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## **2020: Assignment 3B (CLOs 2, 3)**

The assignment carries 20 marks (20% of course grade)

## Part A: Capacity and Resource Management

To obtain your first driver’s license, you must successfully complete several activities. First, you must produce the appropriate identification. Then, you must pass a written exam. Finally, you must pass the road exam. At each of these steps, 10 percent, 15 percent and 40 percent of driver’s license hopefuls fail to fulfil the step’s requirements. You are only allowed to take the written exam if your identification is approved, and you are only allowed to take toe road test if you have passed the written exam. Each step takes 5, 3 and 20 minutes respectively (staff members administering written exams need only to set up the applicant at a computer). Currently the DMV staffs 4 people to process the license applications, 2 to administer the written exams and 5 to judge the road exam. DMV staff are rostered to work 8 hours per day.

1. Draw a flow diagram for this process
2. Where is the bottleneck, according to the current staffing plan?
3. What is the maximum capacity of the process (expressed in applicants presenting for assessment and newly-licensed drivers each day)? Show your workings.
4. How many staff should the DMV roster at each step if it has a target to produce 100 newly-licensed drivers per day while maintaining an average staff utilisation factor of 85%? Show your workings. **(10 marks)**

## Part B: Scheduling and Sequencing

You are the manager of a mail order warehouse operation. Each day, you are given the list of orders outstanding, detailing the estimated time it will take your pickers to assemble each order and the date on which it was received. When customers place their orders, they indicate whether they want the order urgently, routinely or are prepared to wait longer than routine for it. Their packing charges are varied according to their time preferences. The warehouse has a policy that all urgent orders will be dispatched that day and all others will be dispatched within one week of receipt. Discuss the range of rules you could use to sequence the orders, and the implications your choice of rule will have for your objective of operating the warehouse efficiently and within policy guidelines. Which rule do you prefer? Why? **(10 marks)**