

FOR TEACHERS ONLY

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

PS-ES PHYSICAL SETTING/EARTH SCIENCE

Wednesday, January 27, 2010 — 9:15 a.m. to 12:15 p.m., only

SCORING KEY AND RATING GUIDE

Directions to the Teacher:

Refer to the directions on page 3 before rating student papers.

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site <http://www.emsc.nysed.gov/osa/> and select the link "Examination Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents examination period.

Part A and Part B-1

Allow 1 credit for each correct response.

Part A			Part B-1	
1 2	13 1	25 4	36 2	44 1
2 1	14 3	26 4	37 3	45 1
3 2	15 3	27 2	38 4	46 3
4 4	16 1	28 3	39 1	47 4
5 3	17 2	29 1	40 3	48 3
6 1	18 3	30 4	41 2	49 3
7 4	19 4	31 1	42 2	50 1
8 2	20 4	32 4	43 4	
9 4	21 3	33 2		
10 3	22 2	34 2		
11 3	23 1	35 4		
12 2	24 3			

Directions to the Teacher

Follow the procedures below for scoring student answer papers for the Physical Setting/Earth Science examination. Additional information about scoring is provided in the publication *Information Booklet for Scoring Regents Examinations in the Sciences*.

Use only *red* ink or *red* pencil in rating Regents papers. Do *not* correct the student's work by making insertions or changes of any kind.

On the detachable answer sheet for Part A and Part B–1, indicate by means of a check mark each incorrect or omitted answer. In the box provided at the end of each part, record the number of questions the student answered correctly for that part.

At least two science teachers must participate in the scoring of each student's responses to the Part B–2 and Part C open-ended questions. Each of these teachers should be responsible for scoring a selected number of the open-ended questions on each answer paper. No one teacher is to score all the open-ended questions on a student's answer paper.

Students' responses must be scored strictly according to the Scoring Key and Rating Guide. For open-ended questions, credit may be allowed for responses other than those given in the rating guide if the response is a scientifically accurate answer to the question and demonstrates adequate knowledge as indicated by the examples in the rating guide. In the student's answer booklet, record the number of credits earned for each answer in the box printed to the right of the answer lines or spaces for that question.

Fractional credit is *not* allowed. Only whole-number credit may be given to a response. Units need not be given when the wording of the questions allows such omissions.

Raters should enter the scores earned for Part A, Part B–1, Part B–2, and Part C on the appropriate lines in the box printed on the answer booklet and then should add these four scores and enter the total in the box labeled "Total Written Test Score." The student's score for the Earth Science Performance Test should be entered in the space provided. Then, the student's raw scores on the performance test and written test should be converted to a scaled score by using the conversion chart that will be posted on the Department's web site <http://www.emsc.nysed.gov/osa/> on Wednesday, January 27, 2010. The student's scaled score should be entered in the labeled box on the student's answer booklet. The scaled score is the student's final examination score.

All student answer papers that receive a scaled score of 60 through 64 **must** be scored a second time. For the second scoring, a different committee of teachers may score the student's paper or the original committee may score the paper, except that no teacher may score the same open-ended questions that he/she scored in the first rating of the paper. The school principal is responsible for assuring that the student's final examination score is based on a fair, accurate, and reliable scoring of the student's answer paper.

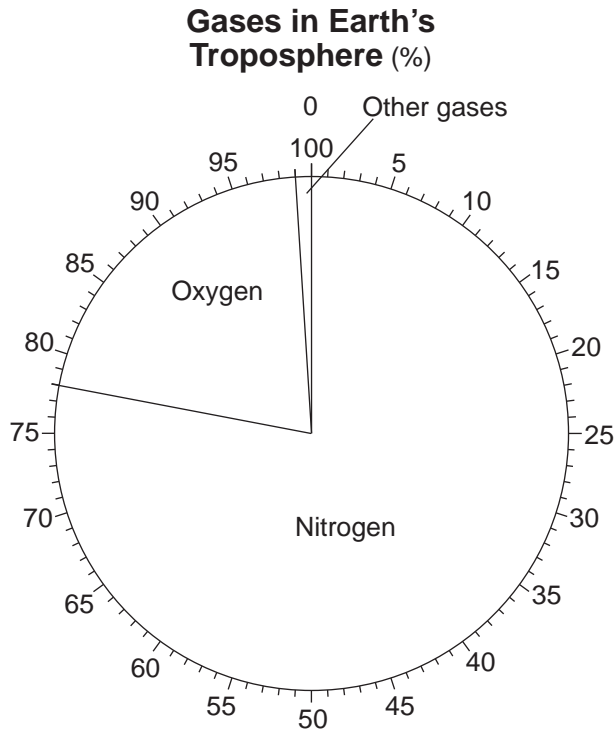
Because scaled scores corresponding to raw scores in the conversion chart may change from one examination to another, it is crucial that for each administration, the conversion chart provided for that administration be used to determine the student's final score.

