,865.49 |
| 87  | 9/1/2028  | ₹389,865.49 | ₹13,215.07    | ₹3,248.88   | ₹9,966.19     | ₹379,899.29 |
| 88  | 10/1/2028 | ₹379,899.29 | ₹13,215.07    | ₹3,165.83   | ₹10,049.25    | ₹369,850.05 |
| 89  | 11/1/2028 | ₹369,850.05 | ₹13,215.07    | ₹3,082.08   | ₹10,132.99    | ₹359,717.06 |
| 90  | 12/1/2028 | ₹359,717.06 | ₹13,215.07    | ₹2,997.64   | ₹10,217.43    | ₹349,499.63 |
| 91  | 1/1/2029  | ₹349,499.63 | ₹13,215.07    | ₹2,912.50   | ₹10,302.58    | ₹339,197.05 |
| 92  | 2/1/2029  | ₹339,197.05 | ₹13,215.07    | ₹2,826.64   | ₹10,388.43    | ₹328,808.62 |
| 93  | 3/1/2029  | ₹328,808.62 | ₹13,215.07    | ₹2,740.07   | ₹10,475.00    | ₹318,333.62 |
| 94  | 4/1/2029  | ₹318,333.62 | ₹13,215.07    | ₹2,652.78   | ₹10,562.29    | ₹307,771.32 |
| 95  | 5/1/2029  | ₹307,771.32 | ₹13,215.07    | ₹2,564.76   | ₹10,650.31    | ₹297,121.01 |
| 96  | 6/1/2029  | ₹297,121.01 | ₹13,215.07    | ₹2,476.01   | ₹10,739.07    | ₹286,381.94 |
| 97  | 7/1/2029  | ₹286,381.94 | ₹13,215.07    | ₹2,386.52   | ₹10,828.56    | ₹275,553.39 |
| 98  | 8/1/2029  | ₹275,553.39 | ₹13,215.07    | ₹2,296.28   | ₹10,918.80    | ₹264,634.59 |
| 99  | 9/1/2029  | ₹264,634.59 | ₹13,215.07    | ₹2,205.29   | ₹11,009.79    | ₹253,624.81 |
| 100 | 10/1/2029 | ₹253,624.81 | ₹13,215.07    | ₹2,113.54   | ₹11,101.53    | ₹242,523.27 |
| 101 | 11/1/2029 | ₹242,523.27 | ₹13,215.07    | ₹2,021.03   | ₹11,194.05    | ₹231,329.23 |
| 102 | 12/1/2029 | ₹231,329.23 | ₹13,215.07    | ₹1,927.74   | ₹11,287.33    | ₹220,041.89 |
| 103 | 1/1/2030  | ₹220,041.89 | ₹13,215.07    | ₹1,833.68   | ₹11,381.39    | ₹208,660.50 |
| 104 | 2/1/2030  | ₹208,660.50 | ₹13,215.07    | ₹1,738.84   | ₹11,476.24    | ₹197,184.27 |
| 105 | 3/1/2030  | ₹197,184.27 | ₹13,215.07    | ₹1,643.20   | ₹11,571.87    | ₹185,612.40 |
| 106 | 4/1/2030  | ₹185,612.40 | ₹13,215.07    | ₹1,546.77   | ₹11,668.30    | ₹173,944.09 |
| 107 | 5/1/2030  | ₹173,944.09 | ₹13,215.07    | ₹1,449.53   | ₹11,765.54    | ₹162,178.55 |
| 108 | 6/1/2030  | ₹162,178.55 | ₹13,215.07    | ₹1,351.49   | ₹11,863.59    | ₹150,314.97 |
| 109 | 7/1/2030  | ₹150,314.97 | ₹13,215.07    | ₹1,252.62   | ₹11,962.45    | ₹138,352.52 |
| 110 | 8/1/2030  | ₹138,352.52 | ₹13,215.07    | ₹1,152.94   | ₹12,062.14    | ₹126,290.38 |
| 111 | 9/1/2030  | ₹126,290.38 | ₹13,215.07    | ₹1,052.42   | ₹12,162.65    | ₹114,127.73 |
| 112 | 10/1/2030 | ₹114,127.73 | ₹13,215.07    | ₹951.06     | ₹12,264.01    | ₹101,863.72 |
| 113 | 11/1/2030 | ₹101,863.72 | ₹13,215.07    | ₹848.86     | ₹12,366.21    | ₹89,497.51  |
| 114 | 12/1/2030 | ₹89,497.51  | ₹13,215.07    | ₹745.81     | ₹12,469.26    | ₹77,028.25  |
| 115 | 1/1/2031  | ₹77,028.25  | ₹13,215.07    | ₹641.90     | ₹12,573.17    | ₹64,455.08  |
| 116 | 2/1/2031  | ₹64,455.08  | ₹13,215.07    | ₹537.13     | ₹12,677.95    | ₹51,777.13  |
| 117 | 3/1/2031  | ₹51,777.13  | ₹13,215.07    | ₹431.48     | ₹12,783.60    | ₹38,993.53  |
| 118 | 4/1/2031  | ₹38,993.53  | ₹13,215.07    | ₹324.95     | ₹12,890.13    | ₹26,103.40  |
| 119 | 5/1/2031  | ₹26,103.40  | ₹13,215.07    | ₹217.53     | ₹12,997.55    | ₹13,105.86  |
| 120 | 6/1/2031  | ₹13,105.86  | ₹13,215.07    | ₹109.22     | ₹13,105.86    | ₹0.00       |
|     |           |             | ₹1,585,808.84 | ₹585,808.84 | ₹1,000,000.00 |             |

