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| **Trim: Jan-Mar 2025****Maximum Marks: 50 Examination: ETE Exam Date: 1/4/2025 Duration: 3 Hours** |
| **Programme code: 01****Programme: MBA-Major-Finance** | **Class:** SY | **Semester/Trimester: VI** |
| **College:**  **K. J. Somaiya Institute of Management** | **Name of the department/Section/Center:** Finance and Law |
| **Course Code: 217P01C616**  | **Name of the Course: Project Finance and Appraisal**  |
| **Instructions:** 1. Section I Compulsory Carries 20 Marks.
2. From Sections II and III, **solve any one section** carries 30 marks.
3. Use of scientific and/or financial calculators is allowed.
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| **Question No.** |  |  **Max.****Marks** |
| **SECTION I** |
| 1 | **Case Study**GreenTech Ltd., a renewable energy company, is considering expanding its solar panel manufacturing capacity by setting up a new production plant. The proposed project has a planned operational life of 5 years, and the company’s finance team must estimate the relevant cash flows to determine its financial viability.The project involves complexities such as previous expenses, alternative resource utilization, allocated and additional overheads, varying working capital requirements, and tax implications. The finance team must carefully assess these factors and provide a recommendation based on financial viability.**Project Details:****1. Initial Investment*** The cost of setting up the new plant, including machinery, infrastructure, and installation, is ₹200 crore.
* An initial working capital investment of ₹25 crore is required at the beginning of the project. However, due to fluctuations in raw material prices and inventory cycles, working capital will increase by 6% per year for the first three years, after which it will remain constant.
* At the end of year 5, 60% of the working capital investment will be recovered, while the remaining amount will be written off as bad debts.

**2. Previous Expenses & Resource Utilization:*** GreenTech Ltd. conducted a feasibility study last year and incurred ₹8 crore in expenses.
* The company owns a 3-acre plot of land valued at ₹40 crore. If the project is not pursued, the land could be sold or rented out for ₹6 crore per year.
* The company has an unused warehouse facility on the same land. If the project moves forward, this warehouse will be repurposed at no additional cost. However, renting out instead could generate an annual rental income of ₹3 crore.

**3. Operating Cash Flows:*** Expected annual revenue from solar panel sales: ₹100 crore.
* Annual operating expenses (excluding depreciation): ₹45 crore.
* The company will use a straight-line depreciation method with an annual depreciation expense of ₹25 crore.
* GreenTech Ltd. currently incurs ₹10 crore in company-wide fixed overheads. If the project is approved, ₹4 crore of these overhead costs will be allocated to the new plant, but they will not increase total company-wide expenses.
* Additional Overheads: The new plant will also require hiring new staff and additional security, leading to an extra overhead cost of ₹5 crore per year.
* The corporate tax rate is 30%.

**4. Terminal Cash Flows:*** At the end of 5 years, the plant’s machinery and equipment are expected to have a salvage value of ₹40 crore.
* The working capital investment will be partially recovered, with 60% recaptured and 40% written off as bad debts.

**5. Financing Consideration:*** The project is funded through equity and debt, but financial viability must be assessed based on unlevered cash flows.

**Required Analysis**1. Estimate the relevant incremental cash flows for the project.
2. Evaluate the project’s feasibility by computing NPV at a discount rate of 12%.
3. Provide a final recommendation.
 | 12 |
| 2 | Consider the data given below for a small project. The actual performance is measured at the end of 10 months in terms of % actual completion and actual cost incurred.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activity | Preceding Activity | Normal Time | Normal Cost | Actual Cost | % Actual Completion |
| ABCDEFGHI | ------AAB, C, DCE, FG, H | 445355864 | 120008000500012000150001000016000120004000 | 10000900050001000013000700013000---- | 100%100%100%100%80%60%75%---- |

1. Comment on the performance of the project by finding CPI and SPI.
2. What is EAC for the entire project based on current performance and estimated project duration?
 | **8** |
|  **SECTION II****Solve any Three** |
|  | **Case Study****Cost Estimation and Budgeting at Kenya’s Lakeview**Dr. Elias Mwandu, Deputy Director of the Community Health Initiative in Kenya’s Lakeview Province, was assigned the responsibility of organizing and training five teams of outreach workers for a public health campaign. This initiative aimed to promote awareness and acceptance of a newly developed malaria prevention method. While the outreach workers had prior experience in community health education, they required specialized training on the new intervention. Additionally, two sets of materials needed to be developed: one for training the workers and another for distribution in local communities.To plan the project, Dr. Mwandu gathered his office staff for a strategy meeting. Together, they identified key activities, determined their sequence, and estimated the time required for each task. Their findings were compiled into a preliminary schedule.Amina Otieno, the administrative officer, pointed out that the total estimated timeline amounted to 94 days—far exceeding the 60-day deadline. “This seems impossible,” she noted.“Not necessarily,” Dr. Mwandu replied. “Some of these tasks can run concurrently.”Joseph Karanja, the lead field coordinator, cautioned, “We need to be realistic about our manpower—we have only ten people in this office. We can’t spread ourselves too thin.”Dr. Mwandu nodded in agreement. “I’ll draft a tentative schedule to see if we can manage within the given timeframe. If it turns out to be too tight, I have approval from the HealthReach Foundation to allocate additional funds to speed up the process—but only if I can demonstrate that we’re doing it at the lowest possible cost. Can you help me prove that?”

