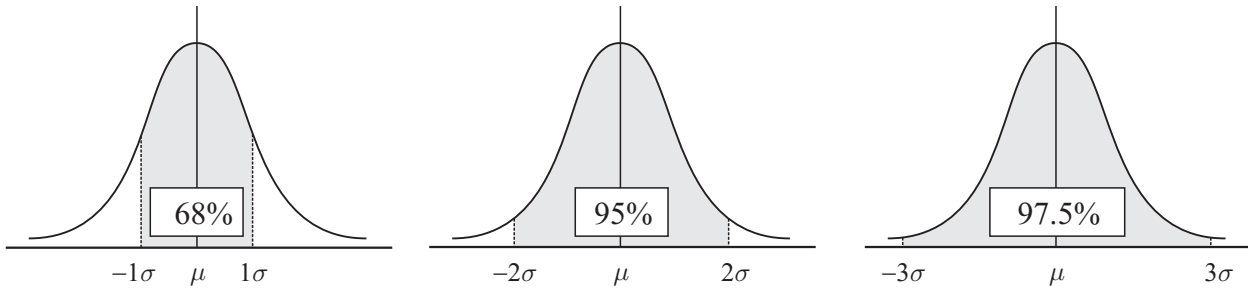


SAMPLE PAPER 6: PAPER 2

QUESTION 4 (25 MARKS)

Question 4 (a)



In any normal distribution with mean μ and standard deviation σ .

1. 68% of the data falls within 1σ of the mean μ .
2. 95% of the data falls within 2σ of the mean μ .
3. 99.7% of the data falls within 3σ of the mean μ .

Question 4 (b)

$$\mu - 2\sigma = 24.8$$

$$\mu + 2\sigma = 36.4$$

$$2\mu = 61.2 \Rightarrow \mu = 30.6 \text{ years}$$

$$30.6 - 2\sigma = 24.8$$

$$5.8 = 2\sigma$$

$$\therefore \sigma = 2.9 \text{ years}$$

Question 4 (c)

$$\mu = 30.6 \text{ years}$$

$$\sigma = 2.9 \text{ years}$$

$$P(x \geq 30) = ?$$

$$x = 30 : z = \frac{x - \mu}{\sigma} = \frac{30 - 30.6}{2.9} = -0.21$$

$$P(x \geq 30) = P(z \geq -0.21)$$

$$= 1 - P(z \leq -0.21)$$

$$= 1 - P(z \geq 0.21)$$

$$= 1 - \{1 - P(z \leq 0.21)\}$$

$$= P(z \leq 0.21)$$

$$= 0.5832$$

$$= 58.32\%$$