Replacement Model (Economic Life of a machine)

1. The cost of a machine is $7000 and it maintenance and the scrap value for each year is given below. When should the machine be replaced?

Year	Operating cost ($)	Salvage value ($)
1	900	4,000
2	1,200	2,000
3	1,600	1,200
4	2,100	600
5	2,800	500
6	3,700	400
7	4,700	400
8	5,900	400

2. A taxi owner estimates from his past records that the cost per year for operating a taxi whose purchase price when new is $60,000 are as given below

Year	Operating cost ($)
1	10,000
2	12,000
3	15,000
4	18,000
5	20,000

If the scrap value decrease by 6% every year, what is the best time to replace the taxi?

3. Fleet cars have their cost increasing as they continue in service due to increased direct operating cost (gas and oil).The initial cost is $38, 00. Given the operating cost and the trade in value (scrap value), determine the length of service before the car should be replaced.

Year	Trade-in-value	Operating cost
1	2000	2000
2	1200	2400
3	800	2900
4	700	3400
5	600	3900

4. (a) Machine A cost $9000. Annual operating cost is $200 for the first year and then increase by $2000 every year. Determine the best age to replace the machine assuming that there is no re-sale value.
   (b) Machine B cost $10,000. Annual operating cost is $400 for the first year and then increase by $800 every year. Determine the best age to replace the machine assuming that there is no re-sale value.
   (c) Depending upon the annual average cost, should machine A be replaced by machine B? Give reason why.
   (d) If machine A should be replaced by machine B, which is the best time of replacement?