

NOT FOR SALE

Junior

Level

Science

Scholarships

Examination

P R I M E R

2024



Department of Science and Technology
SCIENCE EDUCATION INSTITUTE

FOREWORD


The Science Education Institute (SEI) of the Department of Science and Technology (DOST) administers the Junior Level Science Scholarships (JLSS). These scholarships aim to assist deserving Filipino students in their third year of college, displaying high aptitude in science and mathematics and pursuing degree programs in the priority fields of science and technology.



For the forthcoming JLSS pen-and-paper qualifying examination to identify new scholars, the Institute has prepared the **DOST-SEI JLSS Examination Primer**. This primer contains sample test items in the various domains similar to what you will encounter in the examination. By being familiar with the question types, hopefully, you will be able to prepare and practice on similar items and be ready for the test.

Through the JLSS and other scholarships offered by the DOST-SEI, we envision producing a sufficient pool of highly qualified S&T human resources who can potentially emerge as future STEM leaders and contribute to the country's economic progress and sustainability through research, development, and innovation.

We wish you the best of luck in the exam and future endeavors.


Engr. Albert G. Mariño
Director III, and OIC, SEI

JUNIOR LEVEL SCIENCE SCHOLARSHIP EXAMINATION PRIMER

ABOUT THE EXAMINATION

The Junior Level Science Scholarship (JLSS) Examination for scholarship applicants under RA 7687, RA 10612, and Merit Programs is primarily a multiple-choice test consisting of three (3) parts which are separately timed:

Part I.	Creative Reasoning; Language and Literature	30 mins.
Part II.	Science	45 mins.
Part III.	Mathematics	60 mins.

If you finish a part before the allotted time, you can use your time wisely by reviewing your answers for that particular part only. You will not be allowed to proceed to the next part nor will you be allowed to go back to the previous part.

You will take the examination in one sitting for approximately four (4) hours. This includes the reading of instructions, filling-out of forms and the actual testing. Hence, you will not be allowed to leave the room once the test starts except to go to the comfort room, when necessary.

Eat a heavy meal prior to going to your test session. There is no snack break but you will be allowed to eat at anytime during the exam. Make sure that you do not smear any of the test materials.

In the following sections of the Primer, sample test items are presented so you can familiarize with the type of questions you will encounter in the test. These are made available for you as guide to help you achieve your best performance in the JLSS Examination.

PART I: CREATIVE REASONING TEST LANGUAGE AND LITERATURE

A. Creative Reasoning Test has three (3) sub-parts, namely:

A.1. Verbal Reasoning tests your ability to understand, analyze and interpret information. It also measures your ability to extract meaning from complex information and to think logically and analytically.

Sample Items:

1. Unlike the other interviewees, the last applicant interviewed conducted herself with commendable _____ despite her being asked annoying questions repeatedly.

- | | |
|-------------|-----------------|
| A. decorum | C. patience |
| B. ferocity | D. belligerence |

2. carbohydrates : glucose :: proteins : _____

- | | |
|----------------|-------------|
| A. glycogen | C. albumins |
| B. citric acid | D. lipids |

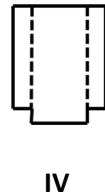
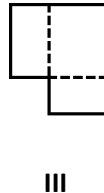
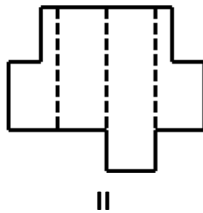
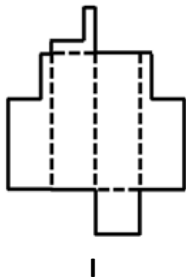
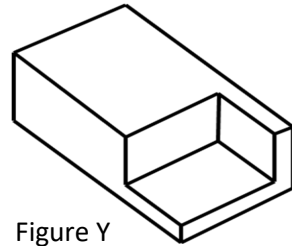
3. dichotomy : _____

- | | |
|-------------|---------------------|
| A. plant | C. struggle |
| B. division | D. religious office |

A.2. Spatial Reasoning measures your ability to recreate visual experiences and reasoning about shape, measurement, depiction and navigation. It also tests your ability to mentally rotate and manipulate two dimensional and three dimensional spaces.

Sample Items:

1. Which two folding patterns below can be joined together to form Figure Y?



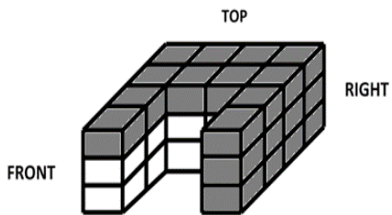
A. **I** and **IV**

C. **I** and **III**

B. **II** and **III**

D. **II** and **IV**

2. What is the resulting volume if the darkened layers of a solid consisting of identical blocks as shown below are removed?



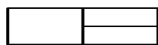
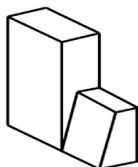
A. 20

B. 16

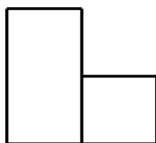
C. 10

D. 28

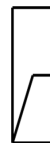
3. Figure A has the following views:



TOP

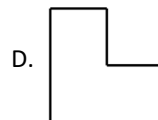
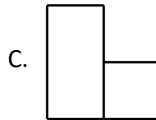
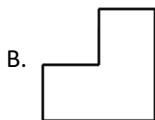
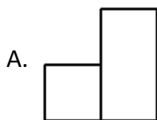


FRONT



SIDE

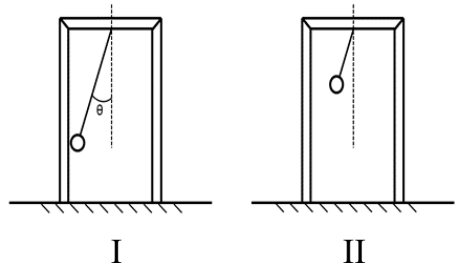
Which of the following shows the rear view of Figure A?



