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INTRODUCTION

The Construction Depth Practice Exam with Assessment Guide includes the top 40 questions that will be on the Construction depth portion of the PE Exam. This practice exam also includes an assessment section for you to quickly evaluate your strengths and weaknesses in the different topics and subtopics. All the questions and solutions are clearly labeled as to what topics they are concentrated on. This allows you to clearly understand what subject matter you are having trouble with or already fully comprehend, this allows you to studying smarter by focusing your efforts on the areas that you really need to.

It is important to note that this practice exam only assesses your ability with quantitative type questions. The actual exam is made up of 70% (+/- 10%) quantitative questions and 30% (+/- 10%) qualitative “word problems” type questions. The word problems are too extensive to anticipate given that any problem in any topic could be asked about any minor detail. These problems you really can’t study for, you prepare for those just by understanding your design standards and understanding the concepts behind and tabbing the quantitative problems.

Several of the qualitative questions and solutions are longer than on the actual exam, since we incorporated more than one key concept into many of the questions. The difficulty level will be about the same as you will encounter on test day.

If you follow the Learn Civil Engineering(LCE) website’s study schedule, go through all the topics while doing multiple practice problems, score greater than 80% on this exam you will be ready for the real PE exam and become a Licensed Professional Engineer.

I am always available to answer any questions you have during this exam prep process, please visit my site www.learncivilengineer.com and join the community.

HOW TO USE THIS PRACTICE EXAM AND GUIDE BOOK

This practice exam and assessment guide should be use as a practice exam. You should at least take one full practice exam before sitting for the real PE Exam. Many students do not use practice exams well. For example, many students will look at the solutions and think to themselves, “I understand”, or “I could do that, let me look at the solution to confirm”. These students make the mistake of not using the practice exams to actually practice for the exam. Do not make that mistake!

Please use this Practice Exam and Assessment Guide the following way:

- Do most of your studying for the real exam before taking this practice exam. One month prior to the test would be optimum.
- Do not look at the practice exam questions before you take the practice exam.
- Take the practice exam in a quiet environment. As close to the actual test day conditions as possible, a library would be ideal. Also practice your practice you test taking strategy (ex. 3 passes, easy-medium-hard)
- Have a special study-only notepad or sheet of paper. During the exam when you encounter a topic that you don't understand, write a quick note on the study-only notepad. Use this notepad later to prepare additional studying.
- Take a break immediately after completing the practice exam. Resist the urge to start working through the solutions as soon as you finish the practice exam.
- After taking a break, compare your answers to the solutions and fill out the assessment guide.
- Resume studying by consulting your study-only notepad and the assessment guide .

The basic idea is to practice both the material and the self-management that will help you do your best on the real exam. Your study-only notepad is the exception. The study-only notepad allows you to have the experience of “If only I had understood that before the exam” before you actually take the exam.

CONSTRUCTION DEPTH EXAM BREAKDOWN

Earthwork Construction and Layout

- A. Excavation and embankment (cut and fill)
- B. Borrow pit volumes
- C. Site layout and control
- D. Earthwork mass diagrams

Estimating Quantities and Costs

- A. Quantity take-off methods
- B. Cost estimating
- C. Engineering economics
 - 1. Value engineering and costing

Construction Operations and Methods

- A. Lifting and rigging
- B. Crane selection, erection, and stability
- C. Dewatering and pumping
- D. Equipment production
- E. Productivity analysis and improvement
- F. Temporary erosion control

Scheduling

- A. Construction sequencing
- B. CPM network analysis
- C. Activity time analysis
- D. Resource scheduling
- E. Time-cost trade-off

Material Quality Control and Production

- A. Material testing (e.g., concrete, soil, asphalt)
- B. Welding and bolting testing
- C. Quality control process (QA/QC)
- D. Concrete mix design

Worker Health, Safety, and Environment

- A. OSHA regulations
- B. Safety management
- C. Safety statistics (e.g., incident rate)