### **B.3 Conclusion of the study with stance and justification**

We learned how to make an Amortization table and implemented it to design a schedule for Short term and Long term loans.

As mentioned, one of the main differences between short term and long-term loans is the amount issued. A general rule of thumb is that the higher the loan amount, the longer it will take to repay it (though there may be some exceptions). Another difference is that it may be easier to obtain loan approval for short-term loans. Short-term lenders might not require as stringent background credit checks as long-term lenders. For instance, a mortgage loan might be associated with a very thorough and sometimes demanding risk analysis process before the loan gets approved. In comparison, some short-term loans can almost be obtained on-the-spot. Lastly, short-term loans tend to have higher, less flexible interest rate options. This is to compensate for the fact that the repayment period will be shorter, and to help prevent borrower default

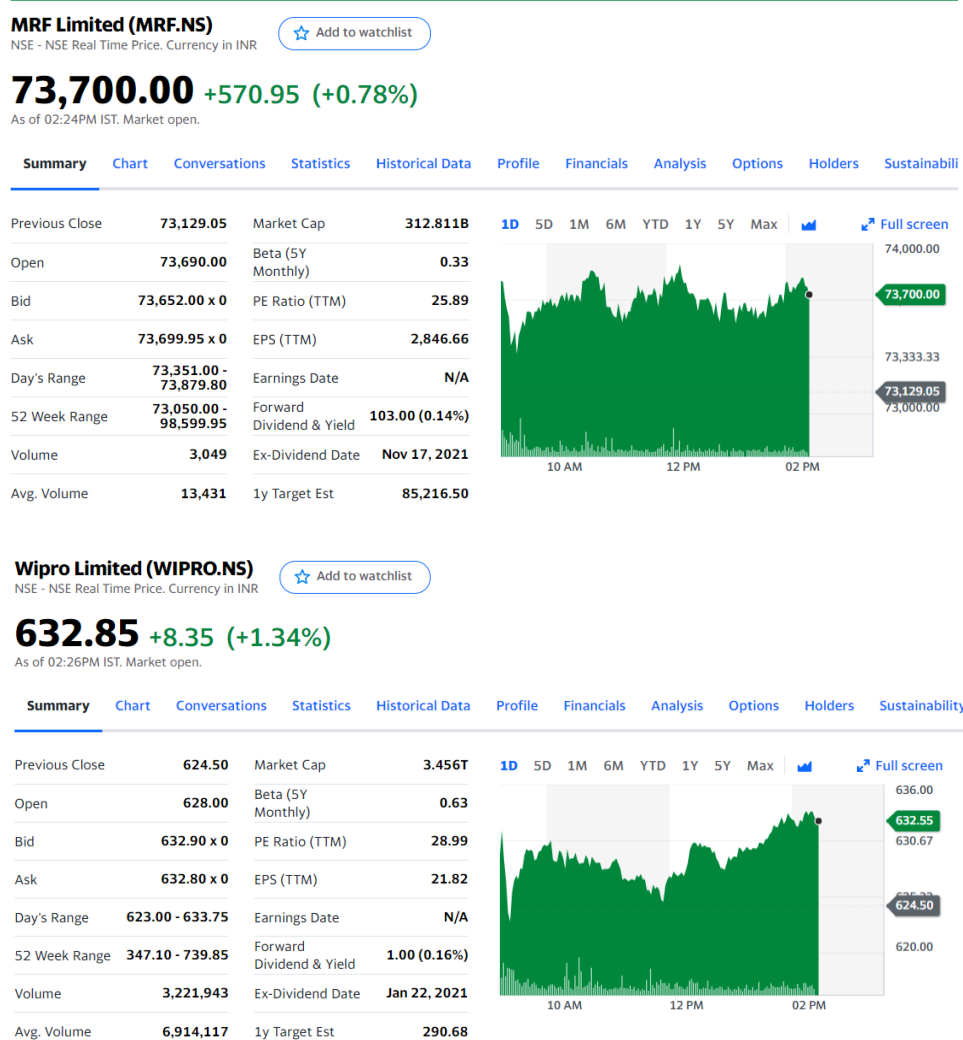
### Question No. 3

Prepare Personal Budget for the period of five years from 2022-2027 with the details assuming an income increment of 5-10% for each year which should include

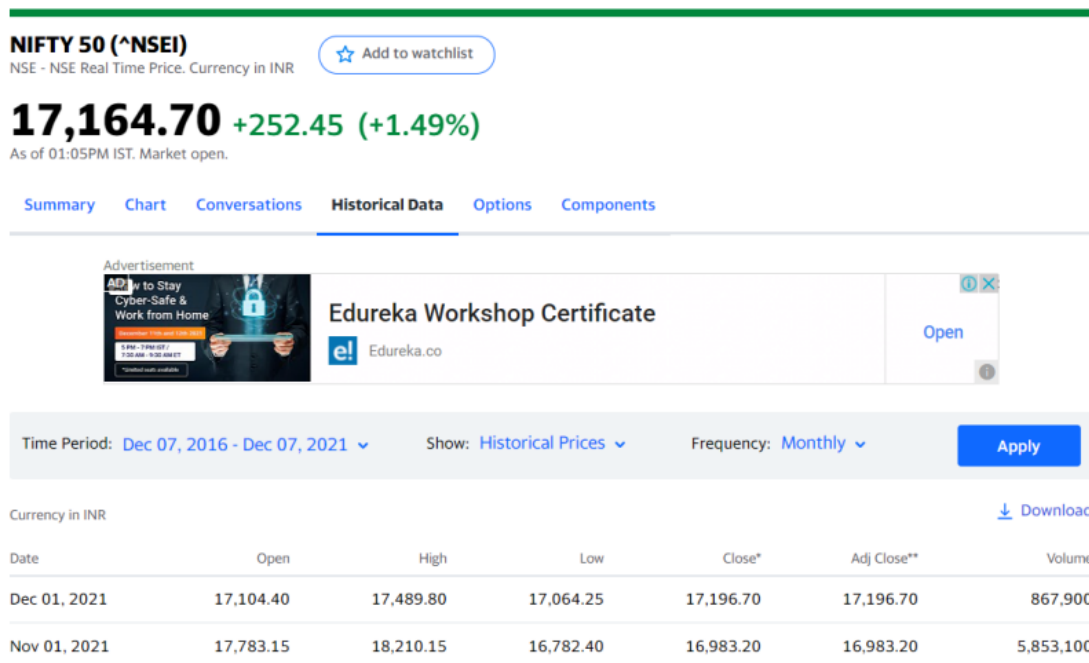
#### Solution to Question No. 3:

**C.1 Select two stocks of your choice listed in National stock exchange from different sector and collect previous five-year monthly data of share prices of selected stock and corresponding index data.**

