

NOT FOR SALE

PRIMER

on the
DOST-SEI

JUNIOR LEVEL SCIENCE SCHOLARSHIPS

**Examination
2019**



FOREWORD

In its commitment to help increase the number of young people who will go into the specialized fields in science and technology, the Department of Science and Technology (DOST) through the Science Education Institute (SEI) is offering the Junior Level Science Scholarships (JLSS) under Republic Act No. 7687, Republic Act No. 10612, and Merit Programs. These scholarships are made available to talented third year college students enrolled in priority science and technology courses at identified tertiary institutions nationwide. To be able to qualify for the scholarships, the applicants must pass the JLSS Examination.



Thus, our Institute ushers in the publication of **A Primer on the DOST-SEI Junior Level Science Scholarship Examination** that will benefit the students in preparing for the highly competitive scholarship examination and eventually qualifying for the S&T Scholarships.

Through the JLSS Program, DOST-SEI hopes to produce scholar-graduates equipped with excellent skills who will have successful careers in science and technology and become the country's future science leaders and innovators.

Josette T. Biyo
JOSETTE T. BIYO, Ph.D.
Director

A PRIMER ON THE JUNIOR LEVEL SCIENCE SCHOLARSHIP EXAMINATION

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 two (2) parts with several sub-parts which are separately timed. If you finish a part before the allotted time, you will not be allowed to proceed to the next part nor will you be allowed to go back to a previous part. You can use your time wisely by reviewing your answers for that particular part only.

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. Bring snacks. You may be allowed to eat at anytime during the test but 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 actual test. These are made available for you as guide to help you achieve your best performance in the JLSS Examination.

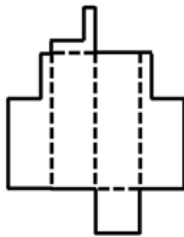
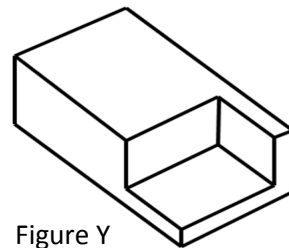
PART I: LOGICAL REASONING TEST

Logical Reasoning Test has three (3) sub-parts, namely:

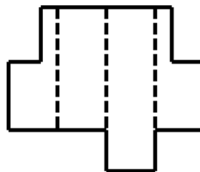
A. Spatial Reasoning measures your ability to recreate visual experiences and reasoning about shape, measurement, depiction and navigation. It also tests your ability to mentally rotate and manipulate two dimensional and three dimensional spaces.

Sample Items:

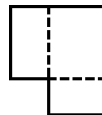
1. Which two folding patterns below can be joined together to form Figure Y?



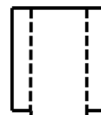
I



II



III



IV

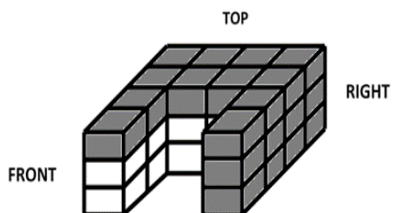
A. I and IV

C. I and III

B. II and III

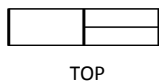
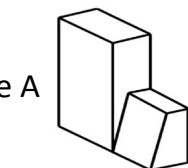
D. II and IV

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

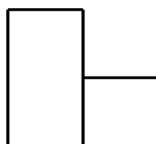


- A. 20 B. 16 C. 10 D. 28

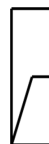
3. Figure A has the following views:



TOP

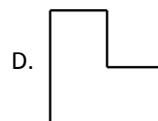
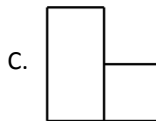


FRONT



SIDE

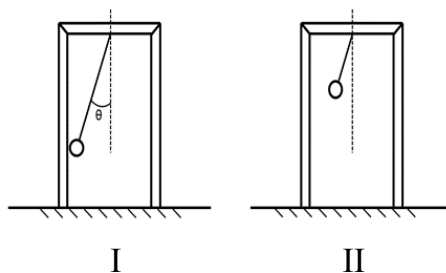
Which of the following shows the rear view of Figure A?



