*SOLUTIONS*

*KING FAHD UNIVERSITY OF PETROLUEM & MINERALS*

*Math 131 - Term 041*

*Quiz #1* *Section: 1 & 2*

*Name:* *ID:* *Serial:*

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**Q1**.A person wishes to invest $20,000 in two enterprises so that the total income per year will be $1440. One enterprise pays 6% annually; the other has more risk and pays 7.5% annually. How much must be invested in each?

*Let* $x$ *be the amount invested at 6%, then*

$(200-x)$ *Will be the amount invested at 7.5%*

$$0.06x+0.075(200-x)=1440$$

$$0.06x+1500-0.075x=1440$$

$$-0.015x=-60 \Rightarrow x=\frac{-60}{-0.015}=\$400$$

$\therefore$\$4000 invested at 6% and (20000 - 4000) = \$6000 at 7.5%

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**Q2.** Suppose that to produce 10 units of a product is 40 S.R. and the cost of 20 units is 70 S.R., if the cost $y$ is linearly related to output $q$ .Find

a. The linear equation relating $y$ and $q$ .

b. The cost to produce 35 units.

$q_1=10,\ y_1=40 \Rightarrow (10,40)$

$q_2=20,\ y_2=70 \Rightarrow (20,70)$

$$\text{slope } = m = \frac{y_2-y_1}{q_2-q_1}=\frac{70-40}{20-10}=\frac{30}{10}=3$$

The equation is:

$$y-y_1=m(q-q_1)$$

$$y-40=3(q-10)$$

$$y=3q-30+40$$

$$y=3q+10$$

**(b)** The cost $=y(35)=3(35)+10=105+10=115$ S.R.