|  |  |  |  |
| --- | --- | --- | --- |
| Activity | Immediate Predecessor | Time (Days) | Staffing Needs |
| 1. Identify faculty and their schedules
 | --- | 5 | 2 |
| 1. Arrange transport to base
 | --- | 7 | 3 |
| 1. Identify and collect training materials
 | --- | 5 | 2 |
| 1. Arrange accommodation
 | A | 3 | 1 |
| 1. Identify team
 | A | 7 | 4 |
| 1. Bring in team
 | B, E | 2 | 1 |
| 1. Transport faculty to base
 | A, B | 3 | 2 |
| 1. Print program material
 | C | 10 | 6 |
| 1. Have program material delivered
 | H | 7 | 3 |
| 1. Conduct training program
 | D, F, G, I | 15 | 0 |
| 1. Perform fieldwork program
 | J | 30 | 0 |

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| 1. | What is the time length of the critical path? What is the significance of the critical path? (Answer this based on Kenya Lakeview Case) | 10 |
| 2. | At this point, can the project be done, given the personnel constraint of 10 people? Apply activity-based manpower allocation. (Answer this based on Kenya Lakeview Case) | 10 |
| 3. | A small project consists of the following activities. The indirect cost of the project is **₹60000 per unit of time**. Determine the **optimum project duration and cost.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Activities | Preceding  | Crash Cost Per Day | NT | CT |
| A | -- | 20000 | 9 | 6 |
| B | -- | 25000 | 8 | 5 |
| C | -- | 30000 | 15 | 10 |
| D | A | 10000 | 5 | 3 |
| E | B | 15000 | 10 | 6 |
| F | C,D,E | 40000 | 2 | 1 |

 | 10 |
| 4 | An illustration depicts the changes in the trust structure of IndiGrid.Harsh Shah, the CEO of IndiGrid/Sterlite Investment Managers Limited (SIML), and his team worked diligently to review and get the approval of the unitholders for acquiring Patran Transmission Company Limited (PTCL), their first third-party asset, in September 2018. Looking out from the large glass window of his fifth-floor office at North Avenue, Mumbai, with a cup of coffee in his hand, Shah had a satisfying smile on his face. At the beginning of 2019, he was due to discuss and formulate the future plan with Pratik Agarwal, representing the Sponsor of IndiGrid—one of India's two listed Infrastructure Investment Trusts (InvITs). He reflected on the long journey undertaken to give shape to a new securitization vehicle—the InvIT in an emerging market—and the successful initial public offering (IPO) of his InvIT. Although about 18 months had already passed since the units of IndiGrid were listed on the major stock exchanges, Shah knew that it was only the beginning and many changes were still needed to grow the platform and attract many investors.1. Based on the structure presented in the figure above explain the concept of InvITs and the above structure in detail.2. Explain the difference between REITs and InvITs.Source: Agarwalla, S. K., & Pandey, A., (2023). Indigrid: creating india’s first power transmission invit (a). In *Sage Business Cases*. SAGE Publications, Ltd., <https://doi.org/10.4135/9781529619669> | 10 |
| **SECTION III****Solve Any Three** |
| 1 | A company plans to develop a solar power project and needs to structure its debt financing. Discuss the appropriate debt structuring options (Senior, subordinated, and mezzanine debt) available in the following scenarios. Also, analyze the risk factors associated with each case:* Scenario A: The company has an excellent credit rating and is developing the project for commercial purposes, intending to monetize it by selling electricity to Electricity Boards.
* Scenario B: The company has a weaker credit rating, making financing more challenging, but still intends to monetize the project by selling electricity.

Question:1. Compare the suitability of Senior, Mezzanine, and Subordinated Debt in both scenarios.
2. Discuss how credit ratings impact loan availability, interest rates, and lender preferences.
3. Explain the role of risk allocation in structuring debt financing and how it influences lender decisions.

