



Student Name:

ID:

- 1. Find the present value (P) of 10 years bond paying 3 % of its face value \$ 1000 semiannually if the MARR for the buyer is 10 %. The redemption value of the bond is \$ 900.**

- 2. A bond with a face and redemption value \$ 5000 pays an annual interest of 9 %. The validity period of the bond is 10 years and the first interest is to be paid after one year from the purchase moment.**
 - (a) What's the present value “P” of this bond for an investor whose MARR is 10 %?**
 - (b) If this bond is purchased now for \$ 4600, what is the annual interest rate the buyer obtains?**

- 3. The face and redemption value of a bond is \$ 20,000 and its period is 10 years. The bond pays 2.75 % of its face value each 3 months. If the MARR of a buyer is 10 % per year, how much would he pays to buy this bond.**

- 4. Nagy bought a bond that has a face value 150,000 EGP that gives 7 % of its face value each 6 months. The bond duration is 10 years. Its redemption value is 150,000 EGP. Nagy sold the bond to Sameh after 6 years at 160,000 EGP. Determine the annual interest rate for both Nagy and Sameh.**

- 5. The monthly fixed cost of furniture workshop is 25,000 EGP. This workshop produces only chairs. If the materials cost is 50 EGP per chair and the working**

period required to manufacture one chair is two hours and the working hour cost is 25 EGP. If the market price per chair is 150 EGP, determine the breakeven production volume.

(Ans. 500 chairs per month)

6. A photocopier shop has a fixed cost 2,000 EGP per month. The cost per paper is 0.03 EGP and the ink and other costs are 0.02 EGP. If the shop charges 0.1 EGP per paper, determine the minimum photocopied papers per month (breakeven) to cover the shop costs.

(Ans. 40,000 papers per month)

7. Develop a plot of the average cost per unit versus production quantity for house ware appliance assembly factory. The fixed cost is \$160,000 per year and a variable cost \$4 per unit.

(a) Determine the production volume that makes the total unit cost \$5.

(b) If the fixed cost increases to \$200,000, plot total unit cost versus Production volume.

8. An engineering firm has two options to use a measurement system. Option-A to lease a measurement system for \$1000 per month. Option- B to purchase the system for \$15,000 and pays \$80 per month as a maintenance cost. If MARR is 0.5 % per month, how many months must the system be required to break even.

9. The total cost (TC) of a certain product is given by

$$TC = 0.001Q^2 + 3Q + 2$$

On the other hand the total revenue R is given by $R = 25Q$.

(a) Determine the breakeven production volume Q_{BE} .

(b) If $Q = 10,000$, determine the profit.

(Ans. $Q_{BE} = 22,000$ and profit = 62,000)

10. A photocopy machine has an initial value \$5,000 and its lifetime is 8 years. Its salvage value is \$1,100. Using DB determine

- (a) The depreciation rate d.**
- (b) The book value at the end of fourth year.**
- (c) The depreciation during the 6th year.**

(Ans. 0.22 – 1,851 – 318)

11. An electric saw machine used in carpentry workshop costs \$8,000. The book value at the end of 5 years is \$3,500. The lifetime of the machine is 8 years.

Using DB, determine

- (a) The salvage value of the machine S.**
- (b) The book value at the end of 7th year.**
- (c) The depreciation during the 3rd year.**

(Ans. 2,131 – 2,522 – 874)

12. Air handling machine costs \$12,000 has a lifetime of 8 years with \$2000 salvage value.

- (a) Determine the depreciation during 4th. Year if linear method is used.**
- (b) Determine the depreciation during 4th. Year if DB method is used.**
- (c) Determine the BV at the beginning of 5th. year if linear method is used.**
- (d) Determine the BV at the beginning of 5th. year if DB method is used.**

(Ans. 1,250 – 1,229 – 7,000 – 4,915)

13. A machine has an initial cost 200,000 LE and its lifetime is 8 years. The salvage value is 20,000 at the end of lifetime. Determine

- (a) The depreciation factor d.
- (b) The book value at the beginning of year 6.
- (c) The depreciation during the 4th year.

(Ans. 0.25, 47,461 LE , 21,094 LE)

14. A printing machine costs 120,000 LE and its lifetime is 15 years.

Using SYD method, determine

- (a) The depreciation during the 5th. year.
- (b) The book value at the beginning of year 6.

(Ans. 11,000 LE , 66,000 LE)