A closed two tasks embedded systems

A simple single core embedded system executes continuously two tasks: task A, and task B. Both alternates between a running and waiting state, characterized by the following average duration:

Task	**A**	**B**
Waiting	10 s.	5 s.
Execution	8 s.	12 s.

Note that since the system is single core, when both tasks are in execution, they each runs at half of its speed (the corresponding rate is halved). Considering all waiting and execution times exponentially distributed, and the system starts in a state where both tasks are running:

- The utilization and average number of tasks in execution
- The system throughput
- The average number of jobs at $t = 10s$, $t = 20\ s.$, $t = 50\ s.$ and $t = 100\ s$.