NOTE: **1**. **The questions are not in any order of difficulty at all**.
2. **Please provide complete solution for all the problems for full credit**.
3. **Only nonprogramable calculators are allowed**.
4. **Any type of mobiles or pagers are not allowed during the examination**.
5. **Please count that you have exactly** 10 **questions**.

Q#	Marks	Marks Obtained	Remarks
1	**10**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
2	**10**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
3	**10**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
4	**9**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
5	**8**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
6	**8**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
7	**10**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
8	**8**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
9	**10**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
10	**17**		_ _ _ _ _ _ _ _ _ _ _ _ _ _
SUM	**100**		_ _ _ _ _ _ _ _ _ _ _ _ _ _

Q1. **71AL31**. $\left(\textit{Car Sales}\right)$. **A used-car dealer bought two cars for** $ 2900. **He sold one at**

a gain (**profit**) **of** 10 % **and another at a loss of** 5 % **and still made a gain** (**profit**) **of** $ 185 **on the whole transaction**. **Find the cost of each car**.

Cost of the first car : _____*Dollars*

Cost of the sec*ond car* : _____*Dollars*

Q2. **162AL3**. $\left(\textit{Break}-\textit{even Analysis}\right)$. **The cost of producing** x **items is given by**
$y_c = 2.8x + 600$
and each item sells for $\$\ 4.00$.
Find the break-even point.

Break-even quantity x := _____

Q3.101AL27. $\left(\text{Pr}\textit{oduction Sales}\right)$. **A manufacturer can sell all units produced at** $ 30 **per unit**.

Fixed costs are $ 12000 **per month**;

in addition, **it costs** $ 22 **to produce each unit**.

How many minimum number of units must be produced and sold each month to realize a profit?

Minimum Number of required Units: = _____

Q4. **135AL3146**. **Determine whether the following pairs of lines are parallel**, **perpendicular**, **or neither** (**neither parallel nor perpendicular**).

$$4x + 2y = 1$$
$$(a) \quad A \quad N \quad D$$
$$y = 2 - 2x$$

$$3x + 4y = 1$$
$$(b) \quad A \quad N \quad D$$
$$3x - 4y = 1$$

$$2x + 3y = 6$$
$$(c) \quad A \quad N \quad D$$
$$3x - 2y = 6$$

Q5. **37GSS85**. **A T-shirt company has fixed costs of** $25000 **per year**.
Each *T – shirt* **costs** $8.00 **to produce and sells for** $12.50.
How many *T – shirts* **must the company produce and sell each year in order to make a profit of** $65000?

(*a*) **9200**

(*b*) **11250**

(*c*) **14375**

(*d*) **25556**

(*e*) **8888.89**

(*f*) **2000**

(*g*) 40000

(*h*) 5200

(*k*) 5555.56

(*l*) 7200

(*m*) 1444.45

(*n*) *No above choice correct.*

Q6. **64GSS32**. **A high school math department purchased brand** *A* **calculators for** $ 80 **each**
and brand *B* **calculators for** $ 95 **each**.
It purchased a total of 20 **calculators at a total cost of** $ 1780.
How many brand *A* **calculators did the department purchase**?

(*a*) **2**
(*b*) **4**
(*c*) **6**
(*d*) **7**
(*e*) **8**
(*f*) **9**
(*g*) **10**
(*h*) **11**
(*k*) **12**
(*l*) **13**
(*m*) **14**
(*p*) **15**
(*q*) **16**
(*r*) **18**
(*n*) *No above choice correct.*

Q7. 27*MS*1. (Pr*edicting the Cost of a Home*). **In** 1999 **the cost of an average home in Chicago was** $ 170100.

In 2000 **the cost was** $ 173600.

Assuming that the relationship between time and cost is linear, **develop a formula for predicting the cost of an average home in** 2004.

Then find the predicted cost of the home in 2004.

Formula:_____

Predicted cost of Home in 2004 := _____ **Dollars**.

Q8. **147TB36**. **Toy Toss**. **A** 6 – *year –old* **girl standing on a toy chest throws a doll straight up with an initial velocity of** 16 **feet per second**.

The height *h* **of the doll in feet**, *t* **seconds after it was released**, **is described by the function**

$\mathbf{h}(t) = -\mathbf{16t}^2 + \mathbf{16t} + \mathbf{4}$.

(*a*) **How long does it take the doll to reach its maximum height**?

Time: = _____ **Seconds**.

(*b*) **What is the maximum height**?

Maximum Height: = _____ **feet**.

Q9. **166AL42**. $\left(\textit{Market Equilibrium}\right)$. **The demand and supply equations of a certain commodity are given by**

$p + x^2 = 20$

and

$3p - 8 = x$

respectively, **where** p **is the price in dollars and** x **is the quantity sold in units of thousands**.

Find the equilibrium price and quantity.

Quantity : $x =$ _____

Price : $p =$ _____ **Dollars**.

Q10. **81MS71**. **Diet Preparation**. **A hospital dietician is planning a meal consisting of three foods whose ingredients are summarized as follows**:

	Chicken (12 – oz. Serving)	**Potatoes (1/2 – cup serving)**	**Spinach (1 – cup serving)**	**Required No. of ingredients**
Grams of Protein	**14**	**1**	**6**	**30**
Grams of Carbohydrates	**0**	**18**	**8**	**38**
Grams of Fat	**4.5**	**0**	**1**	**7**
Number of Servings	**x**	**y**	**z**	

Determine the number of servings of each food needed to create a meal containing 30 **grams of protein**, 38 **grams of carbohydrates**, **and** 7 **grams of fat**.

$$\begin{cases} \_\_\_\_\_ \\ \_\_\_\_\_ \\ \_\_\_\_\_ \end{cases}$$

Solution of System of Equations:

$x =$ _____

$y =$ _____

$z =$ _____.