Temporary Structures

- A. Construction loads
- B. Formwork
- C. Falsework and scaffolding
- D. Shoring and reshoring
- E. Concrete maturity and early strength evaluation
- F. Bracing
- G. Anchorage
- H. Cofferdams (systems for temporary excavation support)
- I. Codes and standards [e.g., American Society of Civil Engineers (ASCE 37), American Concrete Institute (ACI 347), American Forest and Paper Association-NDS, Masonry Wall Bracing Standard]

Other Topics

- A. Groundwater and well fields
 - 1. Groundwater control including drainage, construction dewatering
- B. Subsurface exploration and sampling
 - 1. Drilling and sampling procedures
- C. Earth retaining structures
 - 1. Mechanically stabilized earth wall
 - 2. Soil and rock anchors
- D. Deep foundations
 - 1. Pile load test
 - 2. Pile installation
- E. Loadings
 - 1. Wind loads
 - 2. Snow loads
 - 3. Load paths
- F. Mechanics of materials
 - 1. Progressive collapse
- G. Materials
 - 1. Concrete (prestressed, post tensioned)
 - 2. Timber
- H. Traffic safety
 - 1. Work zone safety

START OF CONSTRUCTION DEPTH PRACTICE EXAM

EXAM ANSWER SHEET

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)
9. (A) (B) (C) (D)
10. (A) (B) (C) (D)
11. (A) (B) (C) (D)
12. (A) (B) (C) (D)
13. (A) (B) (C) (D)
14. (A) (B) (C) (D)
15. (A) (B) (C) (D)
16. (A) (B) (C) (D)
17. (A) (B) (C) (D)
18. (A) (B) (C) (D)
19. (A) (B) (C) (D)
20. (A) (B) (C) (D)
21. (A) (B) (C) (D)
22. (A) (B) (C) (D)
23. (A) (B) (C) (D)
24. (A) (B) (C) (D)
25. (A) (B) (C) (D)
26. (A) (B) (C) (D)
27. (A) (B) (C) (D)
28. (A) (B) (C) (D)
29. (A) (B) (C) (D)
30. (A) (B) (C) (D)
31. (A) (B) (C) (D)
32. (A) (B) (C) (D)
33. (A) (B) (C) (D)
34. (A) (B) (C) (D)
35. (A) (B) (C) (D)
36. (A) (B) (C) (D)
37. (A) (B) (C) (D)
38. (A) (B) (C) (D)
39. (A) (B) (C) (D)
40. (A) (B) (C) (D)

HOW TO USE THE ASSESSMENT GUIDE

This Assessment Guide is intended to provide a quick assessment of your understanding in each area. In the real exam if you fail, NCEES will send you a breakdown on how you did, similar to what is provided in this guide.

After you take this Practice Exam use the answer key to figure out which problem you got right and wrong. Then go to the assessment guide and using the answer key fill out the guide. Filling in the blank space how many you got correct.

Once the page is all fill out

→ 65% or lower : Poor Understanding: You need additional studying and work many more practice problems

→ 65%- 80%: Moderate Understanding: You may need additional studying and should do a few more practice problems in this area.

→ 80- 100% : High Understanding: You understand this area – only do more practice if time available.

CONSTRUCTION DEPTH ASSESSMENT GUIDE

Earthwork Construction and Layout (10%):

Question #1, #2, #8, #17 → _____ / 4 = _____%

Estimating Quantities and Costs (17.5%)

Question #6, #7, #18, #19, #20, #21, #22, #33 → _____ / 8 = _____%

Construction Operations and Methods (15%)

Question #9, #15, #16, #23, #24, #37 → _____ / 6 = _____%

Scheduling (17.5%)

Question #3, #4, #25, #26, #29, #38 → _____ / 6 = _____%

Material Quality Control and Production(10%)

Question #12, #27, #30, #32 → _____ / 4 = _____%

Temporary Structures (12.5%)

Question #5, #10, #11, #13, #31, #35 → _____ / 6 = _____%

Worker Health, Safety, and Environment (7.5%)

Question #14, #28, #40 → _____ / 3 = _____%

Other Topics (10%)

Question #34, #36, #39 → _____ / 3 = _____%

OVERALL → _____ / 40 = _____%

****Congratulations if scored 32 or greater****