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Notes:

S M T W T F S

③ 95% measurements will be 1.96
 $\sigma = 0.2$

$$1.50 \pm d$$

$$1.50 \pm 1.96 \times 0.2$$

$$1.50 \pm 0.39$$

$$d = 0.39$$

④ $f(x) = 50,000$

$$f(x) = 1 - e^{-\lambda x}$$

$$\text{mean} = 1/\lambda$$

$$100000 = 1/\lambda$$

$$\lambda = \frac{1}{100000}$$

$$F(50000) = 1 - e^{-\frac{1}{100000} \times 50000}$$

$$= 1 - e^{-0.5}$$

$$= 1 - 0.6065$$

$$= 0.3935$$

$$39.35\%$$

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Notes: _____

S M T W T F S

$$C.D.F = F(X \leq x) = 1 - e^{-\left(\frac{x}{\alpha}\right)^k}$$

5

i)

$$x = 6000$$

$$\alpha = 5000$$

$$k = 0.5$$

$$F(6000) = 1 - e^{-\left(\frac{6000}{5000}\right)^{0.5}}$$

$$= 1 - e^{-(1.2)^{0.5}}$$

$$= 1 - e^{-1.09}$$

$$\boxed{= 0.67}$$

$$ii) \text{ Mean} = \alpha \Gamma\left(1 + \frac{1}{k}\right)$$

$$= \cancel{5000} \times 0.5 \left(1 + \frac{1}{\cancel{0.5}}\right)$$

$$= 5000 \Gamma\left(1 + \frac{1}{0.5}\right)$$

$$= 5000 \Gamma(3)$$

$$= 5000 \times 2$$

$$\boxed{= 10000}$$

∴ Probability is 66.7%

∴ Mean time to failure 10,000 hours

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$$\begin{aligned} 1.50 &+ d \\ 1.50 &\pm 1.96 \times 0.2 \\ 1.50 &\pm 0.39 \end{aligned}$$

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