Part B–2

Allow a total of 15 credits for this part. The student must answer all questions in this part.

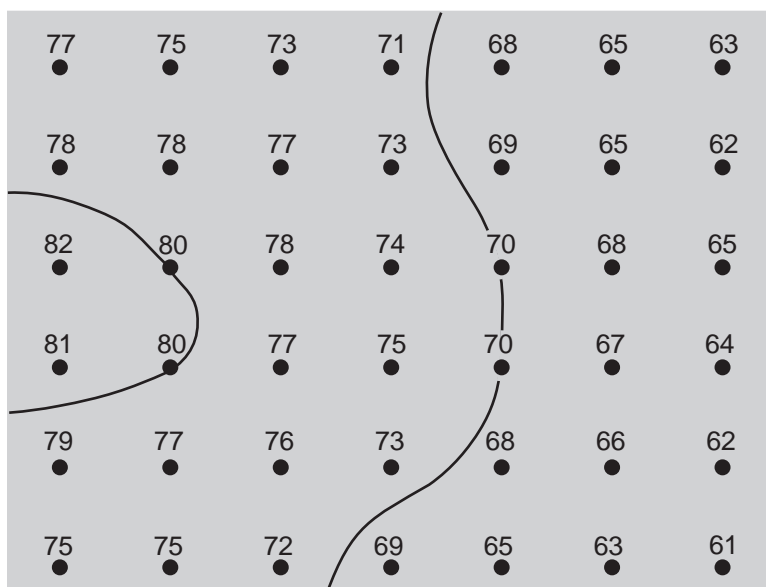
- 51 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Cooling and solidification are processes that form igneous rocks.
 - As early Earth cooled and solidified, igneous rocks were formed.
 - The once molten Earth formed igneous rocks as it solidified.
- 52 [1] Allow 1 credit for hematite.
- 53 [1] Allow 1 credit for stratosphere.
- 54 [1] Allow 1 credit if the student-graphed sections are correctly drawn and labeled. The sections may be graphed in any order.

Example of a 1-credit response:



- 55 [1] Allow 1 credit if *both* isotherms are correctly drawn to the edges of the map. If additional isotherms are drawn, all isotherms must be correct to receive credit.

Example of a 1-credit response:



- 56 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The intensity of insolation increases from 11:00 a.m. to 12 noon.
 - The Sun’s energy becomes more concentrated.
 - Sunlight becomes more direct.
 - The Sun rises higher in the sky.
- 57 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Stars with larger masses reach the main sequence faster.
 - Small stars take more time to become main sequence stars.
 - inverse relationship between mass and time
- 58 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The luminosity will decrease.
 - The star will be less luminous.
- 59 [1] Allow 1 credit for gravity *or* gravitational.

- 60** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- marble
 - hornfels
- 61** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Rock unit *A* is above rock unit *B*.
 - Older sedimentary rock unit *B* is found beneath younger sedimentary rock unit *A*.
- 62** [1] Allow 1 credit for any value from 0.006 to 0.2 cm.
- 63** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Earth is revolving around the Sun.
 - tilt of Earth's axis
 - parallelism of Earth's axis
- 64** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- two different crystal sizes
 - Coarse and fine crystals are found together.
- 65** [1] Allow 1 credit if all *three* minerals are correct.
- (1) plagioclase *or* plagioclase feldspar
 - (2) biotite *or* biotite mica
 - (3) amphibole *or* hornblende

