

SECOND MID-TERM EXAM (1:15 Hour)

Name: _____

Number: _____

Section:

Question 1. (15%)

- Compaction is used to improve the engineering properties of soil. List three improvements.

- What are the differences between performance and retarder curves?

Question 2. (35%)

Find the optimum load time for a scraper using the following data: cycle time less load time 3.5 minutes; efficiency 50 min/hour; relationships between time of loading and the volume of load are as follows:

Load time (min)	0.4	0.6	0.8	1.0	1.2	1.4
Load (BCY)	16.83	20.43	22.32	23.85	24.12	24.3

Load time (min)						
Cycle time less load time						
Cycle time (min)						
Trips/hour						
Load/trip						
Production BCY/h						

Question 3. (25%)

How many hours should it take an articulated wheel loader equipped with a 4-yd bucket to load 3000 cy of gravel from a stockpile into rail cars if the average haul distance is 300 ft one way? The area is level with a rolling resistance factor of 120 lb/ton. Job efficiency is estimated at 50 min/h and basic cycle time equals to 0.4 min.

Question 4. (25%)

Ten miles of gravel road require reshaping and leveling. You estimate that a motor grader will require four passes at 2.5 mi/h, three passes at 5.5 mi/h, and one pass at 6 mi/h to accomplish the work. How many grader hours will be required for this work if the job efficiency factor is 0.85?