The University of the State of New York

296TH HIGH SCHOOL EXAMINATION

EARTH SCIENCE

Tuesday, January 29, 1946 — 1.15 to 4.15 p. m., only

Write at top of first page of answer paper (*a*) name of school where you have studied, (*b*) number of weeks and recitations a week in ninth-year science, (*c*) number of weeks and recitations a week in earth science. Give either the total number of laboratory periods in earth science and the length of such periods or the number of laboratory exercises performed. A paper lacking the statement of laboratory work will not be accepted at a standing of less than 75 credits.

The minimum time requirement is five recitations a week for a school year. An unprepared laboratory exercise of two periods counts in place of one recitation. At least 30 laboratory exercises are required.

Name of pupil.....Name of school.....

Answer all questions in part I and five questions from part II. Answers to the questions in part I should be written on the question paper as directed and handed in with the other answer paper. Whenever questions in part II so direct, answers to these questions are to be written on the question paper. Answers should be numbered and lettered to correspond with the questions.

Part I

Answer all questions in part I.

Write on the line at the right of *each* statement the term which, when inserted in the blank, will make the statement true. [23]

1 The body of shallow water between the mainland and an offshore bar is called a .... 1.....

2 A deposit formed by the accumulation of drift along the front of a continental glacier is called a .... 2.....

3 Very deep wells that flow without pumping are called .... 3.....

4 A stream that crosses a delta divides into .... 4.....

5 A semicircular basin formed by a glacier in the side of a mountain is called a .... 5.....

6 It is 9 a. m. at longitude ... when it is 12 noon at longitude 15° West. 6.....

7 A continuous record of earthquake tremors can be obtained by the instrument called the .... 7.....

8 The angular altitude of the North Star at New York City is 41°. The latitude of the city is .... 8.....

9 The process by which the sun gives off energy is called .... 9.....

10 The southeast trades change their direction and blow from the ... when they cross the equator. 10.....

11 When rock fragments fall to the foot of a slope under the influence of gravity, the deposit is called .... 11.....

12 Winds and ocean currents are deflected to the right in the Northern Hemisphere because the earth .... 12.....

13 The air temperature at which condensation begins in a cooling mass of air is called .... 13.....

14 The tropical storms (cyclones) that originate near the West Indies and sometimes move up our eastern coast are called .... 14.....

15 An area of the earth's surface receives the greatest amount of solar energy when the sun's rays strike that surface at an angle of ... degrees. 15.....

16 One condition necessary for the formation of ground (radiation) fog is a ... sky. 16.....

17 The natural process of breaking up and removing rock material is known as .... 17.....

18 Streams are most likely to develop natural levees during the ... stage of their development. 18.....

19 The chief mineral found in limestone is .... 19.....

20 The force that keeps the planets from leaving their orbits is known as ... force. 20.....

21 The cones of volcanoes of the ... type have steep slopes. 21.....

22 Water evaporates rapidly when the relative humidity of the air above it is .... 22.....

23 Winter is ... severe in mid-continent than along the coast. 23.....

Write on the line at the right of *each* statement the *number* preceding the term that best completes the statement. [17]

24 Evidences of continental glaciation are best found in (1)Colorado (2)Florida (3)New York (4)Texas 24.....

25 The agent of erosion that causes the greatest changes in the earth's surface is (1)moving ice (2)running water (3)waves and shore currents (4)winds 25.....

26 An igneous rock is (1)granite (2)limestone (3)sandstone (4)shale 26.....

27 The difference between Central and Pacific time, in hours, is (1)one (2)two (3)three (4)four 27.....

28 The production of solar energy is believed to be caused by (1)shrinking of the sun (2)burning of hydrogen (3)disintegration of atoms (4)rotation of the sun 28.....

29 Weather is most variable in the belts called the (1)doldrums (2)horse latitudes (3)trades (4)westerlies 29.....

30 The moon's period of rotation is (1)longer than (2)shorter than (3)the same as (4)more variable than its period of revolution. 30.....

31 The base of the stratosphere is highest over the (1)equator (2)North Pole (3)South Pole (4)tropic of Cancer 31.....

32 In the Northern Hemisphere the wind blows (1)from low to high (2)clockwise toward the center of the low (3)counterclockwise toward the center of the low (4)clockwise toward the center of the high 32.....

33 Dikes and sills are (1)igneous intrusions (2)limestone formations (3)glacial deposits (4)fossils 33.....

34 Mesas and buttes are characteristic of (1)young mountains (2)peneplanes (3)old plateaus (4)glaciated regions 34.....

35 Areas located in the (1)Adirondack (2)Appalachian (3)Rocky (4)White mountains are now undergoing glaciation. 35.....

36 Days and nights are always equal in length at the (1)Arctic circle (2)tropic of Cancer (3)equator (4)tropic of Capricorn 36.....

37 The moon rises about (1)30 (2)40 (3)50 (4)60 minutes later every 24 hours. 37.....

38 An esker is (1)an elliptical hill (2)a winding ridge (3)a cone-like mound (4)a sand dune 38.....

39 An example of a ground-water deposit is a (1)cavern (2)natural bridge (3)sinkhole (4)stalactite 39.....

40 A person is traveling a great-circle route when he follows the (1)Arctic circle (2)40th parallel (3)prime meridian (4)tropic of Cancer 40.....