The two chosen stocks are

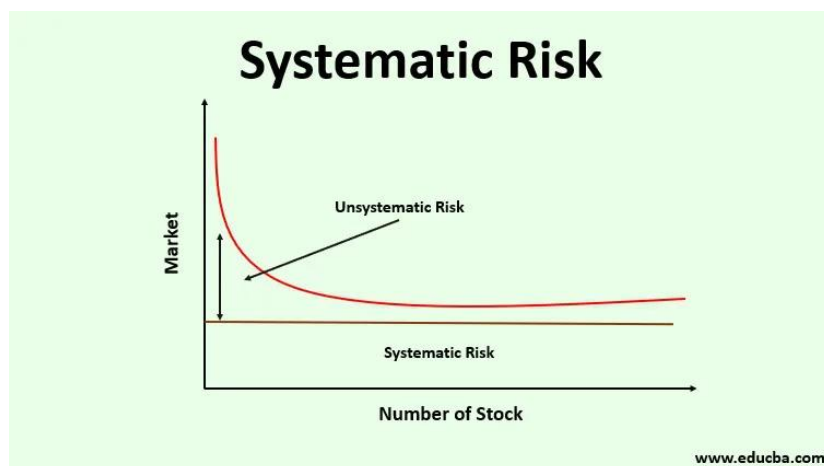


The chosen index is nifty 50



## C.2 Determine Systematic and Unsystematic risks of each stock

Systematic risk refers to the risk inherent to the entire market or market segment. Systematic risk, also known as “undiversifiable risk,” “volatility” or “market risk,” affects the overall market, not just a particular stock or industry. Systematic risk is both unpredictable and impossible to completely avoid. It cannot be mitigated through diversification, only through hedging or by using the correct asset allocation strategy.



The opposite of systematic risk is unsystematic risk which affects a very specific group of securities or an individual security. Unsystematic risk can be mitigated through diversification. While systematic risk can be thought of as the probability of a loss that is associated with the entire

market or a segment thereof, unsystematic risk refers to the probability of a loss within a specific industry or security.

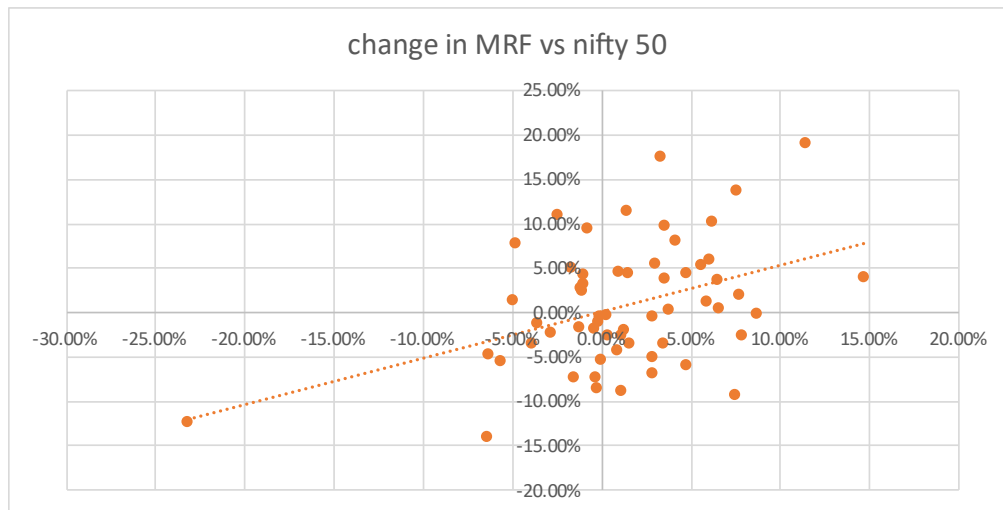
If you want to know how much systematic risk a particular security, fund or portfolio has, you can look at its beta, which measures how volatile that investment is compared to the overall market. A beta of greater than one means the investment has more systematic risk than the market, while less than one means less systematic risk than the market. A beta equal to one means the investment carries the same systematic risk as the market.

