

### Assignment -2 (Solutions)

The following should be used for questions 1 through 3.

A project manager is relegated to a venture ahead of schedule in the venture lifecycle. Something that must be done is to do a justification for the project. Since very little information is known about the project, the estimates are considered to be rough estimates. The accompanying table is the project manager's gauge of the income that will occur throughout the following five years:

End of Year	Cash Flow In	Cash Flow Out
1	0	500,000
2	300,000	90,000
3	400,000	100,000
4	100,000	175,000
5	50,000	35,000

1. What is the payback period for this project?
  - A. One year
  - B. Two years
  - C. Three years
  - D. Four years

(Ans.: C)

Explanation:

End of Year	Cash Flow In	Cash Flow Out	Net (Yearly)	Net (overall)
1	0	500,000	(500,000)	(500,000)
2	300,000	90,000	210,000	(290,000)
3	400,000	100,000	300,000	10,000
4	100,000	175,000	(75,000)	(65,000)
5	50,000	35,000	15,000	(50,000)

2. What is the net cash flow at the end of five years?
  - A. \$50,000
  - B. -\$50,000
  - C. \$850,000
  - D. \$100,000

(Ans.: B)

Explanation: -\$50,000 (Last cell in 5<sup>th</sup> column)

3. If the net present value for each of the cash flows were calculated at a 10% interest rate, the net present value cash flow at the end of five years would be:
- Greater than the total cash flow without the net present value applied
  - Less than the total cash flow without the net present value applied
  - The same as the total cash flow without the net present value applied
  - Unable to be calculated with the information supplied

(Ans.: B)

Explanation:

$$\begin{aligned}
 NPV &= \left( -\frac{500,000}{(1+0.1)^0} \right) + \left( -\frac{290,000}{(1+0.1)^1} \right) + \left( \frac{10,000}{(1+0.1)^2} \right) + \left( \frac{-65,000}{(1+0.1)^3} \right) + \left( \frac{-50,000}{(1+0.1)^4} \right) \\
 &= -838,358
 \end{aligned}$$

$$\text{Cash flow without NPV} = -500,000 - 290,000 + 10,000 - 65,000 - 50,000 = -895,000$$

4. A project manager is dealing with a venture. The first extension standard of the venture was planned at \$100,000. Since work on the venture began there have been seventeen approved and affirmed changes to the venture. The progressions have an estimation of \$17,000 and the cost of exploring them before their endorsement was \$2,500. What is the present spending plan for the venture?
- \$100,000
  - \$114,500
  - \$117,000
  - \$119,500

(Ans.: D)

Explanation:

Initial Cost: \$100,000

Progressions: \$17,000

Cost of Exploring: \$2500

Total = \$119,500

5. A project manager is dealing with a venture that has achieved the end of planning phase. The work scope has been consented to and conclusive cost gauges have been finished for the venture. The aggregate assessed cost of the venture is \$100,000. It is sensible to expect that the venture won't cost over which of the following value?
- \$100,000
  - \$110,000
  - \$125,000
  - \$175,000

(Ans.: B)

Explanation:

After the estimates, the actual cost should be equal to +/- 10% of the estimated cost. Here, the estimated cost of the project is 100000 dollars. So, B is the correct answer.

6. Your association is thinking about running a venture which will involve a speculation of \$1,000,000. The item from the venture is determined to make incomes of \$250,000 in the primary year after the end of the venture and of \$420,000 in each of the two after years. What is valid for the net present estimation of the venture over the three years cycle at a rebate rate of 10%?
- A. The net present value is positive, which makes the project attractive.
  - B. The net present value is positive, which makes the project unattractive.
  - C. The net present value is negative, which makes the project attractive.
  - D. The net present value is negative, which makes the project unattractive.

(Ans.: D)

Explanation:

We need to calculate PV for 3 years, (create revenues of \$250,000 in the first year after the end of the project and of \$420,000 in each of the two following years)

Use the same formula for each year

for first year take  $FV = 250000$ , So  $PV = 250,000$

for second year  $FV = 420000$ ,  $PV = 420,000/1.1 = 381,818.18$

for 3rd year  $FV = 420000$ ,  $PV = 420,000/(1.1)^2 = 347,107.50$

ADD all 3 years PV - initial investment cost (as there is no future investment/outflows as mentioned in question) makes NPV negative. So, D is the correct answer.