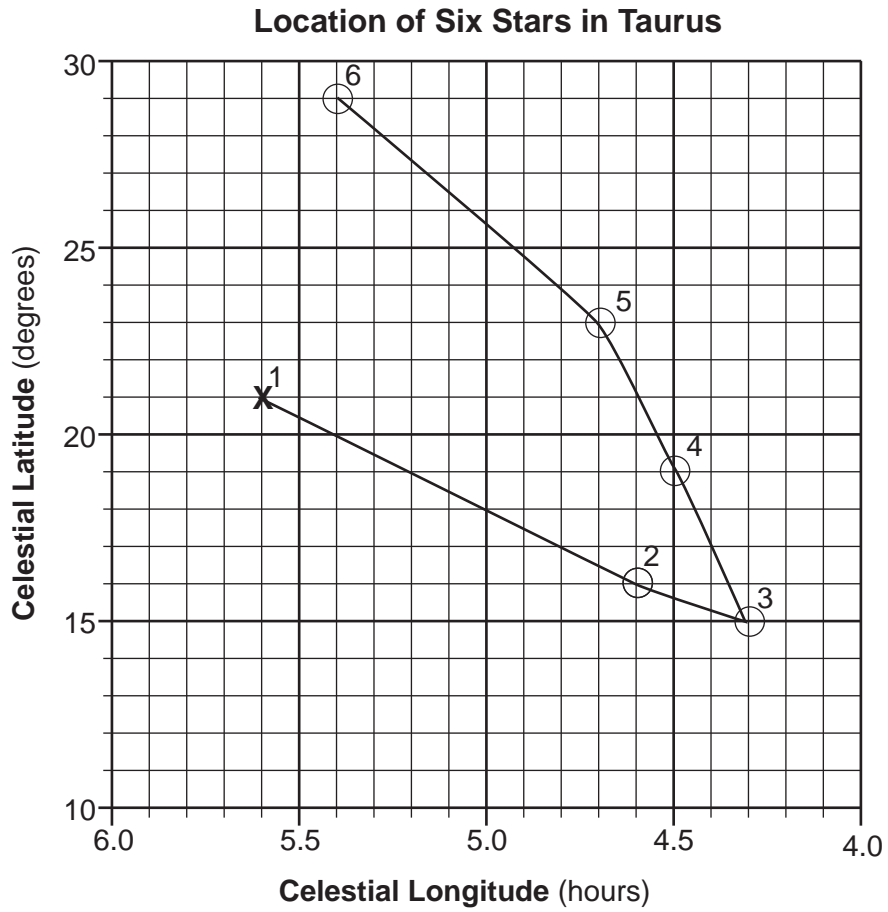
Note: Do *not* allow credit for feldspar, mica, *or* pyroxene.

Part C

Allow a total of 20 credits for this part. The student must answer all questions in this part.

- 66** [1] Allow 1 credit if all **Xs** are correctly plotted, numbered, and connected with a line that passes through the circles as shown below.

Example of a 1-credit response:



67 [1] Allow 1 credit if *both* the temperature and classification are correct.

Stars	Temperature (K)	Luminosity (relative to the Sun)	Classification
<i>Aldebaran</i>	3500 to 4100		
<i>Elnath</i>			main sequence

68 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- intrusion of the Palisades sill
- breakup of Pangaea

69 [1] Allow 1 credit for the letters in the order shown below.

Highest air-pressure station: A

 D

 B

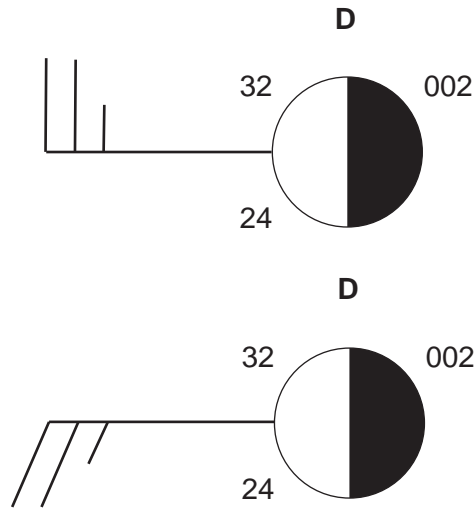
Lowest air-pressure station: C

70 [1] Allow 1 credit for any value from 27°C to 28°C.

71 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The difference between air temperature and dewpoint is smallest at station C.
- Station C has the lowest air pressure.
- Station C has 100% overcast skies.

