The University of the State of New York

303D HIGH SCHOOL EXAMINATION

EARTH SCIENCE

Tuesday, June 22, 1948 — 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.]

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. [16]

1 When a cold front overtakes a warm front a (an) ... front results. 1.....

2 When the standard time in New York is 7:30 a.m., the standard time in Seattle, Washington is ... a.m. 2.....

3 *Monadnock, butte* and *mesa* are terms that refer to a type of plain known as a (an) .... 3.....

4 Eastern standard time is the mean solar time of the ... west meridian. 4.....

5 The portion of the atmosphere characterized by convectional currents is called the .... 5.....

6 When air rises, it ... and cools. 6.....

7 The heap of weathered material that collects at the base of a cliff is known as .... 7.....

8 The date on which the sun's rays are tangent to the earth at the Arctic circle is .... 8.....

9 The name of the principal mineral in limestone is .... 9.....

10 The name of the metal obtained from the mineral hematite is .... 10.....

11 In five hours, the earth rotates through ... degrees. 11.....

12 The terms *moraine, erratic, drumlin* all refer to erosion by .... 12.....

13 A river that has built a very broad flood plain is in the ... stage of its erosion cycle. 13.....

14 A land form worn down to base level by the agents of erosion is called a (an) .... 14.....

15 Seismic waves, faults and fissures are associated with .... 15.....

16 When rocks are broken up as the result of temperature changes, the process is called ... weathering. 16.....

Write on the line at the right of *each* statement the *number* preceding the term that best completes the statement. [20]

17 The moon and the sun are on the same side of the earth at (1) new moon (2) full moon (3) new gibbous moon (4) old gibbous moon 17.....

18 When a stream is at the level of the body of water into which it empties, it has reached (1) early maturity (2) late youth (3) base level (4) late maturity 18.....

19 All of the various minerals in a rock expand (1) rapidly (2) uniformly (3) at different rates (4) whenever the temperature decreases 19.....

20 Domed mountains are formed by (1) faulting (2) lateral pressure (3) volcanic action (4) igneous intrusion 20.....

21 On a contour map of high, rugged mountains, the best contour interval to use would be (1) 5 feet (2) 20 feet (3) 50 feet (4) 100 feet 21.....

22 When the moon is completely within the earth's umbra, the eclipse that occurs is (1) total lunar (2) partial lunar (3) total solar (4) partial solar 22.....

23 A plateau formed by lava flows is the (1) Appalachian (2) Colorado (3) Columbia (4) Piedmont plateau. 23.....

24 The clouds from which thunderheads develop are (1) cirrus (2) cumulus (3) nimbus (4) stratus 24.....

25 Day and night are equal at the tropic of Cancer on (1) March 21 (2) June 21 (3) December 21 (4) January 1 25.....

26 The star nearest the earth is (1) Proxima Centauri (2) Vega (3) Arcturus (4) Sirius 26.....

27 If the earth's axis were tilted 33 degrees, summer in New York State would be (1) colder (2) warmer (3) longer (4) shorter 27.....

28 A mineral with cleavage in three directions is (1) calcite (2) garnet (3) feldspar (4) mica 28.....

29 A common porous rock is (1) basalt (2) sandstone (3) shale (4) slate 29.....

30 When granite is metamorphosed, it becomes (1) gneiss (2) marble (3) mica schist (4) slate 30.....

31 If the new moon occurs on June 1, the next full moon will occur on about June (1) 29 (2) 22 (3) 15 (4) 8 31.....

32 At 18,000 feet the atmospheric pressure is about (1) one half (2) one fourth (3) one fifth (4) one tenth sea level pressure. 32.....

33 The cloud that forms at the highest level above the earth's surface is (1) alto-cumulus (2) cirrus (3) nimbo-stratus (4) stratus 33.....

34 The broad, stratified, nearly level areas formed by runoff of a continental glacier are called (1) drumlins (2) kames (3) terminal moraines (4) outwash plains 34.....

35 Of the following members of the solar system, those that are self-luminous are the (1) comets (2) planets (3) planetoids (4) satellites 35.....

36 Of the following, the place having the greatest extremes of temperature is (1) Honolulu (2) Kansas City (3) Miami (4) San Francisco 36.....