Your response should highlight how financing costs, repayment structures, and risk exposure differ based on the company’s financial strength. | 10 |
| 2. | Write Short Notes (Any Two)* + - 1. Difference between project finance and corporate finance
			2. Difference between IRR and MIRR.
			3. Parties involved in project finance structure.
 | 10 |
| 3. | XYZ Engineering proposes a project with the following details:1. Total Investment: Rs.450 lakhs (Rs.250 lakhs for fixed assets and Rs.200 lakhs for current assets).
2. Financing Structure: Rs.100 lakhs equity, Rs.200 lakhs term loan, Rs.100 lakhs working capital advances, and Rs.50 lakhs trade creditors.
3. Interest Rates: 12% p.a. for the term loan and 15% p.a. for working capital advances.
4. Loan Repayment: A term loan is repayable in five equal installments, starting from the 3rd year of operations. Each installment is paid at the end of the year.
5. Depreciation: 30% on a WDV basis.
6. Production Plan:
	* 1st year: 60% of capacity
	* 2nd year: 70% of capacity
	* 3rd year and beyond: 80% of capacity
7. Revenue and Cost Projections:
	* Full capacity revenue: Rs.500 lakhs per annum
	* Direct costs at full capacity: Rs.20 lakhs
	* Fixed costs: Rs.100 lakhs per annum
	* Working capital advance: Rs.100 lakhs at 80% capacity, adjusted proportionally in the first two years
8. Tax Rate: 50%

Task: Calculate the average Debt Service Coverage Ratio (DSCR) and Interest Coverage Ratio (ICR), then provide insights based on the findings. | 10 |
| 4 | Allied Food Products (AFP) plans to produce a new fruit juice. It has engaged a consultant at fees of Rs.100 million to conduct a market survey to find demand for the juice. The market survey indicated there was enough demand, and the company could sell 100 million one-liter packs yearly. The manufacturing plant would cost Rs.2000 million for full capacity utilization. The economic life of a plant is 5 years. The plant can be depreciated at a written-down depreciation rate of 25%. The company is considering using idle, fully depreciated buildings to set up the manufacturing facility. The current market value of the building is Rs.50 million, and it can be used for five more years. The corporate tax rate is assumed to be 30%.The company expects demand to pick up over the years. It is expected to utilize 70% of capacity for the first year, 80% in the second year, 90% in the third year, and 100% in the fourth and fifth year. The selling price per one-liter pack is expected to be Rs.100. The company has estimated that the variable cost per pack will be Rs.40. The fixed overhead cost per unit is estimated at Rs.60 per pack. The cost of capital will be 18%. The new project will be financed by 50% debt and 50% equity. The other details of the investment are provided as follows:Based on the above information, the net cash flows, NPV, and IRR are estimated as follows:

|  |  |
| --- | --- |
| Year | Cash Flows (Rs. In Million) |
| 012345 | -205011341235134614651935 |
| NPV | Rs.2220 million |
| IRR | 55.87% |

Based on the above case, answer the following questions:1. AFP limited estimated that the following variables may change by +/-10%, +/-20% & +/- 30% with this regards AFP Limited wants to know the sensitivity of NPV to those variables, and the output of the same is given below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Deviation | Investment | SP | VC | FC | COC |
| -30% | 3595 | -3174 | 5792 | 6913 | 4107 |
| -20% | 3580 | -932 | 5045 | 5792 | 3908 |
| -10% | 3566 | 1309 | 4298 | 4672 | 3723 |
| 0% | 3551 | 3551 | 3551 | 3551 | 3551 |
| 10% | 3536 | 5792 | 2804 | 2430 | 3390 |
| 20% | 3521 | 8034 | 2056 | 1309 | 3240 |
| 30% | 3506 | 10275 | 1309 | 189 | 3100 |
| Slope | 1687 | 22415 | 7472 | 11207 | 1913 |
| Ranking | 5 | 1 | 3 | 2 | 4 |

Comment on the above output table.1. AFP limited sensitivity spider web is given in the figure as follow:

Comment on the sensitivity of the spider web. Which variable causes a significant change in NPV?1. Comment on the below calculated NPV BEP:

|  |  |
| --- | --- |
| **NPV BEP**  | **Value** |
| Selling Price | 108.12 per unit |
| Variable Cost | 51.88 per unit |
| Fixed Cost | 71.88 per unit |

1. Based on scenario analysis done under the best-case and worst-case following output, AFP limited extracted:

|  |  |  |
| --- | --- | --- |
| **Scenario** | **Probability** | **NPV** |
| Base | 0.5 | 3551 |
| Worst | 0.25 | -4827 |
| Best | 0.25 | 8614 |
| Expected NPV |  | 2722 |
| Standard Deviation |  | 4824 |
| Coefficient of variation |  | 1.77 |
| Probability of Loss |  | 0.29 |

Comment on the above output1. AFP Limited should accept or reject this project Based on the concepts learned in class and after doing the risk-return analysis.
 | 10 |