

The University of the State of New York

305TH HIGH SCHOOL EXAMINATION

EARTH SCIENCE

Tuesday, January 25, 1949 — 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 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 periods per week for a school year, including at least one prepared laboratory period or its equivalent. [Two unprepared laboratory periods are considered the equivalent of one prepared laboratory period. 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 and to question 8 d in part II 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 word or expression which, when inserted in the blank, will make the statement true. [16]

- 1 Granite is composed of the minerals, quartz, feldspar, and usually . . . 1.....
- 2 Loose rock that remains in the position in which it was originally formed is called . . . mantle rock. 2.....
- 3 If the contour interval of a map is 20 feet, the elevation of the contour line nearest the top of a hill 1147 feet high is . . . feet. 3.....
- 4 An approaching warm front is usually indicated by . . . pressure. 4.....
- 5 When it is midnight at the 180th meridian, it is noon at the . . . meridian. 5.....
- 6 Scratches produced by glacial erosion are called . . . 6.....
- 7 The earth's axis makes an angle of . . . degrees with the plane of the earth's orbit. 7.....
- 8 Closely spaced isobars on a weather map indicate . . . winds. 8.....
- 9 Limestone is composed chiefly of the mineral . . . 9.....
- 10 New York State is located in the . . . wind belt. 10.....
- 11 A well-developed line of thunderstorms is a characteristic of a fast-moving . . . front. 11.....
- 12 Marble is a rock formed from the metamorphism of . . . 12.....
- 13 The phases of the moon are caused by the . . . of the moon. 13.....
- 14 The belt around the earth of high temperature and low pressure is called the . . . 14.....
- 15 Sandstone is composed chiefly of the mineral . . . 15.....
- 16 When noon arrives at any meridian, it is already one hour later on the meridian . . . degrees east of that one. 16.....

EARTH SCIENCE — *continued*

Write on the line at the right of *each* statement the *number* preceding the term that best completes the statement. [21]

- 17 The breaking of minerals in such a way that smooth plane surfaces are produced is known as (1)cleavage (2)fracture (3)luster (4)streak 17.....
- 18 In the United States the highest average annual rainfall occurs along the coast in the state of (1)Florida (2)Maine (3)Michigan (4)Washington 18.....
- 19 The Beaufort scale is used to indicate (1)intensity of earthquake shock (2)pressure (3)temperature (4)wind velocity 19.....
- 20 The climatic factor that is largely responsible for the difference in climate between Denver, Colorado and St. Louis, Missouri is (1)altitude (2)latitude (3)ocean currents (4)prevailing winds 20.....
- 21 An important source of radium and uranium is (1)galena (2)hematite (3)hornblende (4)pitchblende 21.....
- 22 The tropopause is highest over the (1)equator (2)horse latitudes (3)North Pole (4)temperate zones 22.....
- 23 All of the following minerals are important abrasives *except* (1)diamond (2)garnet (3)quartz (4)talc 23.....
- 24 A light year is a measure of (1)distance (2)intensity (3)time (4)velocity 24.....
- 25 Southern Long Island is an example of (1)an alluvial plain (2)a peneplane (3)a lacustrine plain (4)an outwash plain 25.....
- 26 The transportation of particles within the body of a stream is called (1)corrosion (2)suspension (3)traction (4)weathering 26.....
- 27 The summer monsoons over India blow from the (1)northeast (2)southeast (3)southwest (4)west 27.....
- 28 The shortest distance between two places on the earth's surface is measured along a (1)great circle (2)contour line (3)rhumb line (4)parallel 28.....
- 29 The layer of rock serving as the aquifer (water-bearing formation) in an artesian well is usually (1)limestone (2)obsidian (3)sandstone (4)shale 29.....
- 30 The way a mineral reflects light is called its (1)cleavage (2)color (3)crystal shape (4)luster 30.....
- 31 An ore of lead is (1)bauxite (2)galena (3)hematite (4)malachite 31.....
- 32 Extensive, flat-topped erosion remnants composed of horizontal strata are called (1)alluvial fans (2)buttes (3)flood plains (4)mesas 32.....
- 33 A rock that is composed of naturally cemented, rounded fragments is known as (1)breccia (2)conglomerate (3)schist (4)shale 33.....
- 34 The type of fog that usually forms at night near the center of high-pressure areas is (1)radiation fog (2)sea fog (3)steam fog (4)upslope fog 34.....
- 35 The Finger Lakes are (1)kettle lakes (2)sinkhole lakes (3)valleys blocked by glacial moraines (4)lakes being destroyed by evaporation 35.....
- 36 A record of relative humidity is made by the (1)barograph (2)hygrograph (3)seismograph (4)thermograph 36.....
- 37 The altimeter is a type of (1)barometer (2)hygrometer (3)speedometer (4)thermometer 37.....

