STUDY GUIDE
HEAVY EQUIPMENT OPERATOR

TEST #2465

INTRODUCTION

The **2465 Heavy Equipment Operator** Test is a job knowledge test designed to cover the major knowledge areas necessary to perform the job. This Guide contains strategies to use for taking tests and a study outline, which includes knowledge categories and study references.

TEST SESSION

It is important that you follow the directions of the Test Administrator exactly. If you have any questions about the testing session, be sure to ask the Test Administrator before the testing begins. During testing, you may NOT leave the room, talk, smoke, eat, or drink. Since some tests take several hours, you should consider these factors before the test begins.

All cellular/mobile phones, pagers or other electronic equipment will NOT be allowed in the testing area.

All questions on this test are multiple-choice or hot spot questions. Multiple choice questions have four possible answers. Hot spot questions have a picture, and you must click the correct spot on the picture to answer the question. All knowledge tests will be taken on the computer. For more information on this, please see the next section of this study guide on *Computer Based Testing.*

The test has a three hour time limit. A scientific calculator will be provided for you to use during the test. The calculator provided during the test session will be one of these models:

Casio fx-250HC, Texas Instruments TI-30XA, Texas Instruments TI-36X

You will NOT be able to bring or use your own calculator during testing.

You will receive a Test Comment form so that you can make comments about test questions. Write any comments you have and turn it in with your test when you are done.

STUDY GUIDE FEEDBACK

At the end of this Guide you have been provided with a Study Guide Feedback page. If a procedure or policy has changed, making any part of this Guide incorrect, your feedback would be appreciated so that corrections can be made.

ASSESSMENT TAKING STRATEGIES

The 2465 Heavy Equipment Operator knowledge test contains multiple-choice questions. The purpose of this section is to help you to identify some special features of a multiple-choice test and to suggest techniques for you to use when taking one.

Your emotional and physical state during the test may determine whether you are prepared to do your best. The following list provides common sense techniques you can use before the test begins.

CONFIDENCE

If you feel confident about passing the test, you may lose some of your anxiety. Think of the test as a way of demonstrating how much you know, the skills you can apply, the problems you can solve, and your good judgment capabilities.

PUNCTUALITY

Arrive early enough to feel relaxed and comfortable before the test begins.

CONCENTRATION

Try to block out all distractions and concentrate only on the test. You will not only finish faster but you will reduce your chances of making careless mistakes. If possible, select a seat away from others who might be distracting. If lighting in the room is poor, sit under a light fixture. If the test room becomes noisy or there are other distractions or irregularities, mention them to the Test Administrator immediately.

BUDGET YOUR TIMES

Pace yourself carefully to ensure that you will have enough time to complete all items and review your answers.

READ CRITICALLY

Read all directions and questions carefully. Even though the first or second answer choice looks good, be sure to read all the choices before selecting your answer.

MAKE EDUCATED GUESSES

Make an educated guess if you do not know the answer or if you are unsure of it.

CHANGING ANSWERS

If you need to change an answer when testing on a computer, be sure that the new answer is selected instead of the old one.

RETURN TO DIFFICULT QUESTIONS

If particular questions seem difficult to understand, make a note of them, continue with the test and return to them later.

DOUBLE CHECK MATH CALCULATIONS

Use scratch paper to double check your mathematical calculations.

REVIEW

If time permits, review your answers. Do the questions you skipped previously. When testing on a computer, make sure each multiple choice question has a dot next to the correct answer.

Remember the techniques described in this section are only suggestions. You should follow the test taking methods that work best for you.

JOB KNOWLEDGE CATEGORIES AND STUDY REFERENCES

Below are the major job knowledge areas (topics) covered on the **2465 Heavy Equipment Operator Test** and the associated study references. Listed next to each knowledge category is the number of items on the exam that will measure that topic. You can use this information to guide your studying. Some exams also contain additional pretest items. Pretest items will appear just like all of the other items on your exam, but they will not affect your score. They are an essential part of ensuring the 2465 Heavy Equipment Operator Test remains relevant to successful performance of the job.

There are a total of 48 items on the 2465 Heavy Equipment Operator Test and the passing score is 69%.

TOOLS AND EQUIPMENT (2 ITEMS)

MAINTENANCE

Knowledge of proper maintenance practices for heavy equipment, such as backhoes, graders, and bulldozers, and the equipment needed to tow heavy equipment, such as dump trucks and other commercial vehicles. Items in this section may include:

Knowledge of how to verify maintenance needs for heavy equipment, such as knowledge of proper equipment inspection practices, knowledge of wear patterns for moving parts (as well as the names of the basic parts of heavy equipment), knowledge of visual indications of equipment malfunctions, and an understanding of check-engine lights and other warning indicators

Knowledge of how to perform various maintenance tasks, such as knowledge of proper maintenance and adjustment of track equipment and knowledge of proper lubrication practices.

References

California Commercial Drivers Handbook
(https://www.dmv.ca.gov/web/eng_pdf/comlhdbk.pdf)

Nichols, Herbert L.; Day, David. Moving The Earth: The Workbook of Excavation Sixth Edition. McGraw-Hill Education. Chapters 12 & 15

EQUIPMENT OPERATION

Knowledge of proper use of heavy equipment, including backhoes, graders, and bulldozers, and the equipment needed to tow heavy equipment, such as dump trucks and other commercial vehicles. Items in this section may include:

> Knowledge of general heavy equipment operation including knowing how to operate the equipment in difficult situations (e.g., mud, side-hills), the appropriate transmission gear to use in various situations, knowledge of proper blade and implement settings, knowledge of proper engine start-up and shut-down procedures, and knowledge of regulations for operating commercial vehicles.

