

CORRECTED VERSION

A1. What is the formula for calculating ARR? (1 mark)

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A2. Give one advantage of the ARR method of investment appraisal. (1 mark)

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A3. What is the formula for NPV? (1 mark)

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A4. What is meant by *causal modelling*? (2 mark)

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A5. Plot the *minimum efficient scale* of a plant. (2 marks)

B. Exercise:

Consider a retail store in New York that buys t-shirts from a manufacturer in Calcutta. The unit cost depends on the amount of t-shirts that the retailer orders:

- if the order is a batch of 100 t-shirts the unit cost will be \$10
- if the order is a batch of 200 t-shirts the unit cost will be \$9
- if the order is a batch of 300 t-shirts the unit cost will be \$8.5

There is uncertainty associated with the demand of t-shirts in New-York. However the retailer expects three possible states:

- in state 1 demand will be $D(1) = 100$ t-shirts
- in state 2 demand will be $D(2) = 150$ t-shirts
- in state 3 demand will be $D(3) = 200$ t-shirts

The market price of one t-shirt in New York is \$12.

If any T- shirt remains unsold during summer, it can be disposed off at half the price in winter. The marketing manager also feels that there is a goodwill loss of 50 cent for each T-shirt that consumers want to purchase from your shop but cannot because of inadequate supplies.

Table : Pay-off Matrix for T-Shirt
Order Problem

Action (Decision)	Event (State of Nature) : The Level of Demand		
	D_1	D_2	D_3
Order 100 (A_1)			
Order 200 (A_2)	0	300	600
Order 300 (A_3)	-150	150	450

Calculate the missing values in the table (4 marks).

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Construct the corresponding decision tree to the table (6 marks).

How would you assign the probability to each branch. Explain your choice. (3 marks)

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