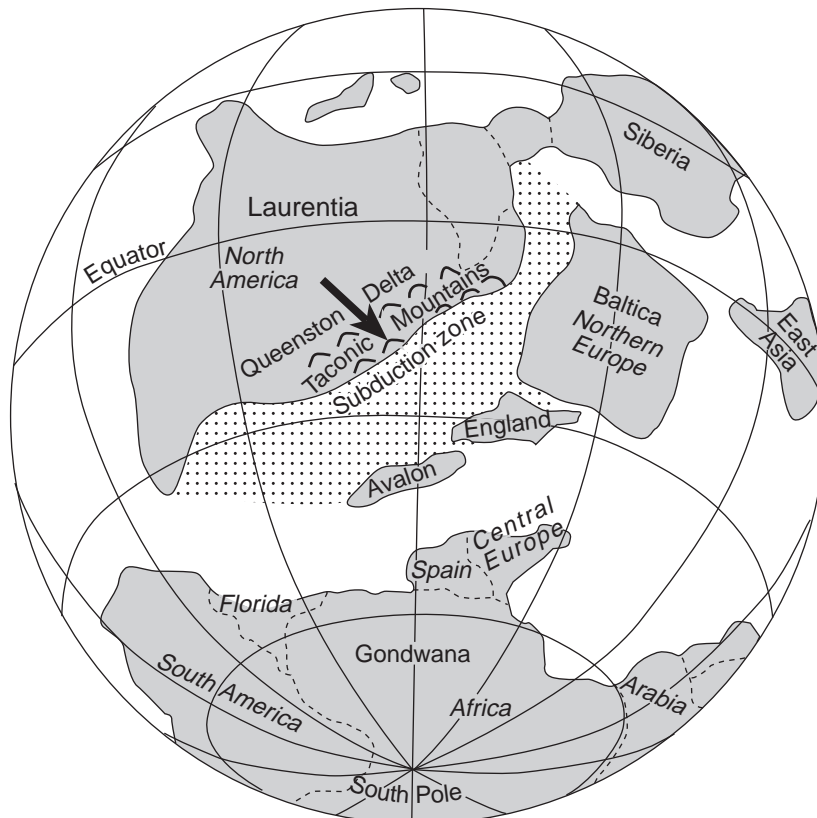
72 [1] Allow 1 credit if *both* wind direction and wind speed are correct as shown below.



73 [1] Allow 1 credit if the center of the student's **X** is within the stippled area.

74 [1] Allow 1 credit for an arrow that shows Laurentia moving to the southeast, south, or east.

2-credit response for questions 73 and 74:

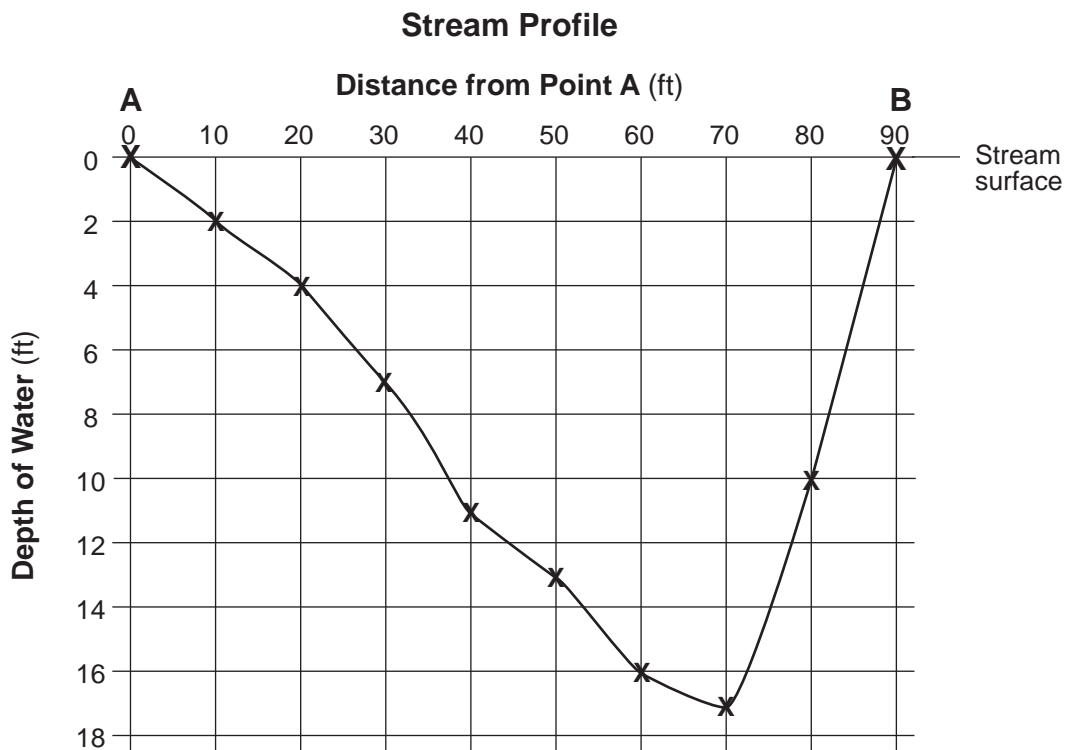


75 [1] Allow 1 credit for Ordovician Period.