References

Backhoe Loader Safety Tips
(https://nasdonline.org/1675/d001575/backhoe-and-loader-operational-safety.html)
Note: Use this reference for proper techniques for digging with a backhoe instead of *Moving the Earth: The Workbook of Excavation*.

California Commercial Drivers Handbook (https://www.dmv.ca.gov/web/eng_pdf/comlhdbk.pdf

Nichols, Herbert L.; Day, David. Moving The Earth: The Workbook of Excavation Sixth Edition. McGraw-Hill Education. Chapters 3 (Stuck Machinery, 2 (Entire chapter, 15 (Bulldozers, 19 (Graders, Chapters 21 (Tractor-Mounted Ripper

State of California, Department of Motor Vehicles. (https://www.dmv.ca.gov – Commercial Driver License Medical Eligibility, Employer Pull Notice (EPN Program General Information

RIGGING PRACTICES

Knowledge of rigging techniques. Items in this section may include knowledge of:

> Proper use of hoists and winches
>
> Proper use of rigging equipment across different situations, including Crosbyclips, chains, and wire rope.
>
> Different types of knots and hitches, including strengths and weaknesses of each

References

> Hoisting and Rigging Safety Manual (https://www.ihsa.ca/PDFs/Products/Id/M035.pdf), Sections 2, 3, and 4
>
> Nichols, Herbert L.; Day, David. Moving The Earth: The Workbook of Excavation Sixth Edition. McGraw-Hill Education. Chapter 1 (Winches)

STANDARD PROCEDURES (12 ITEMS)

CONSTRUCTION

Knowledge of standard procedures for construction. Items in this section may include knowledge of:

Standard road-building practices, techniques to avoid erosion, and knowledge of soil characteristics and the corresponding terminology

How to build and install drain lines, sewer lines, and culverts

References

2015 International Plumbing Code (https://codes.iccsafe.org/public/document/code/550/9794943), Chapter 7, Sanitary Drainage

Best Management Practices: Culvert Replacement (https://www.parks.ca.gov/pages/23071/files/culvert%20replacement.pdf

Nichols, Herbert L.; Day, David. Moving The Earth: The Workbook of

Excavation Sixth Edition. McGraw-Hill Education. Chapter 1 (Brush Clearing),

Chapter 3 (Soil and Rock), Chapter 10 (Use of Level), Chapter 19 (Graders),Glossary.

Relationship between degrees, percent slope, and ratio to express slope gradient (http://www.greenbeltconsulting.com/articles/relationships.html

MATHEMATICAL FORMULAS

General knowledge of mathematical principles and formulas. Items in this section may include:

Knowledge of basic mathematics (i.e., multiplication, volume, ratios, area, conversions)

Knowledge of how to calculate force required to move objects using simple machines (e.g., inclined plane, pulley, etc.)

Glover, Thomas J. *Pocket Ref,* 4th Ed., Sequoia Publishing, Littleton, CO. Page 512, 513, 784. 505, 508, 756

How a Block and Tackle Works (https://science.howstuffworks.com/transport/engines-equipment/pulley.htm)

Inclined plane (https://energyeducation.ca/encyclopedia/Inclined_plane)

Pulleys (https://www.explainthatstuff.com/pulleys.html)

Simple Machines: Wedge/Inclined Plane
(https://www.sophia.org/tutorials/simple-machines-wedgeinclined-plane--2)

SAFETY (12 ITEMS)

Knowledge of safety practices. Items in this section may include knowledge required for general operation of heavy equipment, knowledge of safe working limits (e.g., weight) when using different types of materials (e.g., sand, gravel), knowledge of proper procedures when working near underground hazards (including being able to interpret relevant markings), in addition to other specific safety practices for various activities including:

Using ladders, lifts, and other aerial equipment

Working in trenches

Transporting heavy equipment (either on a trailer or driving over the road)

References

California Commercial Drivers Handbook
(https://www.dmv.ca.gov/web/eng_pdf/comlhdbk.pdf

California Vehicle Codes 21654 and 24615 (http://leginfo.legislature.ca.gov/

DOT manual on securing loads (https://www.gpo.gov/fdsys/pkg/CFR-2010-title49-vol5/pdf/CFR-2010-title49-vol5-sec393-108.pdf

Hazard Alert: Operating Heavy Equipment

(http://elcosh.org/document/1817/d000661/hazard-alert%3A-operating-heavyequipment.html)

Portable Ladder Safety (https://www.osha.gov/sites/default/files/publications/OSHA3660.pdf)

Standard Interpretations of certain OSHA regulations (https://www.osha.gov/laws-regs/standardinterpretations/2005-05-11-1

Trenching and Excavation Safety (https://www.osha.gov/Publications/osha2226.pdf)

Underground Service Alert of Southern California (https://www.digalert.org/delineation

STUDY GUIDE FEEDBACK

Please use this page to notify us of any changes in policies, procedures, or materials affecting this guide. Once completed, return to:

Southern California Edison Human Resources - Performance Assessment Services G.O. 4, Ground Floor 8631 Rush St. Rosemead, CA 91770

TEST NAME: 2465 HEAVY EQUIPMENT OPERATOR TEST

If you have encountered any discrepancies in the test, please provide an explanation and the page number below.

COMMENTS