| Date      | Nifty 50    | % change nifty | wipro      | % change wipro | MRF         | % change MRF |
|-----------|-------------|----------------|------------|----------------|-------------|--------------|
| 1/1/2017  | 8561.299805 |                | 168.897278 |                | 51361.20313 |              |
| 2/1/2017  | 8879.599609 | 3.72%          | 180.255417 | 6.72%          | 51535.73438 | 0.34%        |
| 3/1/2017  | 9173.75     | 3.31%          | 191.013153 | 5.97%          | 60606.05469 | 17.60%       |
| 4/1/2017  | 9304.049805 | 1.42%          | 183.068161 | -4.16%         | 67521.05469 | 11.41%       |
| 5/1/2017  | 9621.25     | 3.41%          | 198.346985 | 8.35%          | 65184.39453 | -3.46%       |
| 6/1/2017  | 9520.900391 | -1.04%         | 191.383545 | -3.51%         | 67935.375   | 4.22%        |
| 7/1/2017  | 10077.09961 | 5.84%          | 213.681381 | 11.65%         | 68803.23438 | 1.28%        |
| 8/1/2017  | 9917.900391 | -1.58%         | 221.570816 | 3.69%          | 63772.49609 | -7.31%       |
| 9/1/2017  | 9788.599609 | -1.30%         | 207.606873 | -6.30%         | 62693.55859 | -1.69%       |
| 10/1/2017 | 10335.29981 | 5.59%          | 217.829819 | 4.92%          | 66093.80469 | 5.42%        |
| 11/1/2017 | 10226.54981 | -1.05%         | 216.237091 | -0.73%         | 68244.15625 | 3.25%        |
| 12/1/2017 | 10530.7002  | 2.97%          | 232.793808 | 7.66%          | 72002.16406 | 5.51%        |
| 1/1/2018  | 11027.7002  | 4.72%          | 225.719254 | -3.04%         | 67779.28906 | -5.86%       |
| 2/1/2018  | 10492.84961 | -4.85%         | 217.611969 | -3.59%         | 73031.65625 | 7.75%        |
| 3/1/2018  | 10113.7002  | -3.61%         | 208.953568 | -3.98%         | 72160.70313 | -1.19%       |
| 4/1/2018  | 10739.34961 | 6.19%          | 207.169861 | -0.85%         | 79544.8125  | 10.23%       |
| 5/1/2018  | 10736.15039 | -0.03%         | 194.646759 | -6.04%         | 75365.83594 | -5.25%       |
| 6/1/2018  | 10714.29981 | -0.20%         | 194.349487 | -0.15%         | 74609.9375  | -1.00%       |
| 7/1/2018  | 11356.5     | 5.99%          | 205.423325 | 5.70%          | 79103.875   | 6.02%        |
| 8/1/2018  | 11680.5     | 2.85%          | 223.892105 | 8.99%          | 73666.83594 | -6.87%       |
| 9/1/2018  | 10930.4502  | -6.42%         | 240.80014  | 7.55%          | 63375.37109 | -13.97%      |
| 10/1/2018 | 10386.59961 | -4.98%         | 246.15123  | 2.22%          | 64272.21094 | 1.42%        |
| 11/1/2018 | 10876.75    | 4.72%          | 241.283218 | -1.98%         | 67095.76563 | 4.39%        |
| 12/1/2018 | 10862.54981 | -0.13%         | 245.891129 | 1.91%          | 66752.67969 | -0.51%       |
| 1/1/2019  | 10830.9502  | -0.29%         | 274.39325  | 11.59%         | 61076.90234 | -8.50%       |
| 2/1/2019  | 10792.5     | -0.36%         | 274.944458 | 0.20%          | 56642.66797 | -7.26%       |
| 3/1/2019  | 11623.90039 | 7.70%          | 253.206207 | -7.91%         | 57789.36719 | 2.02%        |
| 4/1/2019  | 11748.15039 | 1.07%          | 296.682526 | 17.17%         | 52724.55859 | -8.76%       |
| 5/1/2019  | 11922.79981 | 1.49%          | 284.608521 | -4.07%         | 55076.60938 | 4.46%        |
| 6/1/2019  | 11788.84961 | -1.12%         | 278.745453 | -2.06%         | 56416.51953 | 2.43%        |
| 7/1/2019  | 11118       | -5.69%         | 263.640503 | -5.42%         | 53366.10547 | -5.41%       |
| 8/1/2019  | 11023.25    | -0.85%         | 252.808701 | -4.11%         | 58390.21875 | 9.41%        |
| 9/1/2019  | 11474.4502  | 4.09%          | 238.300049 | -5.74%         | 63139.35547 | 8.13%        |

