Problem 1
With a 12% interest rate, approximately how much money must be invested today in order to withdraw $1000 per year at the end of each year for 10 years?

(A) $4800   (B) $5650
(C) $5800   (D) $6150

Problem 2
A machine is under consideration for purchase. The cost of the machine is $25,000. Each year it operates, the machine will generate a savings of $15,000. Given an effective annual interest of 18%, what is the discounted payback period on the purchase of the machine?

(A) 1.67 yr   (B) 1.75 yr
(C) 2.15 yr   (D) 3.17 yr

Problem 3
$10,000 is invested at the beginning of a year in a 15% security and held for 5 yr. During that time, the average annual inflation is 6%. Approximately how much, in terms of year zero dollars, will be in the account at maturity?

(A) $11,700   (B) $13,400
(C) $15,000   (D) $15,400

Problem 4
What is the book value of equipment purchased 3 yr ago for $15,000 if it is depreciated using the sum of years’ digits (SOYD) method? The expected life is 5 yr.

(A) $3000   (B) $4000
(C) $6000   (D) $9000

Problem 5
A company has $100,000 to spend on the various projects listed. Using these projects only, what should this company consider its minimum attractive rate of return to be?

<table>
<thead>
<tr>
<th>Project</th>
<th>Investment Required ($)</th>
<th>Expected Return (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10,000</td>
<td>14</td>
</tr>
<tr>
<td>B</td>
<td>25,000</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>50,000</td>
<td>12</td>
</tr>
<tr>
<td>D</td>
<td>40,000</td>
<td>16</td>
</tr>
<tr>
<td>E</td>
<td>25,000</td>
<td>11</td>
</tr>
<tr>
<td>F</td>
<td>30,000</td>
<td>10</td>
</tr>
<tr>
<td>G</td>
<td>20,000</td>
<td>12</td>
</tr>
</tbody>
</table>

(A) 10%   (B) 11%
(C) 12%   (D) 14%

Problem 6
A project has the cash flow shown. Theoretically, how many internal rates of return can be calculated for it?

(A) 2   (B) 3
(C) 4   (D) 5

Problem 7
A manufacturing firm maintains one assembly line to produce signal generators. Weekly demand for the generators is 35 units, and the line operates for 7 hr/day, 5 day/wk. What is the maximum production time per unit required of the line in order to meet demand?

(A) 0.750 hr/unit   (B) 1.00 hr/unit
(C) 2.25 hr/unit   (D) 5.00 hr/unit
Problem 8
A steel drum manufacturer incurs a yearly fixed operating cost of $200,000. Each drum manufactured costs $160 to produce and sells for $200. What is the manufacturer’s break-even sales volume in drums per year?

(A) 1000   (B) 1250
(C) 2500   (D) 5000

Problem 9
The volatility, $\beta$, of a stock is found to be 1.5 times the stock market average. If the risk premium for buying stocks averages 8.3% and the present treasury bill rate (assumed to be risk free) is 7%, what is most nearly the expected rate of return (ER) on the stock?

(A) 12.5%   (B) 15.3%
(C) 18.9%   (D) 19.5%

Problem 10
What is a “work in process” classified as?

(A) an asset   (B) a liability
(C) an expense   (D) a revenue

Problem 11
Consider a deposit of $600, to be paid back in 1 yr by $700. What are the conditions on the rate of interest, $i$, in %/yr compounded annually, such that the net present worth of the investment is positive? Assume $i \geq 0$%.

(A) 12.5% $\leq i < 14.3%$
(B) 0% $\leq i < 14.3%$
(C) 0% $\leq i < 16.7%$
(D) 16.7% $\leq i < 100%$

Problem 12
Mr. Johnson borrows $100,000 at 10% effective annual interest. He must pay back the loan over 30 yr with uniform monthly payments due on the first day of each month. Approximately what amount does he pay each month?

(A) $840   (B) $850
(C) $870   (D) $880

Problem 13
In 5 yr, $18,000 will be needed to pay for building renovation. In order to generate this sum, a sinking fund consisting of three annual payments is established now. No further payments will be made after the third year. What payments are most nearly necessary if money is worth 15% each year?

(A) $2670   (B) $2870
(C) $3920   (D) $5100

Problem 14
The following schedule of funds is available to form a sinking fund.

\[
\begin{align*}
  t = 0 \text{ yr} & \quad $5000 \\
  t = 1 \text{ yr} & \quad $4000 \\
  t = 2 \text{ yr} & \quad $3000 \\
  t = 3 \text{ yr} & \quad $2000
\end{align*}
\]

At the end of the fourth year, equipment costing $25,000 will have to be purchased as a replacement for old equipment. Money is valued at 20% by the company. At the time of purchase, how much money will be needed?

(A) $820   (B) $1000
(C) $2000   (D) $8200