② Lifetime $\sim Exp(\lambda)$

$\mu = \frac{1}{\lambda} = 10$ hours

$\Rightarrow \lambda = \frac{1}{10}$; Useful time = $\min(-\mu \ln R, 15)$

Repair time = 30 minutes

Maximum lifetime = 15 hours

Component	Rand. No.	Useful Time (hrs)	Clock Time (hrs)
1	0.29	12.38	12.88
2	0.32	11.39	24.77
3	0.15	18.97	44.24
4	0.67	4	48.74
5	0.96	0.4	49.64
6	0.02	15	65.14
7	0.56	5.8	71.44
8	0.18	15	86.94
9	0.75	2.87	90.31
10	0.39	9.41	100.22

(a) Total simulation time = 100.22

(b) 7 components must be replaced within the first three days.

(c) Average time a component is used $= \frac{95.22}{10}$

$= 9.522$

(d) Fraction of time machine is idle $= \frac{5}{100.22}$

$= 0.0498$