FOR TEACHERS ONLY

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

ES–PM

EARTH SCIENCE
PROGRAM MODIFICATION EDITION

Thursday, June 18, 1998 — 1:15 to 4:15 p.m., only

SCORING KEY

Directions to the Teacher:

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

Scan each answer paper to make certain that the student has marked only one answer for each question. If a student has marked two or more answers with an X in ink, draw a red line through the row of numbers for that question to indicate that no credit is to be allowed for that question when the answer paper is scored.

To facilitate scoring, the scoring key for **Part I and Part II** may be made into a scoring stencil by punching out the correct answers. Be sure that the stencil is aligned with the answer paper so that the holes correspond to the correct answers. To aid in proper alignment, punch out the first and last item numbers in each part and place the stencil on the answer paper so that these item numbers appear through the appropriate holes.

Part I
Allow a total of 40 credits for Part I, one credit for each correct answer.

1	1	2	**X**	4		15	1	2	**X**	4		29	1	2	3	**X**
2	**X**	2	3	4		16	**X**	2	3	4		30	1	**X**	3	4
3	1	2	3	**X**		17	1	2	3	**X**		31	1	2	3	**X**
4	1	2	**X**	4		18	1	2	**X**	4		32	1	2	**X**	4
5	1	**X**	3	4		19	1	**X**	3	4		33	**X**	2	3	4
6	**X**	2	3	4		20	1	2	3	**X**		34	1	2	3	**X**
7	1	2	3	**X**		21	1	2	**X**	4		35	**X**	2	3	4
8	**X**	2	3	4		22	1	**X**	3	4		36	1	2	3	**X**
9	1	**X**	3	4		23	**X**	2	3			37	1	2	**X**	4
10	1	2	**X**	4		24	**X**	2	3	4		38	1	**X**	3	4
11	1	**X**	3	4		25	1	**X**	3	4		39	**X**	2	3	4
12	1	2	3	**X**		26	**X**	2	3	4		40	1	**X**	3	4
13	**X**	2	3	4		27	1	2	3	**X**						
14	1	**X**	3	4		28	1	2	**X**	4						

88 *a* Allow 1 credit for correctly recording the equation.

Examples: eccentricity = $\dfrac{\text{distance between foci}}{\text{length of major axis}}$

$$e = \dfrac{d}{\ell}$$

(*Note*: The student must give the answer in the form of an equation, which must include "eccentricity =" or "*e* =".)

b Allow 1 credit for correctly substituting both acceptable measurements into the equation given in *a*. (The student need *not* record the units.)

eccentricity = $\dfrac{4}{8}$ (Allow 3.9 cm to 4.1 cm for distance between foci and 7.9 cm to 8.1 cm for length of major axis.)

c Allow 1 credit for correctly calculating eccentricity *based on the student's answer in b*.

eccentricity = 0.5 *or e* = .5

(*Note*: Do *not* allow credit for answers recorded as fractions or with units.)

Part II

Allow a total of 10 credits, one credit for each question, for only two of the six groups in this part. If the student answers more than two groups, consider only the first two groups answered.

Group A Rocks and Minerals			
41	1	2	**X** 4
42	1	2	**X** 4
43	1	2	3 **X**
44	1	**X** 3	4
45	**X** 2	3	4

Group B Plate Tectonics			
46	1	2	3 **X**
47	1	2	3 **X**
48	1	2	3 **X**
49	1	**X** 3	4
50	1	2	**X** 4

Group C Oceanography			
51	**X** 2	3	4
52	1	**X** 3	4
53	1	2	**X** 4
54	1	2	3 **X**
55	**X** 2	3	4

Group D Glacial Processes			
56	**X** 2	3	4
57	1	**X** 3	4
58	1	2	**X** 4
59	1	**X** 3	4
60	**X** 2	3	4

Group E Atmospheric Energy			
61	1	2	3 **X**
62	1	2	**X** 4
63	1	2	3 **X**
64	**X** 2	3	4
65	1	2	**X**

Group F Astronomy			
66	1	2	**X** 4
67	1	**X** 3	4
68	1	2	**X** 4
69	**X** 2	3	4
70	1	**X** 3	4

Part III

Allow a total of 25 credits for this part. The student must answer all questions in this part.

