1. Sceret Recipe make cakes and pastries. On a Monday morning they have to make "Choclate cake" and "Fruit pastries". They have 155 units of flour and they use 6 units of flour per cake and 4 units per pastry. They also have 80 units of time in the oven that day and each cake requires 4 units in the oven and each pastry requires 3 units of time in the oven. They sell each cake for RM 75 and each pastry for RM 40. How many cakes and pastries they should make to maximize their sale?

2. Petronas produces two products, Petrol and Diesel. The sales volume for Petrol is at least 80% of the total sales of both Petrol and Diesel. However, the company cannot sell more than 100 units of Petrol per day. Both products use one raw material, of which the maximum daily availability is 240 kg. The usage rates of the raw material are 2 kg per unit of Petronas and 4 kg per unit of Diesel. The profit units for Petrol and Diesel are RM 20 and RM 50, respectively. Determine the optimal product mix for the Petronas.

3. (a) A manufacturer of soft drinks wishes to blend three sugars in approximately equal quantities to ensure uniformity of taste in a product. Suppliers only provide combinations of the sugars, at varying costs/ton:

Sugar	A	B	C	D	E	F	G
				SUPPLIER			
Cane	10%	10	20	30	40	20	60
Corn	30%	40	40	20	60	70	10
Beet	60%	50	40	50	0	10	30
Cost/ton	$10	11	12	13	14	12	15

Figure 1: Supplier

Formulate an Linear programming model that minimizes the cost of supply while producing a blend that contains 52 tons of cane sugar, 56 tons of corn sugar, and 59 tons of beet sugar. (b) The manufacturer feels that to ensure good relations with suppliers it is necessary to buy at least 10 tons from each. How does this change the model and the minimum-cost solution? (c) Formulate an alternative to the model in (a) that finds the lowest-cost way to blend one ton of supplies so that the amount of each sugar is between 30 and 37 percent of the total.

4. Our Group Digital requires different numbers of fulltime employees on different days of the week. Each full-time employee must work five consecutive days and then receive two days off. In the following table, the number of employees required on each day of the week is specified.

Day	Number of full-time Employees Required
1=Monday	17
2= Tuesday	13
3=Wednesday	15
4=Thursday	19
5=Friday	14
6=Saturday	16
7=Sunday	11

Formulate an LP that the group digital can use to minimize the number of full-time employees who are needed to satisfy these constraints.