A.3. Mechanical Reasoning will measure your ability to comprehend mechanical and physical concepts and principles. It also measures your ability to understand, analyze and visualize the movement and interaction of different mechanical components.

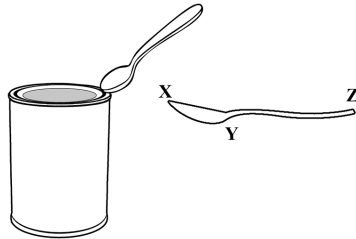
Sample Items:

1. Pendulums I and II are shown on the right. If they are released from the same angle at the same time, which of the following statements will be TRUE?



- A. Pendulum I will have more oscillations than Pendulum II.
- B. Pendulums I and II will move at the same time.
- C. Pendulums I and II will stop at the same time.
- D. Pendulum I will be the last to stop.

2. A spoon is used to pry open the lid of a can of biscuits. Which of the following will work better?



- A. Apply a downward force on Z and a fulcrum at Y
- B. Apply an upward force on Z and a fulcrum at Y
- C. Apply an upward force on Y and a fulcrum at Z
- D. ALL will work equally well

3. **Direction:** Choose the best meaning which corresponds to the underlined word. The meaning maybe contextual, idiomatic or metaphoric.

Solar inventions have been patented for use as bleaching ivory, drying fruit and treating Irish moss.

- A. protected by legal documents C. prevented
B. manufactured extensively D. legalized

4. **Direction:** Study the given situation and choose the appropriate response to the question.

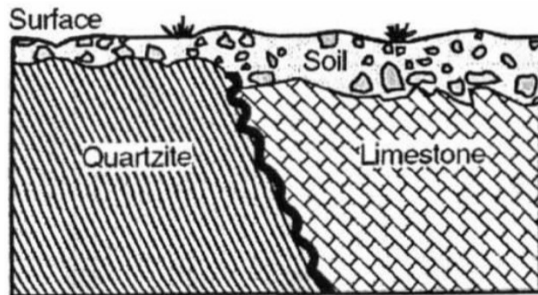
You are listening to a lecture and you did not quite hear what the lecturer just said. You raise your hand to ask the lecturer to repeat what he said. Which of the following will you say?

- A. How's that again? C. I didn't quite hear you.
B. Please repeat what you said. D. Could you please repeat what you just said?

PART II: SCIENCE

Sample Items:

1. After a period of vigorous exercise, blood leaving a muscle is expected to have _____.
 - A. less carbon dioxide, less oxygen and less glucose
 - B. more carbon dioxide, less oxygen and less glucose
 - C. more carbon dioxide, more oxygen and less glucose
 - D. more carbon dioxide, more oxygen and more glucose
2. Which of the following statement **BEST** explains why the soil is thicker above the limestone than it is above the quartzite?



- A. Quartzite is older than the limestone.
- B. Limestone is thicker than the quartzite.
- C. Quartzite is formed from molten magma.
- D. Limestone is less resistant to weathering than the quartzite.

3. The average mass of an Avogadro's number of hydrogen atoms is 1.008 grams. Which of the following statement is TRUE?

(Avogadro's number, $N_A = 6.022 \times 10^{23}$)

A. Average mass of a H atom is given by $N_A \times 1.008$

B. Average mass of a H atom is given by $1.008 / N_A$

C. Average mass of a H atom is given by $N_A / 1.008$

D. Average mass of a H atom is 1.008 g

4. Which of the following are intensive properties in thermodynamics?

- | | |
|------|-------------|
| I. | Temperature |
| II. | Pressure |
| III. | Composition |
| IV. | Mass |

A. I only

C. I and II

B. IV only

D. I, II and III

5. The process by which a substance in liquid state becomes a gas is called _____.

A. melting

C. vaporization

B. freezing

D. condensation

6. What are the three basic components of an atom?

A. protons, neutrons, water

B. protons, neutrons, electrons

C. neutrons, protons, electricity

D. electrons, neutrons, particles

PART III: MATHEMATICS

Sample Items:

1. The angle of elevation from a point $15\sqrt{3}$ meters from the base of a tower to its top is 60° . Find the height of the tower.
A. 30 m
B. 45 m
C. 60 m
D. 75 m
2. Working together, Alex and Avie can finish a job in 4 hours. If Avie alone can finish the job in 6 hours, how many hours will it take Alex to work alone to complete the job?
A. 5
B. 8
C. 10
D. 12
3. What is the area of the region bounded by the parabola $y = x^2$, the x axis, and the line $x = 2$?
A. 8 sq. units
B. 4 sq. units
C. $\frac{8}{3}$ sq. units
D. $\frac{4}{3}$ sq. units

Answer Key :

Part I : Creative Reasoning Test

A. Verbal Reasoning

1. A
2. C
3. B

B. Spatial Reasoning

1. C
2. B
3. B

C. Mechanical Reasoning

1. D
2. A

D. Language and Literature

1. B
2. A
3. A
4. D

Part II : Science

1. B
2. D
3. B
4. D
5. C
6. B

Part II : Mathematics

1. B
2. D
3. C



***”Ang karunungan taglay,
sa bayan iaalay.”***

Maging DOST-SEI Scholar!

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