7. In independent projects evaluation, results of internal rate of return and net present value lead to:
- A. Cash flow decision
  - B. Cost decision
  - C. Same decisions
  - D. Different decisions.

(Ans.: C)

Explanation: Internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero. IRR calculations rely on the same formula as NPV does

8. Projects which are mutually exclusive but different on scale of production or time of completion then the:

- A. External return method
- B. Net present value of method
- C. Net future value method
- D. Internal return method

(Ans.: B)

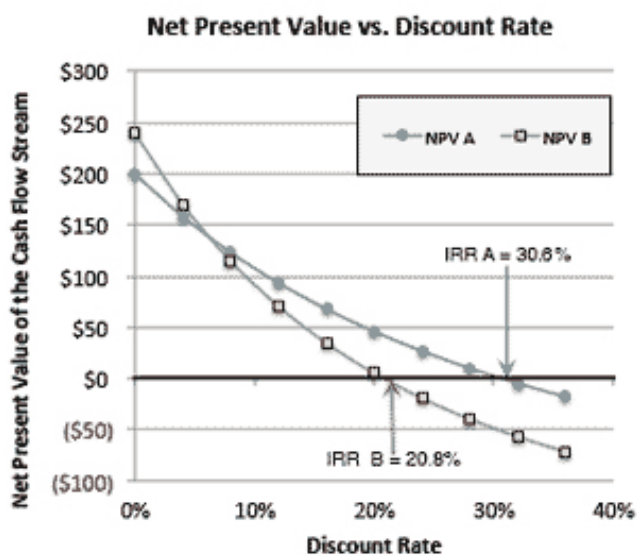
Explanation: Sometimes a firm must choose among mutually exclusive projects in which only one of two or more projects being considered can be selected. In this case, the NPV rule advises picking the project with the highest NPV and provides the best answer.

9. Graph which is plotted for projected net present value and capital rates is called:

- A. net loss profile
- B. net gain profile
- C. net future value profile
- D. net present value profile

(Ans.: D)

Explanation:



10. A point where profile of net present value crosses horizontal axis at plotted graph indicates project:

- A. Costs
- B. Cash flows
- C. Internal rate of return
- D. External rate of return

(Ans.: C)

Explanation: Refer solution of question 09.

11. Windsor Ltd is considering a project, which will involve the following cash inflows and (out) flows:

	Rs. '000
Initial Outlay	(400)
After 1 Year	40
After 2 Years	300
After 3 Years	300

What will be the NPV (net present value) of this project if a discount rate of 15% is used?

- A. +Rs. 60.8k
- B. -Rs. 60.8k
- C. +Rs. 240k
- D. +460.8k

(Ans.: A)

Explanation:  $NPV = (40 \times 0.87) + (300 \times 0.76) + (300 \times 0.66) - 400 = +Rs. 60.8k$

12. Which of the following statements concerning the NPV is not true?

- A. The NPV technique takes account of the time value of money
- B. The NPV of a project is the sum of all the discounted cash flows associated with a project
- C. The NPV technique takes account of all the cash flows associated with a project
- D. If two competing projects are being considered, the one expected to yield the lowest NPV should be selected

(Ans.: D)

Explanation: If two competing projects are being considered, the one expected to yield the HIGHEST NPV should be selected.

13. Kappa Ltd is about to undertake a project and has computed the NPV of the project using a variety of discount rates:

Discount rate used	NPV
10%	Rs. 130K
15%	Rs. 50K
20%	Rs. -50K

What is the approximate IRR of this project?

- A. 20%
- B. 17.5%
- C. 15%

D. 22.5%

(Ans.: B)

Explanation:  $IRR = 15\% + 50/100 \times 5\% = 17.5\%$

14. EFG Ltd is considering two possible projects but can only raise enough funds to proceed with one of them. Investment appraisal techniques have been used and the following results found:

	Project W	Project X
Payback Period	3.8 Years	2.8 Years
Accounting Rate of Return	16%	14%
Net Present Value	Rs. 880,000	Rs. 610,000

Which of the following is the most logical interpretation of the results?

