

# *PLANT OPERATOR SELECTION SYSTEM*

## **Test Brochure**

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## **Plant Operator Selection System (POSS)**

The Plant Operator Selection System (POSS) is a test battery that was developed and validated to aid in selecting power plant operators. POSS is the culmination of a large research program sponsored by the Edison Electric Institute (EEI) and carried out by the Personnel Decisions Research Institute. A total of 70 investor-owned electric companies initially participated in the project. Research information was obtained and analyzed from thousands of company officials, supervisors, and plant operating incumbents working in hundreds of plants. The result of this extensive research effort is a battery of tests that predict the likelihood of success in various power plant operator jobs.

POSS can be used to select candidates for operating jobs in fossil, nuclear, or hydro power plants. The test battery takes about two hours to administer. Components of the test battery measures how a candidate compares with others on a number of important aptitudes or abilities. The POSS test battery consists of four test components.

The test components measure the cognitive abilities found to be important to successful job performance for plant operators. The test components are arranged in two alternate test batteries, which differ slightly in content and administration time. Although the content of the two test batteries differs somewhat, both have been found to be related to success in plant operations work.

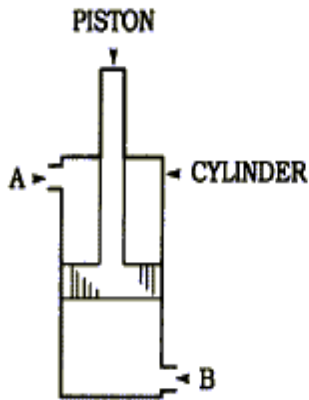
The test components included in the battery are described below.

**Reading Comprehension.** This test measures a person's ability to read and understand the type of material found in power plant operator training and safety manuals. The Reading Comprehension test consists of five reading passages, each followed by several multiple-choice questions about the passage. The test has 36 questions and a 30-minute time limit.

**Mechanical Concepts.** This test measures a person's ability to understand mechanical principles. Each question contains a pictorial description of a mechanical situation and three possible answers. The test has 44 multiple-choice questions and a 20-minute time limit.

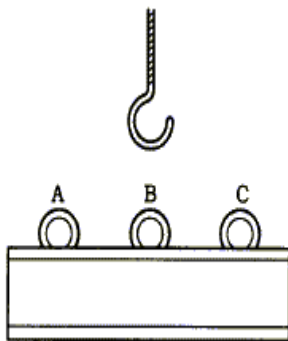
Examples of questions like those on the **Mechanical Concepts** test are:

- 1) In the figure below, at which point should pressurized air enter the cylinder to lower the piston?  
(If both, mark C.)



- A
- B
- C (Both A & B)

- 2) To keep the beam horizontal when lifted, at which point should you hook the cable?



- A
- B
- C

**Mathematical Usage.** There are two versions of this test component depending on the version of test battery administered. The first version measures candidates' skill in working with basic mathematical formulas based on information provided at the beginning of the test. This version of the test includes 18 questions and has a 7-minute time limit.

The second version of the test measures skill in solving and manipulating mathematical relationships. There are three sections: formula conversion problems, algebra problems, and word problems. This version of the test contains 46 multiple-choice questions and has a 17-minute time limit.

An example of a question like those on the first version of the **Mathematical Usage** test is:

**2 quarts = ? gallons** [with the information already provided that 1 gallon = 4 quarts]

- a. .4
- b. 2
- c. .5
- d. 5
- e. N

The correct answer is C.

Examples of questions like those on the second version of the **Mathematical Usage** test are:

1)  $6X + 12 = 48$        $X = ?$

- a. 6
- b. 12
- c. 8
- d. 4
- e. N

2) What would be the area of a trapezoid with an upper base of 10', lower base of 25' and 32' tall?  
[with the information already provided that Area of a trapezoid =  $[1/2(\text{upper base} + \text{lower base})] \times \text{height}$ ]

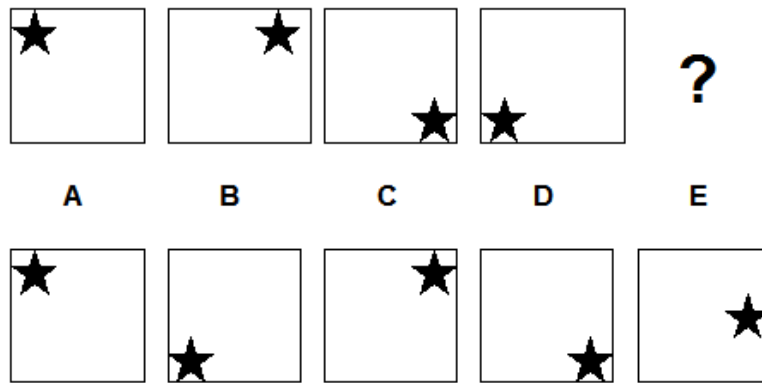
- a. 480
- b. 540
- c. 360
- d. 560
- e. N

The correct answer to the first question is A and the correct answer to the second question is D.