76 [2] Allow a maximum of 2 credits, allocated as follows:

- Allow 1 credit for a scale that has numbers at equal intervals indicating an increasing depth from the stream surface and incorporates all data.
- Allow 1 credit if the centers of seven or eight student drawn **Xs** are located within ± 0.5 feet, according to the student's scale, and are correctly connected with a line.

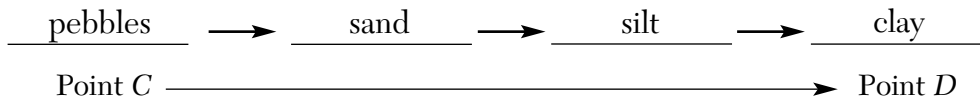
Example of a 2-credit response:



77 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- More deposition has occurred on the inside of the meander.
- Stream water moves slower on the inside curve.
- More erosion occurs on the outside of a bend.
- B is located on the outside of a meander.

78 [1] Allow 1 credit for listing all sediments in the order shown below.



79 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- A “clean” sandstone contains mostly quartz, while a “dirty” sandstone can contain other minerals, such as plagioclase feldspar and calcite.
- A “dirty” sandstone contains many different minerals, while a “clean” sandstone contains mostly one kind of mineral.

80 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- burial
- compaction
- cementation

81 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- noise or dust from drilling, blasting, grinding, and/or truck traffic
- pollution of streams and groundwater
- increased erosion
- habitat destruction/deforestation

- 82** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Dust from the volcanic eruption carried high in the atmosphere reflected and reduced the sunlight reaching Earth’s surface.
 - The eruption caused a decrease in atmospheric transparency.
 - Ash blocks insolation from reaching Earth’s surface.
- 83** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- infrared
 - microwaves
 - radio waves
- 84** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- allows most solar radiation to pass through
 - prevents some terrestrial radiation from escaping
 - traps heat

Map to Core Curriculum

January 2010 Physical Setting/Earth Science			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		54, 55	66, 76
Math Key Idea 2	6, 10, 12, 14, 30	45, 57, 58	67
Math Key Idea 3		41, 42	
Science Inquiry Key Idea 1	3, 4, 7, 13, 25, 28, 29	37, 38, 39, 46, 51, 59, 64	80, 82, 83, 84
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	4		
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1		43	
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1	9, 19, 32	40, 51, 52, 59	71, 77, 78, 80
Key Idea 2	1, 16, 17, 23, 24, 26, 28, 30, 32, 33, 34, 35	36, 41, 42, 43, 44, 47, 48, 49, 50, 54, 55, 57, 58, 60, 61, 62, 63	69, 70, 71, 72, 73, 74, 75, 76, 84
Key Idea 3	2, 31		
Key Idea 4			
Key Idea 5	18, 26, 27, 28, 32	38, 41, 42, 43, 44, 51, 56, 57, 58, 63	74, 75
Key Idea 6			81
Standard 7			
Key Idea 1			81
Key Idea 2			
Standard 4			
Key Idea 1	1, 2, 3, 4, 5, 6, 7, 11, 13, 14, 16, 17, 18, 26, 30, 31	36, 37, 38, 39, 44, 47, 48, 49, 50, 57, 58, 59, 61, 63	66, 67, 68, 73, 75
Key Idea 2	8, 9, 10, 12, 15, 19, 22, 23, 24, 25, 27, 28, 29, 32, 33, 34, 35	40, 41, 42, 43, 45, 53, 54, 55, 56	69, 70, 71, 72, 74, 76, 77, 78, 82, 83, 84
Key Idea 3	20, 21	46, 51, 52, 60, 62, 64, 65	79, 80, 81
ESRT 2010 Edition	4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 27, 31, 33, 34	44, 45, 46, 52, 53, 54, 60, 62, 64, 65	67, 68, 69, 70, 71, 72, 74, 75, 78, 80, 83