- A. Project W should be selected as it gives the longest payback period
- B. Project W should be selected because it will yield the highest NPV
- C. Project X should be selected because it will yield the lowest NPV
- D. The ARR is the most meaningful investment appraisal technique and hence Project W should be selected.

(Ans.: B)

Explanation: As the NPV technique is the most reliable investment appraisal technique and Project W will yield the highest positive NPV, this project should be selected

15. The accounting rate of return is measured as follows:

- A. Average annual profit expressed as a percentage of the total funds invested in the project
- B. Average annual profit expressed as a percentage of the average funds invested in the project
- C. Total profits expressed as a percentage of the average funds invested in the project
- D. Total profits expressed as a percentage of the total funds invested in the project

(Ans.: B)

Explanation: Average annual profit expressed as a percentage of the average funds invested in the project.

16. XYZ Ltd is thinking about undertaking a venture that would return yearly benefits (after devaluation) of Rs. 68,000 for a long time. The underlying expense of the venture would be Rs. 800,000 and the venture's assets would have a residual value of Rs. 50,000 toward the end of the venture. What might be the accounting rate of return for this venture?

- A. 16%
- B. 8.5%
- C. 8.0%

D. 9.1%

(Ans.: A)

Explanation:  $ARR = \text{average annual profits} / \text{average amount invested in the project} = 68,000 / 425,000 \times 100 = 16\%$ . The average amount invested in the project =  $(\pounds 800,000 + \pounds 50,000) / 2 = \pounds 425,000$

17. Which of the following statements concerning the payback period, is not true?

- A. The payback period is simple to calculate and understand
- B. The payback period measures the time that a project will take to generate enough cash flows to cover the initial investment
- C. The payback period ignores cash flows after the payback point has been reached
- D. It takes account of the time value of money

(Ans.: D)

Explanation: The length of time required for an investment to recover its initial outlay in terms of profits or savings is called the payback period. It DOESNOT take into account time value of money.

18. ABC Ltd is considering undertaking a project, which will involve an initial outlay of Rs.3,00,000. The project has the following cash flows associated with it:

	'000
Year 1 cash inflows	100
Year 2 cash inflows	150
Year 3 cash inflows	200

If a discount rate of 10% is used to calculate the NPV of the project, which of the following statements is correct? (Assume the cash flows arise at the end of each year.)

- A. The project will yield a positive NPV of Rs. 65.5k and have a payback period of 2 years and 3 months
- B. The project will yield a positive NPV of Rs. 65.5k and have a payback period of 2 years and 9 months
- C. The project will yield a positive NPV of Rs. 365.5k and have a payback period of 2 years and 3 months
- D. The project will yield a positive NPV of Rs. 365.5k and have a payback period of 2 years and 9 months

(Ans.: A)

Explanation:  $NPV = (100 \times 0.91) + (150 \times 0.83) + (200 \times 0.75) - 300 = 65.5$ . Payback period = 2 years plus  $(50/200) \times 12$  months = 2 years and 3 months

19. Which of the following statements is true?

- A. Investments that pay back in five years or less should always be accepted
- B. Investments that have a positive net present value should always be accepted
- C. Investments that have a positive net present value should be considered for acceptance
- D. Investments that yield a positive internal rate of return should be accepted

(Ans.: C)

Explanation: When using the payback method it is usual to place a minimum payback period on projects. However, it would be up to the business concerned to decide what the minimum payback period should be. Projects could yield a positive internal rate of return but this must be compared with the company's existing rate of return and the risk of the particular project. Projects that have a positive net present value should be considered for acceptance but the company should consider all factors in the appraisal of a project, not just the final NPV figure.

