The University of the State of New York

300TH HIGH SCHOOL EXAMINATION

# EARTH SCIENCE

Tuesday, June 17, 1947 — 1.15 to 4.15 p. m., only

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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 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 four or 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. 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. [20]

1 The ... winds blow between the horse latitudes and the doldrums. 1.....

2 The lighted surface of the moon is not visible from the earth at the ... phase. 2.....

3 Condensation will not take place in the air until its temperature has been reduced to below the .... 3.....

4 A river that has built a broad plain is in the ... stage of its development. 4.....

5 A solar eclipse can occur only at the ... phase of the moon. 5.....

6 Igneous rocks that have been changed by heat and pressure form ... rocks. 6.....

7 The name of an air mass that brings hot, humid weather to eastern United States in summer is .... 7.....

8 The name of the planet that has a period of revolution longer than that of the earth but shorter than that of Jupiter is .... 8.....

9 Valleys along coasts that have been eroded by glaciers and then submerged are called .... 9.....

10 The free end of a barrier beach is called a (an) .... 10.....

11 Lateral pressure exerted upon the earth's crust may result in downfolds of the rock strata called .... 11.....

12 The part of a continent that extends under the ocean is called the .... 12.....

13 On December 21 the sun's vertical rays are at the tropic of .... 13.....

14 When the moon passes through the earth's shadow a total ... eclipse occurs. 14.....

15 When it is Tuesday on the east side of Bering Strait, it is ... on the west side of Bering Strait. 15.....

16 The mineral ... is always found in limestone and marble. 16.....

17 The steepest slopes in block mountains always occur on the same side as the .... 17.....

18 Meanders begin to form in rivers during the ... stage. 18.....

19 Weather observers use a clinometer and a beam of light projected vertically to determine .... 19.....

20 The moon takes about ... week(s) to go from first quarter to new moon phase. 20.....

Write on the line at the right of *each* statement the *number* preceding the term that best completes the statement. [19]

21 The chief work of a river in the mature stage is (1) downward erosion (2) lateral erosion (3) deposition of sediment (4) headward erosion 21.....

22 In New York State the average dew point during the month of June is about (1) 0°F (2) 32°F (3) 60°F (4) 85°F 22.....

23 The direction of movement of the ice sheet during the Glacial Period can be determined from (1) striae (2) cirques (3) kames (4) terminal moraine 23.....

24 Conglomerate is (1) igneous (2) sedimentary (3) metamorphic (4) crystalline 24.....

25 A cumulo-nimbus cloud is an indication that (1) the weather will remain clear (2) it will rain continuously for many hours (3) the air is smooth for flying (4) a thunderstorm may develop 25.....

26 Rain is most likely to occur in a mass of air that is moving (1) upslope (2) downslope (3) across level land (4) from land to sea 26.....

27 The phases of the moon are caused by the (1) earth's rotation (2) earth's revolution (3) moon's rotation (4) moon's revolution 27.....

28 The date on which the sun's rays striking New York State are most nearly vertical is (1) March 21 (2) June 21 (3) September 23 (4) December 21 28.....

29 The moon appears to rise and set because of the (1) rotation of the earth (2) revolution of the earth (3) rotation of the moon (4) revolution of the moon 29.....

30 The name of a mineral that can be scratched with calcite is (1) mica (2) quartz (3) feldspar (4) topaz 30.....

31 Igneous rocks that have formed as the result of cooling far below the surface have (1) no crystals (2) small crystals (3) large crystals (4) crystals in layers 31.....

32 A mineral that breaks with shell-like (curved) fracture is (1) mica (2) quartz (3) calcite (4) feldspar 32.....

33 Disturbed rock structure is characteristic of (1) plains (2) old plateaus (3) dissected plateaus (4) mountains 33.....

34 Continuous rain usually occurs when the cloud form is (1) nimbo-stratus (2) strato-cumulus (3) alto-stratus (4) alto-cumulus 34.....

35 Relative humidity can be determined by dividing the absolute humidity by the (1) dew point (2) capacity (3) wet-bulb temperature (4) dry-bulb temperature 35.....

36 The heaviest rainfall in the United States occurs on the western slopes of the (1) Rockies (2) Pacific Coast Ranges (3) Appalachians (4) Great Basin Ranges 36.....

37 Spits are built as the result of deposition by (1) offshore currents (2) rivers (3) glaciers (4) ground water 37.....

38 Comets are visible from the earth because they (1) reflect sunlight (2) burn in the earth's atmosphere (3) are self-luminous (4) revolve about the earth 38.....

