Question 7 (75 marks)

Question 7 (a) (i)

$$R = \frac{100I}{\text{GDP}}$$

$R = 10{\cdot}1\%$, GDP = €159 billion, $I = ?$

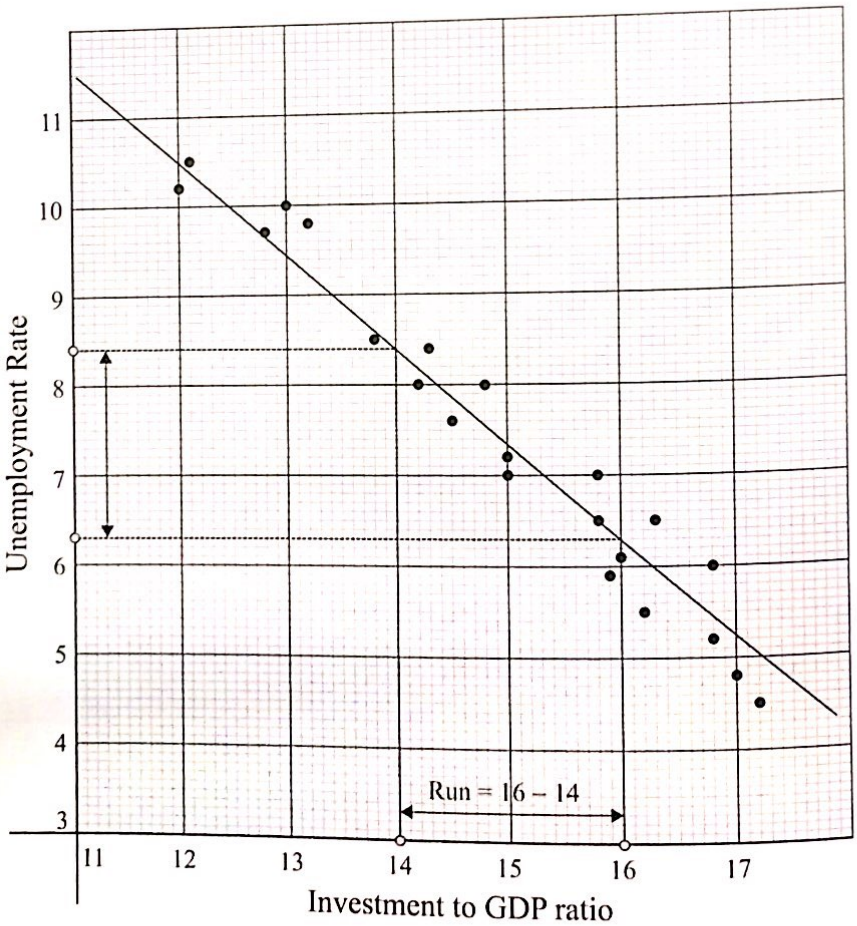
$$10{\cdot}1 = \frac{100I}{159}$$

$$\therefore I = \frac{159 \times 10{\cdot}1}{100} = €16{\cdot}1 \text{ billion}$$

Question 7 (a) (ii)

$$\text{GDP per capita} = \frac{€159\,000\,000\,000}{4\,588\,252} = €34\,654$$

Question 7 (b)



Question 7 (c) (i)

The data shows that the most effective way to reduce *the unemployment rate* is to *increase investment to GDP ratio*.

Question 7 (c) (ii)

A. Linear,
B. Negative shape,
C. Very strong correlation

Question 7 (d)

Casio Calculator (*fx-85GT PLUS*)
Steps to find r:
Press Mode.
Press 2: Stat
Press 2: $A + Bx$
Input your x and y values
Press AC Button
Press Shift followed by the Number 1
Press 5: Reg
Press 3: r
Press =

$r = -0.9767$

Question 7 (e) (i)

(14, 8.4), (16, 6.3)

$$m = \frac{8.4 - 6.3}{14 - 16} = -1.1$$

Question 7 (e) (ii)

$m = -1.1$, $(x_1, y_2) = (14, 8.4)$

$(y - 8.4) = -1.1(x - 14)$

$y - 8.4 = -1.1x + 15.4$

$1.1x + y - 23.8 = 0$

Question 7 (e) (iii)

$y = 3 : 1.1x + (3) - 23.8 = 0$

$\therefore x = 18.9$

Question 7 (f) (i)

The 11 year plot is misleading as the 64 year plot shows little correlation between the unemployment rate and investment to GDP ratio. It is a prime example of someone using statistics to support their own position.

Question 7 (f) (ii)

Yes