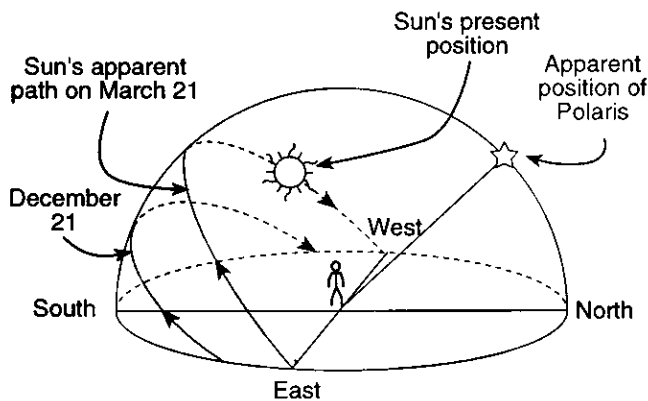71 Allow 1 credit if the Moon is located anywhere on a straight line between the Sun and Earth.

Sun

Earth
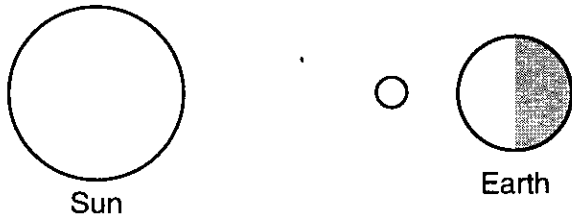
(Not drawn to scale)

72 Allow 1 credit for a scientifically correct answer.

Example: The altitude of Polaris is equal to the observer's latitude.

73 Allow 1 credit for the answer 3 p.m. (± 1 hour)

74 Allow 1 credit for a complete path rising south of East, setting south of West, and approximately parallel to the March 21 path.

Sun's present position

Sun's apparent path on March 21

Apparent position of Polaris

December 21

West

South

North

East

(Not drawn to scale)

75 *a* Allow a maximum of 2 credits if the student correctly plots all 6 points. Allow only 1 credit if the student correctly plots only 4 or 5 points.

   b Allow 1 credit for correctly connecting all the points to indicate the thickness of the ash.

See example, top of next column.

Example:

Thickness of Volcanic Ash (cm)

A   B
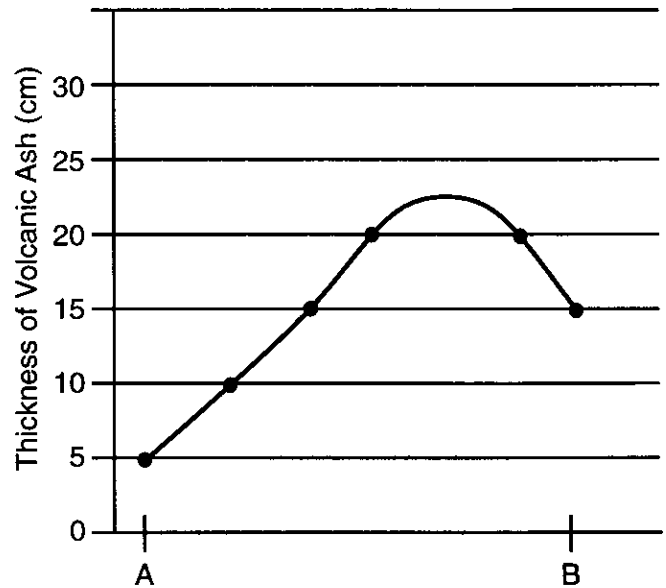
76 Allow 1 credit for a scientifically correct explanation.

Examples: wind
         Wind blew the ash toward the south.
         laterally directed volcanic eruption

77 Allow 1 credit for a scientifically correct explanation.

Examples: Iceland is located near a divergent boundary.
         Iceland is located on the mid-**Atlantic** Ridge.

