


Course No: ECGD4214  
Course Title: Construction Methods  
& Equipments  
Date: Wednesday, January 11, 2012  
No. of Questions: 7  
Time: 150 Minutes  
Using Calculator: (Yes)

University of Palestine  
  
Open-Book Final Exam  
1<sup>st</sup> Semester 2010/2011  
Total Grade: 60

Instructor: Dr. Wa'el M. Albawwab  
Student No.:  
Student Name:  
College Name:  
Dep. / Specialist:  
Using Dictionary: (Yes)  
Open-Book: (Yes)

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**Answer All Questions**

**Q1-** Give a brief report explaining your presentation topic. Enhance your answer with all the necessary schematic diagrams. **(5 Marks)**


**Q2-** Specifically identify and briefly explain three different expected consequences of poor construction project management. **(5 Marks)**

**Q3-** A 1000 ft long pipeline requires an excavation of a 4 ft width to a 5 ft average depth in a dry common earth. Determine the size of the resulting spoil bank. **(10 Marks)**

**Q4-** A small hydraulic excavator will be used to dig a trench in hard clay. The minimum required trench size is 26 in wide by 5 ft deep. The excavator bucket is 30 in wide and has a heaped capacity of 20 ft<sup>3</sup> and a fill factor of 0.8. The excavator has a maximum digging depth of 16 ft and a swinging angle of 85°. Estimate the expected hourly trenching in linear feet if the job efficiency is 70%. **(10 Marks)**

**Q5-** A wheel tractor-scraper has a weight on the driving wheels of 17500 kg and has a gross weight of 32000 kg. The road surface is dry earth with a rolling resistance factor of 50 kg/t. Determine the maximum grade the scraper could ascend. **(10 Marks)**

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**Continued**

**Q6-** A hydraulic shovel will be used to excavate sandy clay and load it into 12 BCY dump trucks. The shovel's production at 100% efficiency is 300 BCY/hr. If the job efficiency is 0.80, and the truck travel time is 8.0 min., and the truck fixed cycle time without loading is 2.0 min.:

- a) Estimate the maximum expected production rate **(5 Marks)**
- b) Determine the number of dumping units theoretically required to achieve this production level **(5 Marks)**

**Q7-** Estimate the production rate in CCM/hr of a self-propelled tamping foot roller under the following conditions: **(10 Marks)**

- Required number of passes for each lift is 8
- Compacted lift thickness is 25 cm
- Average tamping speed is 8 km/hr
- Effective rolling width is 3 m
- Job efficiency is 0.75