B. 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.

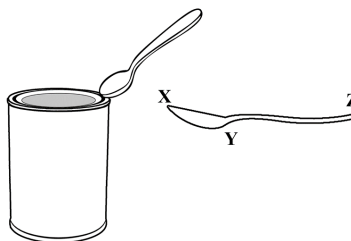
Sample Items:

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 an upward force on Z and a fulcrum at Y
- B. Apply a downward 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

C. 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 repeatedly asked annoying questions.

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

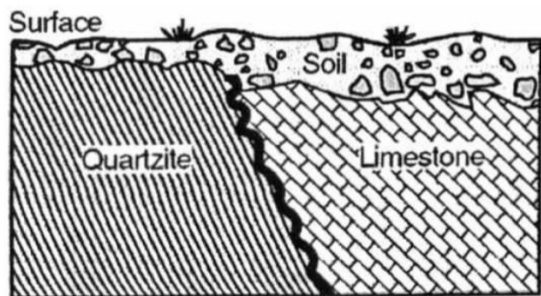
D. religious office

PART II: POWER TEST

Power Test includes sub-tests in Science, Mathematics, English and Teaching Aptitude.

A. SCIENCE

Sample Items:



1. Which of the following statement **BEST** explains why the soil is thicker above the limestone than it is above the quartzite?
 - A. Quartzite is formed from molten magma
 - B. Quartzite is older than the limestone
 - C. Limestone is thicker than the quartzite
 - D. Limestone is less resistant to weathering than the quartzite
2. 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

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
- B. IV only
- C. I and II
- D. I, II and III

5. Find the number of bricks used in a wall 100 ft long, 10 ft high and one and half brick in thickness. The size of each is $9'' \times 4 \frac{1}{2}'' \times 3''$.

- A. 10000
- B. 16000
- C. 15000
- D. 11000

6. What value of x will make the program run infinitely many times?

<pre>while (x < 5) print "hello" x = x - 1</pre>

- A. $x = 7$
- B. $x = 6$
- C. $x = 5$
- D. $x = 4$

7. How many 60KB files can be stored in a 1 GB storage device?

A. 16,666

C. 16,665

B. 16,667

D. 16,664

B. 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

C. 60 m

B. 45 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

C. 10

B. 8

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

C. $\frac{8}{3}$ sq. units

B. 4 sq. units

D. $\frac{4}{3}$ sq. units

Sample Items:

1. Can you give me an information as to when and where the conference will be held?

A B C D

I look forward to the adventure promised by a *habal-habal* ride now, but on my first ride, I was practically frozen with fear as I sat between the driver and my British co-volunteer. Barely moving a muscle, I was terrified we would fall off on one of the slippery bends, or worse, plummet into a ravine. Later, experience taught me that if I shadowed the driver's movements, I could actually manage to enjoy the trip and reach my destination in one piece.

The writer mentions how difficult her first ride was in order to _____.

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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/she 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? |

D. TEACHING APTITUDE

This part is an inventory which aims to assess your traits and skills and potential for the role and responsibilities of an effective and inspiring science or mathematics teacher.

Direction: Choose your best answer in each of the following questions.

Sample Items:

1. Teacher Ched would like to see to it that her class is well-managed. Which of the following three techniques can she do?

- I. Teachers praising their students, either privately or publicly, depending on the student's personality
- II. Telling the students that there's no room for mistakes in the classroom
- III. Reiterating rules every now and then
- IV. Ignoring misbehavior that can stop on its own

A. I, II, III

C. III, IV, I

B. II, III, IV

D. IV, I, II

2. Who among the teachers below assesses students authentically?

A. Mr. Mel who gives students real-life tasks to accomplish.

B. Ms. Flora who gives valid and reliable paper-pencil test.

C. Ms. Minerva who considers students' suggestions in testing.

D. Mr. Mario who includes parents in the determination of assessment procedures.

Answer Key :

Part I : Logical Reasoning Test

A. Spatial Reasoning

1. C
2. B
3. B

B. Mechanical Reasoning

1. D
2. B

C. Verbal Reasoning

1. A
2. C
3. B

Part II : Power Test

A.Science

1. D
2. B
3. B
4. D
5. B
6. D
7. A

B. Mathematics

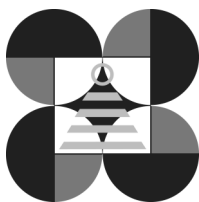
1. B
2. D
3. C

C. English

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

D. Teaching Aptitude

1. C
2. A



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