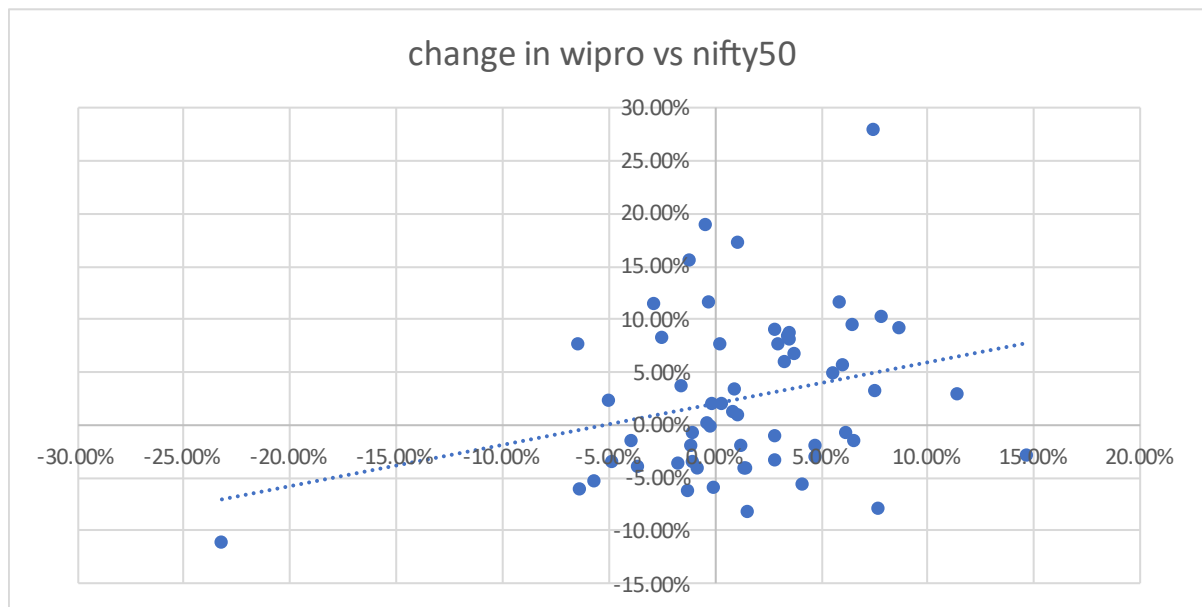
|           |             |         |            |         |             |         |
|-----------|-------------|---------|------------|---------|-------------|---------|
| 10/1/2019 | 11877.4502  | 3.51%   | 257.67804  | 8.13%   | 65515.82031 | 3.76%   |
| 11/1/2019 | 12056.04981 | 1.50%   | 236.213165 | -8.33%  | 63244.59766 | -3.47%  |
| 12/1/2019 | 12168.4502  | 0.93%   | 244.262497 | 3.41%   | 66173.9375  | 4.63%   |
| 1/1/2020  | 11962.09961 | -1.70%  | 235.318802 | -3.66%  | 69510.50781 | 5.04%   |
| 2/1/2020  | 11201.75    | -6.36%  | 220.953247 | -6.10%  | 66236.69531 | -4.71%  |
| 3/1/2020  | 8597.75     | -23.25% | 196.258774 | -11.18% | 58029.78516 | -12.39% |
| 4/1/2020  | 9859.900391 | 14.68%  | 190.521667 | -2.92%  | 60370.55078 | 4.03%   |
| 5/1/2020  | 9580.299805 | -2.84%  | 212.322662 | 11.44%  | 58976.23828 | -2.31%  |
| 6/1/2020  | 10302.09961 | 7.53%   | 219.157288 | 3.22%   | 67118.75    | 13.81%  |
| 7/1/2020  | 11073.4502  | 7.49%   | 280.319794 | 27.91%  | 60907.20703 | -9.25%  |
| 8/1/2020  | 11387.5     | 2.84%   | 270.691406 | -3.43%  | 57853.19531 | -5.01%  |
| 9/1/2020  | 11247.54981 | -1.23%  | 312.846649 | 15.57%  | 59434.27344 | 2.73%   |
| 10/1/2020 | 11642.40039 | 3.51%   | 339.93576  | 8.66%   | 65255.625   | 9.79%   |
| 11/1/2020 | 12968.9502  | 11.39%  | 349.713776 | 2.88%   | 77681.95313 | 19.04%  |
| 12/1/2020 | 13981.75    | 7.81%   | 385.383575 | 10.20%  | 75698.26563 | -2.55%  |
| 1/1/2021  | 13634.59961 | -2.48%  | 416.962585 | 8.19%   | 84011.23438 | 10.98%  |
| 2/1/2021  | 14529.15039 | 6.56%   | 410.299988 | -1.60%  | 84439.9375  | 0.51%   |
| 3/1/2021  | 14690.7002  | 1.11%   | 414.149994 | 0.94%   | 82205.53906 | -2.65%  |
| 4/1/2021  | 14631.09961 | -0.41%  | 492.75     | 18.98%  | 80667.64844 | -1.87%  |
| 5/1/2021  | 15582.79981 | 6.50%   | 539.049988 | 9.40%   | 83586.58594 | 3.62%   |
| 6/1/2021  | 15721.5     | 0.89%   | 545.650024 | 1.22%   | 80027.01563 | -4.26%  |
| 7/1/2021  | 15763.04981 | 0.26%   | 587.150024 | 7.61%   | 79855.08594 | -0.21%  |
| 8/1/2021  | 17132.19922 | 8.69%   | 640.950012 | 9.16%   | 79690.49219 | -0.21%  |
| 9/1/2021  | 17618.15039 | 2.84%   | 634.099976 | -1.07%  | 79372.50781 | -0.40%  |
| 10/1/2021 | 17671.65039 | 0.30%   | 646.75     | 1.99%   | 77305.1875  | -2.60%  |
| 11/1/2021 | 16983.19922 | -3.90%  | 637.25     | -1.47%  | 74627.9375  | -3.46%  |
| 12/1/2021 | 17196.69922 | 1.26%   | 624.5      | -2.00%  | 73129.04688 | -2.01%  |