In *some* of the following statements the term in italics makes the statement incorrect. For each *incorrect* statement write on the line at the right the term that must be substituted for the italicized term to make the statement correct. For each correct statement write the word *true* on the line at the right. [10]

41 Isobars that are *far apart* indicate low wind velocity. 41.....

42 Depressions in an outwash plain, formed by the melting of buried blocks of ice, are called *sinkholes.* 42.....

43 The approximate temperature of a star can be determined by its *magnitude.* 43.....

44 The most abundant element in the earth's crust is *oxygen.* 44.....

45 Oxbow lakes are formed during the *young* stage of river development. 45.....

46 Anticlines and synclines are characteristic of *faulted* mountains. 46.....

47 The earth rotates in a(an) *eastward* direction. 47.....

48 Some comets are classed as members of the solar system because they move in *closed* orbits. 48.....

49 The wind belt in which most of continental Europe is located is the *polar easterlies.* 49.....

50 A maritime tropical (mT) air mass usually brings *humid* weather to eastern United States. 50.....

Part II

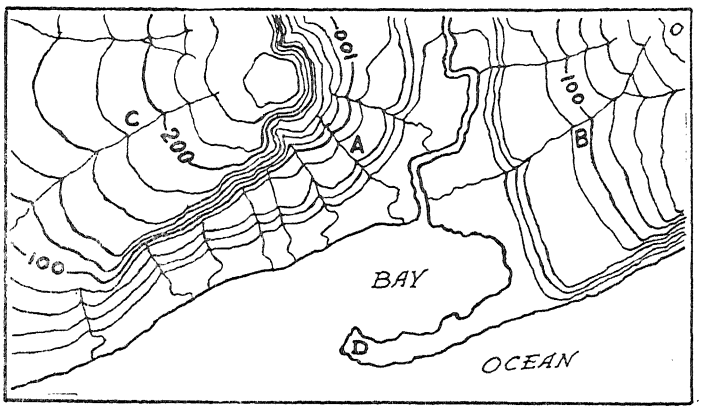
Answer five questions from part II.

1 A river deposits its load when its velocity decreases sufficiently.
- *a* Name *three* features formed by rivers as the result of deposition. [3]
- *b* Explain how *each* feature named in answer to *a* is formed. [6]
- *c* State *one* characteristic of all alluvial deposits. [1]

2 It is possible to distinguish among the common rocks and minerals by performing simple laboratory tests.
- *a* Is quartz or feldspar the harder mineral? Describe a simple test that is used to determine hardness. [3]
- *b* You are given a piece of sandstone and a piece of limestone, each of which has the same color. Describe a test that is used to identify the limestone. [2]
- *c* Describe a test that could be used to distinguish between brown sandstone and brown shale. [2]
- *d* State *two* changes that occur when igneous and sedimentary rocks are metamorphosed. [2]
- *e* State *one* difference between shale and slate. [1]

3 Explain *each* of the following: [10]
- *a* Winds are caused by the unequal heating of the earth's atmosphere.
- *b* The relative humidity is usually lower at noon than it was at 6 a. m.
- *c* Many regions over which trade winds blow have dry climates.
- *d* Weathering does not take place everywhere at the same rate.
- *e* Meanders begin to occur in the mature stage of river development.

4 New York State contains many physiographic features of interest to the earth science pupil. Account for *five* of these features: [10]
- *a* Rockaway Beach, Long Island
- *b* The plain that borders the southern shore of Lake Ontario
- *c* The Palisades of the Hudson
- *d* The Catskills
- *e* Howe Caverns
- *f* The Finger Lakes



5 *a* Define the term *contour interval.* What is the contour interval used on this map? [2]

b Does river *A* or river *B* flow down the steeper slope? Explain how the steepness of the slope is determined. [2]

c Draw an arrow on the map that shows the direction in which river *C* flows. Explain how contour maps indicate the direction of river flow. [2]

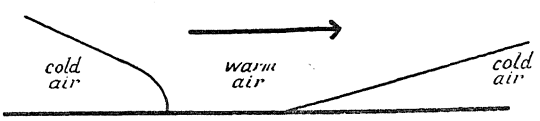
d Place an *X* at the highest point on the map. State the *highest possible* elevation of this point. [2]

e Name the feature shown at *D*. Explain how this feature was formed. [2]

6 *a* Explain the meaning of the term *air mass.* [2]

b The air mass designated by the letters *cPk* occurs frequently over the United States. What does the designation *cPk* mean? [1]

c The diagram represents a vertical section of a typical cyclonic area.



(1) Label on the diagram a warm front and a cold front. [2]

(2) Indicate by arrows on the diagram the movement of air along both fronts. [2]

(3) Describe how the fronts shown on the diagram may form an occluded front. [1]

(4) Explain why clouds and precipitation usually occur along or near fronts. [2]

7 *a* Name the class of body to which *each* of the following belongs: earth, moon, sun. [3]

b Make a labeled diagram that represents the position of the sun, moon and earth at the time of a solar eclipse. [3]

c Name the phase of the moon at which solar eclipses occur, and state whether spring or neap tides occur at this phase. [2]

d Explain why the tides along irregular coasts are of greater range than are tides along regular coasts. [2]

8 Clouds are the most important single weather element visible to the aviator.

a Classify *three* of these cloud forms as low, middle or high: altostratus, cirrus, cumulonimbus, nimbostratus, stratus. [3]

b Give *one* characteristic, other than height, by which *each* cloud form classified in answer to *a* can be recognized. [3]

c Explain how cumulus clouds form. [2]

d Describe a method by which the height of low clouds (ceiling) can be measured. [2]