20. The net present value method and the internal rate of return method will always yield the same decision when:
- A. A single project is evaluated
  - B. Mutually exclusive projects are evaluated
  - C. A limited number of projects must be selected from a large number of opportunities
  - D. All of the above are correct

(Ans.: D)

21. In cases where capital must be rationed, a firm should rank projects according to their:
- A. Net present values
  - B. Internal rates of return
  - C. Profitability indexes
  - D. External rates of return

(Ans.: C)

Explanation: Capital rationing is nothing but capital budgeting with modified rules. Now instead of choosing every project that has an NPV greater than zero, the firm uses a different approach. All projects with a positive NPV qualify for a possible investment. These projects are then ranked according to their attractiveness. The firm then invests in the top3 or top 5 projects (based on their resources). So, here a finite amount of capital is being rationed amongst projects as opposed to an infinite capital assumption. But, how does the firm decide which projects are the most attractive? Simply ranking the projects with higher NPV will be incorrect. This is because we are not paying attention to the input we are putting in. We are simply paying attention to the output which is obviously incorrect. What if a project with a slightly higher NPV requires double the investment as



compared to another project? Is it still a good bet? Obviously not and to solve this problem and ration capital effectively, companies have come up with a metric called the Profitability Index. The profitability index is nothing but the NPV of the project divided by the amount of its investment.

Profitability Index = NPV / Investment

So we are simply looking at the NPV amount per dollar of investment. Projects with highest NPV per dollar of investment are considered more attractive and the investment dollars are first allocated to them so that the returns of the firm are maximized.

22. Assume that the risk-free rate is 5% and that the rate of return on a balanced portfolio of common stocks is 9%. If a firm has a beta coefficient of 2, then its risk premium is:
- A. 18%
  - B. 10%
  - C. 8%
  - D. 4%

(Ans.: C)

Explanation: Risk Premium =  $2 \times (9 - 5) = 2 \times 4 = 8\%$

23. In comparing two investment alternatives, the difference between the net present values of the two alternatives obtained using the total-cost approach will be:
- A. Less than the net present value obtained using the incremental cost approach
  - B. The same as the net present value obtained using the incremental cost approach
  - C. Greater than the net present value obtained using the incremental cost approach
  - D. Indeterminable

(Ans.: B)

Explanation: The net present value in favor of one alternative obtained using the total-cost approach is the same as the net present value obtained using the incremental-cost approach. The total-cost approach simply includes all cash flows associated with each alternative whereas the incremental-cost focuses only on differential costs (that is, those costs and revenues that differ between the two alternatives being considered).

24. Which of the following reasons might result in the NPV and internal rate of return criteria conflicting as to which of two projects (A or B) to support?
- A. The NPV curves for the respective projects (A and B) do not intersect above the horizontal axis

- B. The NPV curves for the respective projects (A and B) do intersect above the horizontal axis
- C. The NPV curves for the respective projects (A and B) do intersect below the horizontal axis
- D. The NPV curves for the respective projects (A and B) do not intersect below the horizontal axis

(Ans.: B)

Explanation: The net present value profile may be used when conflicting rankings of projects exist by depicting each project as a line on the profile and determining the point of intersection. If the intersection occurs at a positive discount rate, any discount rate below the intersection will cause conflicting rankings, whereas any discount rates above the intersection will provide consistent rankings. Conflicts in project rankings using NPV and IRR result from differences in the magnitude and timing of cash flows. Projects with similar-sized investments having low early-year cash inflows tend to be preferred at lower discount rates. At high discount rates, projects with the higher early-year cash inflows are favored, as later-year cash inflows tend to be severely penalized in present value terms.

25. A profitability index (PI) of 0.92 for a project means that \_\_\_\_\_.
- A. The project's costs (cash outlay) are (is) less than the present value of the project's benefits
  - B. The project's NPV is greater than zero
  - C. The project's NPV is greater than 1
  - D. The project returns 92 cents in present value for each current dollar invested (cost)

(Ans.: D)

Explanation: The profitability index is an index that attempts to identify the relationship between the costs and benefits of a proposed project through the use of a ratio calculated as:

Profitability = PV of future cash flows/Investment

A ratio of 1.0 is logically the lowest acceptable measure on the index, as any value lower than 1.0 would indicate that the project's PV is less than the initial investment. As values on the profitability index increase, so does the financial attractiveness of the proposed project.