|  | monthly Nifty | annual Nifty | monthly wipro           | annual wipro | monthly MRF | annual MRF |
|--|---------------|--------------|-------------------------|--------------|-------------|------------|
| mean   | 1.34%         | 16.08%       | 2.51%                   | 30.06%       | 0.83%       | 9.93%      |
| variance   | 0.293%        | 3.52%        | 0.569%                  | 6.83%        | 0.471%      | 5.65%      |
| Beta wipro                                       | 0.389397286   |              |                         |              |             |            |
| beta MRF   | 0.523500991   |              |                         |              |             |            |
| TOTAL RISK = UNSYSTEMATIC RISK + SYSTEMATIC RISK |               |              | risk free rate (rf)= 6% |              |             |            |
| SYSTEMATIC RISK = BETA^2 * VARIANCE OF MARKET    |               |              | RA = RF + (RM-RF)BETA   |              |             |            |
| wipro sys risk =                                 | 0.53%         |              | EXPECTED RETURN wipro   | 6.260%       |             |            |
| wipro unsys risk =                               | 6.29%         |              | EXPECTED RETURN MRF     | 8.415%       |             |            |
| MRF sys risk =                                   | 0.96%         |              |                         |              |             |            |
| MRF unsys risk =                                 | 4.69%         |              |                         |              |             |            |

| MRF SUMMARY OUTPUT    |          |                |          |          |                |           |             |             |
|-----------------------|----------|----------------|----------|----------|----------------|-----------|-------------|-------------|
|                       |          |                |          |          |                |           |             |             |
| Regression Statistics |          |                |          |          |                |           |             |             |
| Multiple R            | 0.412763 |                |          |          |                |           |             |             |
| R Square              | 0.170374 |                |          |          |                |           |             |             |
| Adjusted R            | 0.155819 |                |          |          |                |           |             |             |
| Standard Error        | 0.063069 |                |          |          |                |           |             |             |
| Observations          | 59       |                |          |          |                |           |             |             |
| ANOVA                 |          |                |          |          |                |           |             |             |
|                       | df       | SS             | MS       | F        | Significance F |           |             |             |
| Regression            | 1        | 0.046561       | 0.046561 | 11.70562 | 0.001159       |           |             |             |
| Residual              | 57       | 0.226726       | 0.003978 |          |                |           |             |             |
| Total                 | 58       | 0.273287       |          |          |                |           |             |             |
| Coefficients          |          | Standard Error | t Stat   | P-value  | Lower 95%      | Upper 95% | Lower 95.0% | Upper 95.0% |
| Intercept             | 0.001264 | 0.008463       | 0.149321 | 0.881828 | -0.01568       | 0.01821   | -0.01568    | 0.01821     |
| X Variable            | 0.523501 | 0.15301        | 3.421347 | 0.001159 | 0.217103       | 0.829899  | 0.217103    | 0.829899    |



