

The University of the State of New York

290TH HIGH SCHOOL EXAMINATION

EARTH SCIENCE

Tuesday, January 18, 1944 — 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, four questions from part II and one question from part III. 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 number preceding the term that best completes the statement. [18]

- 1 The chief work of an old river is (1)deposition (2)erosion of its bed (3)headward erosion (4)widening of its valley 1.....
- 2 Days and nights are equal in length all over the earth on (1)January 1 (2)March 21 (3)June 21 (4)December 21 2.....
- 3 The monsoon winds that blow over India during the summer come from the (1)northeast (2)northwest (3)southeast (4)southwest 3.....
- 4 Climatic conditions are most uniform in regions that are (1)crossed by mountains (2)distant from the equator (3)located in continental interiors (4)surrounded by water 4.....
- 5 The chemical elements present on the sun's surface can be determined by the use of a (1)radiometer (2)sextant (3)spectroscope (4)telescope 5.....
- 6 A lunar eclipse occurs when the (1)moon casts its shadow on the earth (2)earth casts its shadow on the moon (3)moon's shadow does not reach the earth (4)moon casts its shadow on the sun 6.....
- 7 The chief mineral constituent of sandstone is (1)calcite (2)feldspar (3)mica (4)quartz 7.....
- 8 The amount of (1)carbon dioxide (2)nitrogen (3)water vapor (4)oxygen in the air varies greatly from day to day. 8.....
- 9 Many of the island harbors in the South Pacific are (1)atolls (2)deltas (3)fiords (4)submerged valleys 9.....
- 10 The Hawaiian Islands were formed by (1)flows of lava (2)growth of coral beds (3)submergence of a mountain region (4)sedimentary deposits 10.....
- 11 A small, closed contour line on a map indicates a (1)cliff (2)hilltop (3)steep slope (4)valley 11.....
- 12 Streams are most likely to develop falls and rapids in the stage called (1)early maturity (2)late maturity (3)old age (4)youth 12.....
- 13 Cirrus clouds are (1)thunder clouds (2)high, feathery clouds (3)rain clouds (4)clouds of smoke 13.....

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- 14 An increase in the temperature of a volume of air causes (1)a decrease in pressure (2)an increase in pressure (3)an increase in moisture content (4)no change in pressure 14.....
- 15 All the planets of the solar system (1)are the same size (2)have elliptical orbits (3)have satellites (4)revolve about the sun in the same period of time 15.....
- 16 Of the following, the rock that is most easily weathered by freezing and thawing is (1)limestone (2)obsidian (3)quartzite (4)sandstone 16.....
- 17 As the temperature and the dew point of air approach each other, pilots should expect (1)a temperature decrease (2)clear, cool weather (3)fog (4)strong winds and rising temperature 17.....
- 18 The air mass responsible for cold waves that occur in the Midwest is called the (1)continental polar (2)maritime polar (3)maritime tropical (4)superior cold front 18.....

Write on the line at the right of *each* statement the term which, when inserted in the blank, will make the statement true. [16]

- 19 The part of the continent that extends under the ocean is called the .... 19.....
- 20 Since the earth rotates, winds in the southern hemisphere are deflected to the .... 20.....
- 21 Wind velocities are measured by an instrument called the .... 21.....
- 22 In a (an) ... well, the water rises above the local water table. 22.....
- 23 Winds blow outward from the center of a ... pressure area. 23.....
- 24 The discoloration and crumbling of rocks is caused by ... weathering. 24.....
- 25 Anticlines and synclines are characteristic of ... mountains. 25.....
- 26 Lines on a map that connect places having the same elevation above sea level are called .... 26.....
- 27 Many bays and inlets along a coast line give evidence of ... of the coast. 27.....
- 28 Distance north or south of the equator, expressed in degrees, is called .... 28.....
- 29 Large boulders scattered over a wide area give evidence of erosion caused by .... 29.....
- 30 The igneous intrusion that forms between sedimentary layers is called a (an) .... 30.....
- 31 The length of the year is determined by the period of ... of the earth. 31.....
- 32 Eastern standard time is based on the mean solar time of the meridian that runs through ... degrees west longitude. 32.....
- 33 In winter, the temperature of ocean areas is ... than that of land areas in the same latitude. 33.....
- 34 Clouds are formed when moist air is cooled below the ... point. 34.....

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. [16]

- 35 *Basalt* is a sedimentary rock that effervesces with acid. 35.....
- 36 *Comets* are not visible until they have entered the earth's atmosphere. 36.....
- 37 The *Colorado* plateau is an example of a lava plateau. 37.....