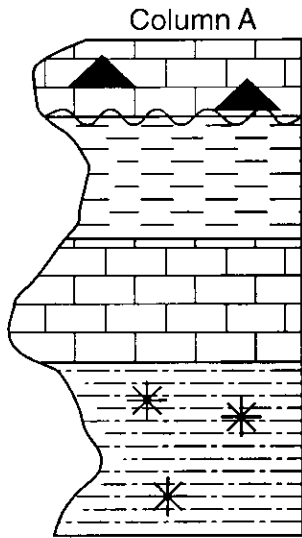78 Allow 1 credit for a scientifically correct explanation.

(*Note*: If more than one explanation is given, allow this credit only if *all* explanations given are correct.)

Examples: by using similar fossils
         Correlate the layers by matching sequences of rock types.

79 Allow 1 credit for correctly showing the unconformity immediately below the top limestone layer in column *A*.

Example:

Column A

80 Allow a maximum of 2 credits:

Allow 1 credit for a scientifically correct answer.

and

Allow 1 credit if the answer is stated in one or more sentences.

(Allow *no* credit if the answer is scientifically incorrect, even if it is written in a sentence.)

Examples: The limestone layer "sticks out" more than other layers.
The limestone layer appears less weathered.

81 Allow 1 credit for the answer 540 million years.

82 Allow a maximum of 2 credits if all three variables are correctly recorded *and* correctly placed on the station model. Allow only 1 credit if any two variables are correctly recorded *and* correctly placed.
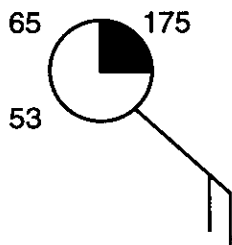
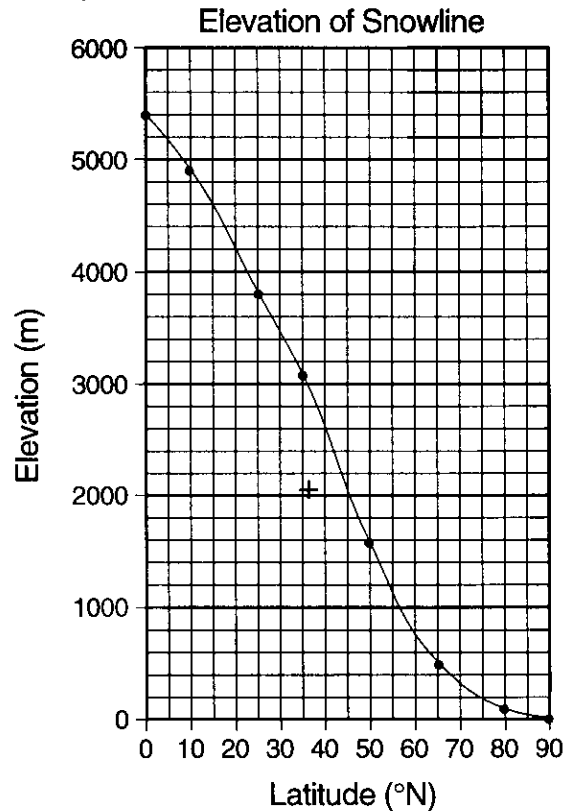(*Note*: Do *not* allow 65°, 65°F, 53°, 53°F, 1017.5, or 17.5.)

83 Allow 1 credit for an answer of partly cloudy or mostly sunny; 25% or $\frac{1}{4}$ cloud cover; or 75% or $\frac{3}{4}$ clear.

84 Allow a maximum of 2 credits:

Allow 1 credit if five or more of the **eight** points are plotted correctly.
and
Allow 1 credit for connecting the points.

Example:

85 Allow 1 credit for correctly plotting the point representing Mt. Mitchell between 2000 and 2200 meters in elevation and between 35° N and 38° N latitude.

86 Allow 1 credit for correctly determining the latitude based on the student's answer in 84 and 85.

45° N (±2°)

87 Allow 1 credit for a scientifically correct answer.

Examples: snowline elevation highest at low latitudes
As latitude increases, the elevation of the snowline decreases.

See the back of the Scoring Key for Part I for the key for question 88.