Confidence intervals

Consider two scenarios focusing on a server that executes jobs individually, in order of arrival and without interruption. In each case, jobs arrive and are served according to the following inter-arrival time and service time distribution:

Scenario	Arrival	Service
I	*Two stages* **hyper-exponential** distribution with: $\lambda_1 = 0.02$, $\lambda_2 = 0.2$, $p_1 = 0.1$	**Erlang** with: $k = 10$, $\lambda = 1.5$
II	**Exponential** with: $\lambda = 0.1$	**Uniform** with: $a = 5$, $b = 10$

For each scenario, using batches of M = 1000 jobs, compute the 95% confidence interval, with a 4% relative error, of the following performance indices:

- Utilization
- Throughput
- Average number of jobs in the system
- Average response time
- Variance of the response time

For each scenario, report the number of batches K required to reach the required accuracy.