EARTH SCIENCE — *continued*

38 At the center of a low pressure area the air <i>ascends</i> .	38.....
39 Monadnocks are found in <i>young</i> mountain regions.	39.....
40 A wet-bulb thermometer usually indicates a <i>lower</i> temperature than that indicated by a dry-bulb thermometer.	40.....
41 A large portion of southern New England is a peneplane formed by <i>deposition</i> .	41.....
42 The daily period of insolation at the equator is about <i>fifteen</i> hours.	42.....
43 Wind erosion is most active in <i>arid</i> regions.	43.....
44 The observed motion of sunspots shows that the sun <i>revolves</i> .	44.....
45 Precipitation occurs when saturated air is <i>cooled</i> .	45.....
46 The amount of moisture in a unit volume of air is called <i>relative humidity</i> .	46.....
47 Most of the large deserts of the earth lie in the <i>westerly</i> wind belts.	47.....
48 Limestone always contains the mineral <i>calcite</i> .	48.....
49 Soil located on a flood plain is an example of <i>residual</i> soil.	49.....
50 The temperature of the air in the troposphere <i>decreases</i> with increase in altitude.	50.....

Part II

Answer four questions from part II.

- 1 It is estimated that rivers carry to the sea more than 12 billion tons of rock material every year.
  - a Name *three* ways in which rivers carry this rock load. [3]
  - b What causes a river to drop some of the rock material it carries? [2]
  - c Name *three* features formed by rivers as the result of deposition. [3]
  - d Explain the conditions that cause the formation of *one* of the features named in answer to c. [2]
  
- 2 a A war correspondent's report from the South Pacific was dated December 15, 1943. It appeared in a New York newspaper on December 14, 1943. Account for this difference in date. [2]
  - b State the relationship that exists between longitude and time. [2]
  - c Describe *one* way by which longitude can be determined on board ship. [2]
  - d The time at Greenwich, 0°, is 12 o'clock noon. What is the time at (1) St. Louis, 90° W., (2) Naples, Italy, 30° E.? [4]
  
- 3 a Describe the movement of air within a cyclone (low). [3]
  - b State the approximate rate at which cyclones and anticyclones move across the United States. [2]
  - c Give the general direction of movement of these cyclones and anticyclones. [1]
  - d Predict the weather that may be expected as a well-developed warm front approaches, including state of sky, relative air temperature, wind direction and precipitation. [4]
  
- 4 The glacier that covers much of Greenland differs from the glaciers on the slopes of Mt. Ranier, Washington.
  - a Explain the difference in origin between these two types of glaciers. [2]
  - b Compare the type of movement of the Greenland glacier with that of a glacier on Mt. Ranier. [2]
  - c Describe briefly *two* evidences found today that indicate the direction of movement of the ice sheet across New York State. [2]
  - d Account for the formation of *two* of these features: cirque, crevasse, erratic, hanging valley, outwash plain, terminal moraine. [4]

EARTH SCIENCE — *concluded*

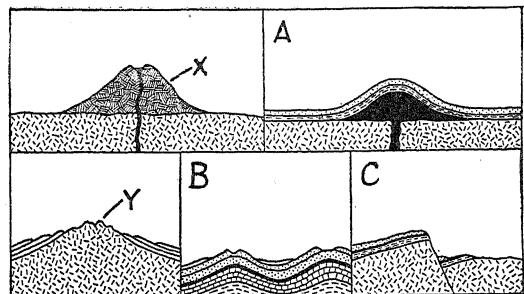
- 5 Write explanations of *five* of the following: [10]
- The same side of the moon is always turned toward the earth.
  - Rain is a daily occurrence in the doldrum belt.
  - Wind velocity is less at the surface of the earth than it is 5000 feet above the surface.
  - The stratosphere is characterized by absence of clouds.
  - In summer, a breeze usually blows from sea to land during the day.
  - The position of the star Sirius appears to change during the night.
- 6
- Explain why caverns are usually found in limestone regions. [2]
  - Explain how sinkholes are formed. [2]
  - Sinkholes sometimes fill with water — the sinkhole lakes of northern Florida are examples of this. Describe the condition that produces this result. [2]
  - State *two* changes that may cause ground water to deposit dissolved mineral matter and name *two* types of deposit so formed. [4]

Part III

Answer one question from part III.

- 7 The diagrams indicate various ways by which mountains are formed.

- Name the feature at *x* and explain how it was formed. [2]
- What type of mountain is indicated in diagram *A*? Explain how such mountains are formed. [2]
- Explain what has happened to expose the granite core at *Y*. [2]
- Name the type of mountain shown in diagram *B* and explain how mountains of this type are formed. [2]
- What type of mountain is shown in diagram *C*? Explain how such mountains are formed. [2]



- 8 An air mass starts as a warm moist parcel of air over the Pacific Ocean and moves in over the Coastal Range as indicated by the arrows.

- (1) Name the type of cloud pictured over the Coastal Range and explain how it forms. [2]
- (2) Why should airplane pilots avoid flying through such clouds? [2]
- Describe *two* changes that occur in the air that descends the eastern slopes and explain why each of the changes occurs. [4]
- Explain why pilots must allow plenty of altitude when flying to the leeward of mountains. [2]

