

Trim: Jan – Mar 24			
Maximum Marks: 50	Examination: ETE	Exam Date: 13/4/2024	Duration: 3 Hours
Programme code: 11		Class: SY	Semester/Trimester: VI
Programme: MBA-PT (FM)			
College: K. J. Somaiya Institute of Management		Name of the department/Section/Center: Finance and Law	
Course Code: 217P10C607		Name of the Course: Infrastructure and Project Finance	
Instructions: 1. Question number 1 is compulsory. 2. From question number 2 to 5, solve two questions. 3. Except for question number 3, solve all other questions in one workbook. 4. Solve question 3 on the dataset provided. 5. Write the interpretation in a spreadsheet only.			

Question No.		Max. Marks																					
1.	<p>A company is considering which of two mutually exclusive projects it should undertake. The finance director thinks that the project with higher NPV should be chosen, whereas the MD thinks that the one with higher IRR should be undertaken, especially as both projects have the same initial outlay and length of life. The company anticipated a cost of capital of 10%, and the cash flows of the project are as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Projects</th> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>-200</td> <td>35</td> <td>80</td> <td>90</td> <td>75</td> <td>20</td> </tr> <tr> <td>Y</td> <td>-200</td> <td>218</td> <td>10</td> <td>10</td> <td>4</td> <td>3</td> </tr> </tbody> </table> <ol style="list-style-type: none"> 1. Calculate the NPV and IRR of each project. 2. State, with reasons, which project you would recommend. 3. Explain the inconsistency in the ranking of the two projects. 4. What are the disadvantages of IRR criteria? 5. How to resolve the ranking conflict? 6. What is the payback period? Calculate the payback period of both projects. 7. What is BCR? Calculate the BCR of both projects. 	Projects	0	1	2	3	4	5	X	-200	35	80	90	75	20	Y	-200	218	10	10	4	3	10
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2.	<p>Susan Roger needs to coordinate the opening of a new office for her company in the city of Denver. The activity time and relationship for this project, as well as the total budgeted cost for each activity are shown in the following table.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Activity</th> <th>Immediate Predecessors</th> <th>Time (Weeks)</th> <th>Total cost (\$)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>---</td> <td>2</td> <td>2200</td> </tr> <tr> <td>B</td> <td>A</td> <td>3</td> <td>5100</td> </tr> <tr> <td>C</td> <td>A</td> <td>4</td> <td>6000</td> </tr> <tr> <td>D</td> <td>B, C</td> <td>2</td> <td>3600</td> </tr> </tbody> </table>	Activity	Immediate Predecessors	Time (Weeks)	Total cost (\$)	A	---	2	2200	B	A	3	5100	C	A	4	6000	D	B, C	2	3600	20	
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E	C	3	2700
F	D, E	3	1800

- (a) Develop a weekly budget for the project, using the earliest start times.
(b) Develop a weekly budget for this project, using the latest start times.

Susan Roger's project has progressed over the past several weeks and is now the end of week 8. Susan would like to know the project's current status with regard to schedule and budget by developing an appropriate table. Assume that all activities follow their earliest time schedules. The relevant data are shown in the following table.

Activity	% completed	Actual cost (\$)
A	100	1900
B	100	5300
C	100	6150
D	40	1800
E	60	1755
F	0	0

3.

You are given the following particulars in respect of HHT Company:

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Sales price per unit	Rs.15
Quantity sold	900000
Variable cost per unit	Rs.6
Fixed cost	3500000
Depreciation	2000000
Tax rate	25%
Life of project	6 years
Initial investment	12000000
Scrap value	400000
Cost of capital	16.5%
Working capital requirement	1500000

With respect to the details of above investment proposal answer the following questions:

- Before the project started, HHT paid Rs.20000 to one of the marketing agencies to do a preliminary survey to determine the project's feasibility. Where should HHT Company consider Rs.20000 in project cash flow calculation?
- By keeping in mind the rule of project cash flow, HHT Company should not consider interest on loans in project cash flow calculation.
- Previously, the Fixed cost calculated by HHT Company was Rs.4500000, but later on, it was revised to Rs.3500000 due to the reason that Rs.1000000 was attributed to the project, which the company needed to incur even if the company rejected the project. Do you agree that the company should not consider Rs.1000000 in the project cash flow calculation?
- What treatment should we give to the opportunity cost and product cannibalization in project cash flow calculation?
- Perform sensitivity analysis on NPV for the following variables and find out the most sensitive variables:
 - Initial Investment
 - Selling price
 - Variable cost
 - Cost of Capital
 - Fixed cost
 - Sales Volume
- Now perform the sensitivity analysis for the sales price to be between Rs.13 and 17 and for the variable cost to be Rs.5 and Rs.7.
- Calculate the NPV breakeven point for the following variables:
 - Selling price
 - Variable cost
 - Fixed cost
 - Sales volume
- HHT estimated that the project might pass through the worst and best possible scenario as follows:

Input Variables	Base Case	Worst Case	Best Case
Probability	0.4	0.3	0.3
Sales price per unit	15	12	18
Quantity sold	900000	800000	1000000
Variable cost per unit	6	8	4

	<table border="1"> <tr> <td>Fixed cost</td> <td>3500000</td> <td>3700000</td> <td>3300000</td> </tr> <tr> <td>Depreciation</td> <td>2000000</td> <td>2500000</td> <td>1500000</td> </tr> <tr> <td>Tax rate</td> <td>25%</td> <td>30%</td> <td>20%</td> </tr> <tr> <td>Life of project</td> <td>6</td> <td>6</td> <td>6</td> </tr> <tr> <td>Initial investment</td> <td>12000000</td> <td>12500000</td> <td>18000000</td> </tr> <tr> <td>Scrap value</td> <td>400000</td> <td>300000</td> <td>600000</td> </tr> <tr> <td>Cost of capital</td> <td>16.50%</td> <td>18%</td> <td>12%</td> </tr> <tr> <td>Working capital requirement</td> <td>1500000</td> <td>1600000</td> <td>1400000</td> </tr> </table> <p>Calculate expected NPV, standard deviation, and coefficient of variation, and generate a scenario summary sheet.</p>	Fixed cost	3500000	3700000	3300000	Depreciation	2000000	2500000	1500000	Tax rate	25%	30%	20%	Life of project	6	6	6	Initial investment	12000000	12500000	18000000	Scrap value	400000	300000	600000	Cost of capital	16.50%	18%	12%	Working capital requirement	1500000	1600000	1400000	
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4.	Answer any TWO																																	
(A)	Explain various sources of project finance.	10																																
(B)	Explain various structures of PPP.	10																																
(C)	<p>On November 15, 2023, the Department of Energy awarded Telestar a Rs.475000 contract for developing and testing two waste treatment plants. Telestar had spent the last two years developing waste treatment technology under their own R&D activities. This new contract would allow Telestar to “break into a new field”- waste treatment.</p> <p>The contract was negotiated at a firm-fixed price. Any cost overruns would have to be incurred by Telestar. The original bid was priced out at Rs.847000. Telestar’s management, however, wanted to win this one. The decision was made that Telestar would buy in at Rs.475000 so they could at least get their foot into the new marketplace.</p> <p>The original estimate of Rs.847000 was very rough because Telestar did not have any good man-hour standards in the area of waste treatment on which to base their man-hour projections. Corporate management was willing to spend up to Rs.400000 of their own funds to compensate the bid of Rs.475000.</p> <p>By February 15, 2024, costs were increasing to such a point where overruns would be occurring well ahead of schedule. Anticipated costs to completion were now Rs.943000. The project manager decided to stop all activities in certain functional departments. However the Structures Manager strongly opposed the closing out of work order prior to the testing of the first plant’s high-pressure pneumatic and electrical systems.</p> <p><i>Structures manager:</i> “You are running a risk if you close out this work order. How will you know if the hardware can withstand the stresses that will be imposed during the test? After all, the test is schedule for next month and I can probably finish the analysis by then.”</p> <p><i>Project manager:</i> “I understand your concern, but I cannot risk a cost overrun. My boss expected me to do the work within cost. The plant design is similar to one that we have tested before, without any structural problems being detected. On this basis I consider your analysis unnecessary.”</p> <p><i>Structures manager:</i> “Just because two plants are similar does not mean that they will be identical in performance. There can be major structural deficiencies.”</p> <p><i>Project manager:</i> “I guess the risk is mine.”</p> <p><i>Structures manager:</i> “Yes, but I get concerned when a failure can reflect on the integrity of my department. You know, we are performing on schedule and within the time and money budgeted. You are setting a bad example by cutting off our budget without any real justification.”</p> <p><i>Project manager:</i> “I understand your concern, but we must pull out all the stops when overrun costs are inevitable.”</p> <p><i>Structures manager:</i> “There is no question in my mind that this analysis should be completed. However, I am not going to complete it on my overhead budget, I will reassign my people tomorrow. Incidentally, you had better be careful; my people are not very happy to work for a project that can be canceled immediately. I may have trouble getting volunteers next time.”</p> <p><i>Project manager:</i> “Well, I am sure you will be able to adequately handle any future work. I will report to my boss that I have issued a work stoppage order to your department.”</p> <p>During the next month’s test, the plant exploded. Post-analysis indicated that the failure was due to a structural deficiency.</p> <p>Discuss the error in the project.</p>	10																																
5	<p>ABC Chemicals Ltd is an established chemical company engaged in the manufacture of resins & certain special compound chemicals. The company now wants to venture into manufacture of agrochemicals since the Government has come up with special subsidy scheme for the same. In order to take advantage of the scheme & increased market demand of the product, a detailed analysis was carried out to understand feasibility of the project.</p> <p>Following details were derived from the analysis for 5 years:</p> <table border="1"> <thead> <tr> <th>Assets Required</th> <th>Rs. Lakhs</th> </tr> </thead> <tbody> <tr> <td>Land</td> <td>1.91</td> </tr> <tr> <td>Building</td> <td>51.27</td> </tr> <tr> <td>Plant & Machinery</td> <td>346.08</td> </tr> <tr> <td>Current Assets</td> <td>146.19</td> </tr> <tr> <td>Total</td> <td>545.45</td> </tr> </tbody> </table>	Assets Required	Rs. Lakhs	Land	1.91	Building	51.27	Plant & Machinery	346.08	Current Assets	146.19	Total	545.45	20																				
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Means Of Finance	Rs. Lakhs
Promoters Equity	90.00
Public Issue	269.00
Long Term Loan	50.00
Working Capital Loan	106.45
Government Grant	30.00
Total	545.45