| Wipro SUMMARY OUTPUT  |          |                |          |          |                |           |             |             |
|-----------------------|----------|----------------|----------|----------|----------------|-----------|-------------|-------------|
|                       |          |                |          |          |                |           |             |             |
| Regression Statistics |          |                |          |          |                |           |             |             |
| Multiple R            | 0.279451 |                |          |          |                |           |             |             |
| R Square              | 0.078093 |                |          |          |                |           |             |             |
| Adjusted R            | 0.061919 |                |          |          |                |           |             |             |
| Standard Error        | 0.073044 |                |          |          |                |           |             |             |
| Observations          | 59       |                |          |          |                |           |             |             |
| ANOVA                 |          |                |          |          |                |           |             |             |
|                       | df       | SS             | MS       | F        | Significance F |           |             |             |
| Regression            | 1        | 0.025762       | 0.025762 | 4.828343 | 0.032075       |           |             |             |
| Residual              | 57       | 0.304123       | 0.005335 |          |                |           |             |             |
| Total                 | 58       | 0.329884       |          |          |                |           |             |             |
| Coefficients          |          | Standard Error | t Stat   | P-value  | Lower 95%      | Upper 95% | Lower 95.0% | Upper 95.0% |
| Intercept             | 0.019834 | 0.009801       | 2.023612 | 0.047708 | 0.000207       | 0.039461  | 0.000207    | 0.039461    |
| X Variable            | 0.389397 | 0.177212       | 2.197349 | 0.032075 | 0.034536       | 0.744259  | 0.034536    | 0.744259    |



### C.3 Determine the Expected return of the stocks using CAPM Model assuming risk free return as 6%.

The Capital Asset Pricing Model (CAPM) describes the relationship between systematic risk and expected return for assets, particularly stocks. CAPM is widely used throughout finance for pricing risky securities and generating expected returns for assets given the risk of those assets and cost of capital.



$$ER_i = R_f + \beta_i(ER_m - R_f)$$

**where:**

$ER_i$  = expected return of investment

$R_f$  = risk-free rate

$\beta_i$  = beta of the investment

$(ER_m - R_f)$  = market risk premium

Investors expect to be compensated for risk and the time value of money. The risk-free rate in the CAPM formula accounts for the time value of money. The other components of the CAPM formula account for the investor taking on additional risk.

The beta of a potential investment is a measure of how much risk the investment will add to a portfolio that looks like the market. If a stock is riskier than the market, it will have a beta greater than one. If a stock has a beta of less than one, the formula assumes it will reduce the risk of a portfolio.

A stock's beta is then multiplied by the market risk premium, which is the return expected from the market above the risk-free rate. The risk-free rate is then added to the product of the stock's beta and the market risk premium. The result should give an investor the required return or discount rate they can use to find the value of an asset.

The goal of the CAPM formula is to evaluate whether a stock is fairly valued when its risk and the time value of money are compared to its expected return.

#### **C.4 Conclusion of the study with stance and justification**

The degree of impact of the systematic risk on the return of the stock with respect to the market returns can be assessed by the magnitude of beta:

- When the  $\beta = 1$  the systematic risk affects the stock returns as much as it affects the market
- When the  $\beta = 0$  the systematic risk does not affect the stock returns but affects the market
- When the  $\beta < 1$  the systematic risk affects the stock returns but less than how much it affects the market

- When the  $\beta > 1$  the systematic risk affects the stock returns but more than how much it affects the market. The solution to systematic risk is in asset allocation. If one market is impacted by a certain systematic risk, some parts of the portfolio should be invested in another market. Now the definition of the market is dynamic, but here we can define it as different asset classes.

Two Stocks were compared for the duration of 5 years and the study revealed the Systematic and unsystematic Risk of each stock. We also calculated the Expected Return of each stock using the CAPM model