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. [14]

37 Clouds that show the presence of vertical currents are *alto-stratus.* 37.....

38 Bays, estuaries and fiords are the result of the coast's *emerging.* 38.....

39 Between September 23 and December 21 the vertical rays of the sun are moving *north* from the equator. 39.....

40 The color of the mark made by rubbing a piece of mineral on unglazed porcelain is known as the *streak*. 40.....

41 Narrow, winding ridges of glacial material that resemble railroad embankments are called *drumlins*. 41.....

42 Weather observers use balloons that rise at known rates to determine *ceiling*. 42.....

43 A ship sailing along *a meridian* is following a great circle route. 43.....

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

45 Soils that remain where they were formed by weathering are known as *alluvial* soils. 45.....

46 The minimum depth to which a permanent well must be dug is determined by the *wet-weather* water table. 46.....

47 Rock fragments that make a river look muddy are *in suspension*. 47.....

48 Wind velocity can be determined by *a wind vane*. 48.....

49 A weather-map station model records *pressure* in millibars. 49.....

50 The *stars* we see at night are members of the solar system. 50.....

Part II

Answer five questions from part II.

1 *a* Name *two* types of active volcanoes. [2]
b Describe the appearance of the cone of each type of volcano named. [2]
c Name *one* active and *one* extinct volcano in North America. [2]
d Explain why earthquakes and volcanoes often occur in the same general region. [2]
e Explain why some igneous rocks, such as obsidian, are glassy and others, such as granite, are coarse. [2]

2 *a* Distinguish between the real motion and the apparent motion of the moon. [2]
b Explain why the moon rises later each day. [2]
c Explain the cause of the phases of the moon. [2]
d Distinguish between a total solar and an annular solar eclipse. [2]
e Distinguish between spring and neap tides. [2]

3 *a* Name the air mass that is responsible for the cold winter weather of New York State and locate its source region. [2]
b Name the air mass that brings hot humid weather to New York State during the summer and locate its source region. [2]
c Explain why a *w* on the weather map may represent a mass of cool air. [2]
d Explain why the greatest weather changes occur along the boundaries between air masses. [2]
e What factor, other than latitude, causes the average winter temperature in the New York City area to be higher than that in the Albany area? [2]

4 The accompanying diagram illustrates a submerged shore line that is being modified.

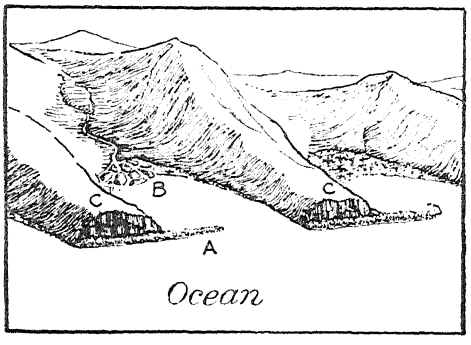
a Explain what is happening to the promontories at *C*. [2]

b What type of bar is shown at *A*? Where does the material come from that forms this bar? [2]

c Explain how the bar at *A* was formed. [2]

d What type of formation is shown at *B*? Explain how it was formed. [2]

e Explain what will eventually happen to this shore line. [2]



5 Distinguish between the terms in each of *five* of the following pairs: [10]

a Laccolith — sill

b Erosion — weathering

c Quartz — quartzite

d Sinkhole — pothole

e Terminal moraine — ground moraine

f Cleavage — fracture

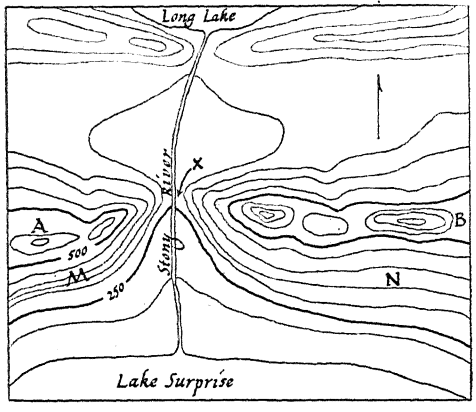
6 *a* What is the contour interval used on this map? Explain what *contour interval* means. [2]

b What is the highest possible elevation of hill *A*? Is the top of hill *B* visible from the top of hill *A*? [2]

c In which direction is the Stony River flowing? Explain how you can determine the direction of river flow on a contour map. [2]

d Is the slope steeper at *M* or at *N*? How do you determine steepness of slope on a contour map? [2]

e Account for the formation of the water gap at *X*. [2]



7 *a* Make a *fully labeled* diagram showing the planetary wind and pressure belts of the Northern Hemisphere. Use arrows to indicate wind direction. [6]

b Why do wind belts shift northward during our spring? [2]

c Explain how wind velocity is indicated on weather maps. [2]

8 Explain each of *five* of the following: [10]

a The reading of the wet-bulb thermometer of a psychrometer is usually lower than the dry-bulb reading.

b No part of New York State ever receives the vertical rays of the sun.

c Greater extremes of temperature are observed in the Northern Hemisphere than in the Southern Hemisphere.

d Not all places on the same parallel of latitude have the same climate.

e The seasons on Mars are longer than the seasons on the earth.

f Thunderstorms often occur along rapidly moving cold fronts.