EARTH SCIENCE — *continued*

In *some* of the following statements the italicized term 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. [13]

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| 38 The weather is usually warmer back of a <i>cold</i> front than ahead of it. | 38..... |
| 39 On December 21 the period of insolation at the equator is <i>twenty-four</i> hours. | 39..... |
| 40 Tides have <i>least</i> range when the moon is in the first or last quarter phase. | 40..... |
| 41 The earth is at <i>perihelion</i> about January 1. | 41..... |
| 42 A continental climate has a <i>small</i> temperature range. | 42..... |
| 43 Air that rises and expands cools at the rate of <i>five and one-half</i> degrees Fahrenheit per 1000 feet, providing it is not saturated. | 43..... |
| 44 In the Southern Hemisphere the trade winds blow from the <i>southwest</i> . | 44..... |
| 45 The rate of the earth's rotation is about <i>thirty</i> degrees per hour. | 45..... |
| 46 Half the mass of the atmosphere exists below an elevation of <i>18,000</i> feet. | 46..... |
| 47 The moraine that marks the farthest advance of the ice is the <i>recessional</i> moraine. | 47..... |
| 48 Contour lines point <i>upstream</i> when they cross rivers. | 48..... |
| 49 The glaciers on Mount Rainier are of the <i>continental</i> type. | 49..... |
| 50 Volcanoes occur in greatest numbers in or near the <i>Pacific Ocean</i> . | 50..... |

Part II

Answer five questions from part II.

- 1 *a* Explain what is meant by weathering. [2]
b State *two* factors that determine the rate of weathering. [2]
c Describe *two* ways in which rocks are weathered mechanically. [2]
d Explain how weathered rock may again become bedrock. [2]
e Explain how a limestone cavern is formed. [2]

- 2 *a* What is meant by the term *dew point*? [2]
b Describe a method of determining dew point. [2]
c Distinguish between absolute and relative humidity. [2]
d Explain why relative humidity decreases as temperature increases. [2]
e Describe the effect of each of *two* conditions of the atmosphere on the rate of evaporation. [2]

- 3 Explain how each of *five* of the following features are formed: (*a*) sinkhole, (*b*) alluvial fan, (*c*) cirque, (*d*) fiord, (*e*) hanging valley, (*f*) kettle hole. [10]

- 4 *a* Show by labeled diagrams the rock structure of *three* types of mountains. [6]
b Explain why metamorphic rocks occur in mountain regions. [2]
c Several monadnocks occur in the New England peneplane. Explain the origin of these monadnocks. [2]

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- 5 Explain each of *five* of the following: [10]
- The equatorial diameter of the earth is about 27 miles longer than the polar diameter.
 - In New York State the altitude of the noon sun is higher during the summer than it is during the winter.
 - The temperature of the lower air is greater than that of the upper air.
 - In summer winds along the coast usually blow from sea to land during the day.
 - Rising air currents may cause condensation.
 - Solar eclipses do *not* occur at each new moon phase.
- 6 *a* Distinguish between latitude and longitude. [2]
- Explain how latitude may be determined at night. [2]
 - Explain how the longitude of a ship may be determined. [2]
 - When it is 11 a. m., June 22, in the eastern standard time belt, what is the *hour* and *date* at Sydney, Australia (150° east longitude), and the *hour* and *date* in the Azores Islands (30° west longitude)? [4]
- 7 *a* Explain the meaning of the term *air masses*. [2]
- Compare (*w*) warm air masses with (*k*) cold air masses by stating (1) the relationship of air temperature to surface temperature, (2) types of clouds, (3) visibility conditions at lower levels. [6]
 - Explain why weather changes occur with the passage of fronts. [2]

- 8 *a* What contour interval is used on this map? [1]
- Which is higher and by how much, Cain Hill or Reed Hill? [2]
 - Which side of Cain Hill is steeper? [1]
 - Complete the two unfinished contour lines in the northwest portion of the map. [2]
 - What is the distance by boat between points *C* and *K*, to the *nearest tenth* of a mile? [2]
 - Explain how the feature at *A* was formed. [2]