(Rs. Lakhs)

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Net Sales	519.00	605.50	692.00	692.00	692.00
Expenses	242.64	241.70	228.88	321.46	299.55
Raw Material	59.34	110.86	173.12	81.85	82.16
Consumable Stores	34.67	40.29	45.78	45.92	69.12
Power & Fuel	4.00	4.40	4.84	5.32	5.85
Admin Expenses	16.19	18.89	21.59	21.59	21.59
S&D Expenses					

Other information given is as follows:

1. Term Loan to be repaid in 5 equal installments at the end of each year & will carry an interest rate of 20% p.a.
2. Current Assets at the end of Year 1 would be Rs.170.29 lakhs. The same at the end of Years 2, 3 & 4 would be same at Rs.194.49 lakhs – the entire current assets would be realized at the end of Year 5
3. The Working Capital Loan at the end of Year 1 would be Rs.124 lakhs. The same at the end of Years 2, 3 & 4 would be Rs.141.60 lakhs
4. Interest on Working Capital Loan is 20% p.a. & will be repaid at the end of Year 5
5. Building & Plant, & Machinery would be depreciated on the Straight Line Method. Net salvage value of the Building would be Rs.25.67 lakhs & that of Plant & Machinery would be Rs.138.73 lakhs at the end of 5 years
6. Land would be sold at book value at the end of Year 5
7. Government Grant received is to be reduced from the value of plant & machinery as per accounting policies at the beginning of the project
8. ABC Ltd would lose revenue of Rs.10 lakhs per year from existing business by investing in the above project
9. Tax rate to be considered is 30%
10. The company has a cost of capital of 15%, whereas Internal Rate of Return of the project is 23.44%

The company has approached you as a consultant to prepare a report on feasibility of the project which should cover the following:

- a) Projected cash flow statement from Long-Term Funds point of view
- b) Following values based on cash flows from a Long-Term Funds point of view
 - Net Present Value
 - Profitability Index
- c) Debt Service Coverage Ratio
- d) Possible Risks associated with the project

Final Recommendation