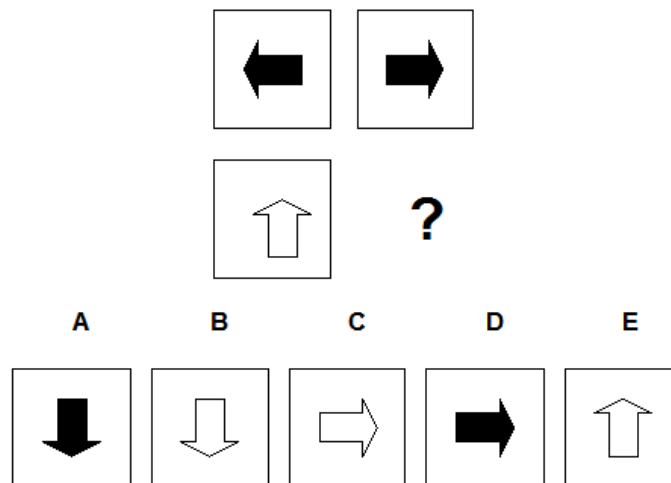
**Figural Reasoning.** This test requires an individual to identify patterns in order to solve problems. There are three different types of questions: Picture Series, Picture Comparison, and Picture Progression. For Picture Series items, a series of four pictures is displayed, and you need to determine what the fifth picture should look like in order to maintain a consistent pattern. For Picture Comparison items, two pictures are displayed in the top row and one in the bottom row. You have to determine what the relationship is between the two pictures in the top row in order to select the answer choice that creates the same relationship when paired with the single picture in the bottom row. For Picture Progression items, one pattern goes across the rows, and one pattern goes down the columns and correct answers maintain a consistent pattern both across the rows and down the columns. The test contains 20 multiple-choice questions and has a 10-minute time limit.

Examples of items like those on the **Figural Reasoning** test are:

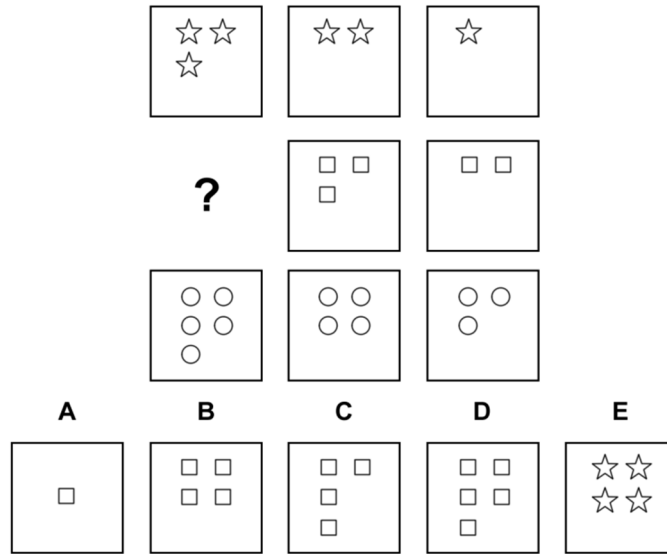
**Example 1:**



**Example 2:**



**Example 3:**



The correct answer for the first example is A. The correct answer for the second example is B. The correct answer for the third example is B.

**Scoring**

The test components are scored based on the number of questions a person answers correctly. There is no penalty for guessing or wrong answers. The component scores are then combined into an index score ranging in value from 0 to 15. The index score provides a prediction of overall plant operations effectiveness and is used to determine the probability of success or failure in plant operations jobs. As such, it can differentiate between potentially effective candidates and those individuals less likely to succeed.

**Integration of MASS and POSS**

Much of the same knowledge, skills, and abilities are often necessary for successful job performance in plant operations and maintenance jobs. Additionally, companies will often wish to select employees for entry-level jobs that may involve progression into either the power plant operations or maintenance hierarchies. For these reasons, the MASS and POSS test batteries may be concurrently administered, using specialized administration instructions. The combined MASS/POSS test battery will require about three hours to administer.