39 Ground water will move most easily through a layer of (1) shale (2) sandstone (3) mica schist (4) basalt 39.....

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. [11]

40 When air flows up a mountain side, it cools by *compression.* 40.....

41 Heavy rainfall is characteristic of the *trade wind* belt. 41.....

42 The point that is at 0° latitude and 0° longitude is in the *Atlantic* ocean. 42.....

43 When it is winter in North America it is *summer* in Japan. 43.....

44 Of the earth's *crust,* 99% is oxygen and nitrogen. 44.....

45 The relative humidity is usually *lower* at 12 noon than it is at 8 a. m. of the same day. 45.....

46 The earth is three million miles closer to the sun during our *winter* season than it is six months later. 46.....

47 Falls and rapids are characteristic of rivers in the *old age* stage of their development. 47.....

48 The principal earthquake belt of the world encircles the *Indian* Ocean. 48.....

49 *Granite* is dissolved by the action of ground water containing carbon dioxide. 49.....

50 The clusters of oval hills formed when glaciers overran ground moraines are called *kames.* 50.....

## Part II

**Answer five questions from part II.**

1 *a* Explain how weathering assists erosion. [2]

*b* Distinguish between mechanical and chemical weathering by describing the action of *one* agent of *each.* [2]

*c* Explain how each of *three* of the following features is formed by some agent of erosion: natural levees, talus, caverns, sand dunes. [6]

2 Last February lava erupted from a new crater of Mount Etna in Sicily and flowed down its slopes.

*a* Describe the eruption of this type of volcano. [2]

*b* Describe another type of volcanic eruption and give an example. [2]

*c* Locate the two main volcanic belts of the earth. [2]

*d* Distinguish between a sill and a dike. [2]

*e* Explain how *each* of the following is formed as the result of volcanic action: (1) pumice, (2) dome mountains. [2]

3 *a* What is the difference in altitude between point *O* and point *P?* [1]

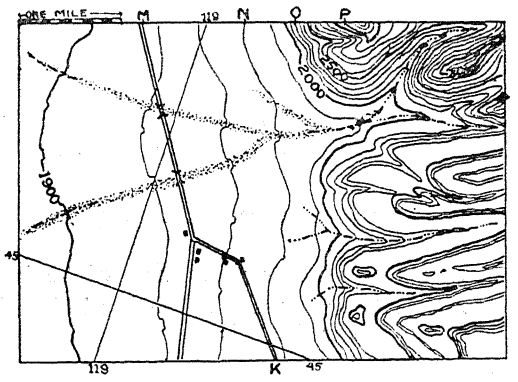
*b* Compare the slope from *M* to *N* with the slope from *O* to *P.* [1]

*c* What are the two contour intervals that were used in making this map? [2]

*d* What is the distance to the *nearest tenth of a mile* along the road from *M* to *K?* [2]

*e* The part of the map below the 2000-ft contour line shows an alluvial fan. Explain why the alluvial fan formed there. [2]

*f* State *two* reasons why an alluvial fan is suitable for human habitation. [2]






[OVER]

4 During the great Ice Age a large portion of North America was covered by continental and valley glaciers.

*a* What *two* large rivers in the United States mark the southern limit of the continental glacier? [2]

*b* Describe how eskers are formed. [2]

*c* Kettle holes are common in outwash plains and terminal moraines. Explain how kettle holes are formed. [2]

*d* Explain why lakes are more common in a glaciated region than in a nonglaciated region. [2]

*e* Explain how hanging valleys are formed. [2]

5 Explain *five* of the following: [10]

*a* Deserts are often found on the leeward side of mountains.

*b* On a psychrometer the temperature of the wet-bulb thermometer is usually lower than that of the dry-bulb thermometer.

*c* The climate of a place on the west coast of the United States is more moderate than that of a place on the east coast at the same latitude.

*d* The monsoons blow from the Indian Ocean toward southern Asia during the summer months.

*e* Artesian wells do not contain local ground water.

*f* Granite has coarser texture than basalt.

6 Important weather changes often occur with the passage of a front.

*a* What is a front? [2]

*b* Diagram the symbols used on a weather map to indicate a warm front and a cold front. [2]

*c* Show by vertical cross section a rapidly moving cold front. Label the cold air and the warm air. Indicate by arrows the direction of movement of the warm air near the front. [3]

*d* Describe the weather that occurs after the passage of a rapidly moving cold front with respect to (1) temperature, (2) pressure, (3) sky condition. [3]

7 The United States is divided into standard time belts.

*a* Explain why we use standard time rather than local time. [2]

*b* State the relationship between longitude and time. [2]

*c* Where is the international date line and what is its purpose? [2]

*d* At 12 o'clock noon on board a ship the chronometer read 3 p. m. What was the longitude of the ship? [2]

*e* Recently a jet-propelled airplane flew from San Francisco to New York City in 7½ hours. It left San Francisco at 10 a. m. Pacific Standard Time. What was the time of arrival at New York, where Eastern Standard Time is used? [2]

8 *a* Explain how the earth's atmosphere is heated during the day. [2]

*b* Why are places that receive vertical rays of the sun warmer than places that receive slanting rays? [2]

*c* Why do places located in the interior of the continent have more severe winters than places located near the coast? [2]

*d* Explain why the coldest hour of the day is normally just before sunrise. [2]

*e* Give *two* reasons why the Byrd Expedition selected our winter season for its exploration of Antarctica. [2]