IESO – 2012 Entrance Test

ANSWER SHEET

Reg. / Sl. No.: _____ **Candidate's Name:** _____

Candidate's Signature: _____ **Invigilator's Signature:** _____

Name of the School _____

Q.No.	A	B	C	D	Q.No.	A	B	C	D	Q.No.	A	B	C	D	Q.No.	A	B	C	D
1	○	○	○	○	26	○	○	○	○	51	○	○	○	○	76	○	○	○	○
2	○	○	○	○	27	○	○	○	○	52	○	○	○	○	77	○	○	○	○
3	○	○	○	○	28	○	○	○	○	53	○	○	○	○	78	○	○	○	○
4	○	○	○	○	29	○	○	○	○	54	○	○	○	○	79	○	○	○	○
5	○	○	○	○	30	○	○	○	○	55	○	○	○	○	80	○	○	○	○
6	○	○	○	○	31	○	○	○	○	56	○	○	○	○	81	○	○	○	○
7	○	○	○	○	32	○	○	○	○	57	○	○	○	○	82	○	○	○	○
8	○	○	○	○	33	○	○	○	○	58	○	○	○	○	83	○	○	○	○
9	○	○	○	○	34	○	○	○	○	59	○	○	○	○	84	○	○	○	○
10	○	○	○	○	35	○	○	○	○	60	○	○	○	○	85	○	○	○	○
11	○	○	○	○	36	○	○	○	○	61	○	○	○	○	86	○	○	○	○
12	○	○	○	○	37	○	○	○	○	62	○	○	○	○	87	○	○	○	○
13	○	○	○	○	38	○	○	○	○	63	○	○	○	○	88	○	○	○	○
14	○	○	○	○	39	○	○	○	○	64	○	○	○	○	89	○	○	○	○
15	○	○	○	○	40	○	○	○	○	65	○	○	○	○	90	○	○	○	○
16	○	○	○	○	41	○	○	○	○	66	○	○	○	○	91	○	○	○	○
17	○	○	○	○	42	○	○	○	○	67	○	○	○	○	92	○	○	○	○
18	○	○	○	○	43	○	○	○	○	68	○	○	○	○	93	○	○	○	○
19	○	○	○	○	44	○	○	○	○	69	○	○	○	○	94	○	○	○	○
20	○	○	○	○	45	○	○	○	○	70	○	○	○	○	95	○	○	○	○
21	○	○	○	○	46	○	○	○	○	71	○	○	○	○	96	○	○	○	○
22	○	○	○	○	47	○	○	○	○	72	○	○	○	○	97	○	○	○	○
23	○	○	○	○	48	○	○	○	○	73	○	○	○	○	98	○	○	○	○
24	○	○	○	○	49	○	○	○	○	74	○	○	○	○	99	○	○	○	○
25	○	○	○	○	50	○	○	○	○	75	○	○	○	○	100	○	○	○	○

Geological Society of India

INTERNATIONAL EARTH SCIENCE OLYMPIAD – Entrance Test

Date: January 22, 2012; Time: 11.30 am to 1.00 pm

Registration No.: _____ **Candidate's Name:** _____

Candidate's Signature: _____ **Invigilator's Signature:** _____

Name of School: _____

Seal of the Test Centre: _____

INSTRUCTIONS

1. You will not be permitted to leave the examination hall until after 30 minutes of commencement of the test.
2. If you have any paper/chit with you, surrender them to the invigilator NOW.
3. Please use a BLACK/BLUE ball point pen to mark your answers. DO NOT use pencil.
   - Choose the MOST appropriate answer.
   - Darken the circle corresponding to the answer of your choice. For example:

Q.No.	A	B	C	D
1	○	●	○	○

indicates that the correct answer is B

   - Marks will not be awarded if more than one answer is chosen.
   - There will be no negative marking.
   - Your answer must be given only in the answer sheet (Page 1). **Answers given anywhere else will not be valuated.**
   - **The answer sheet along with the question paper should be handed over to the invigilator at the end of the test.**
7. Please DO NOT tear out or add any sheet from/to the question paper.
8. Please enter your name, school name, registered / serial no. and affix your signature above and on the answer sheet before starting to answer the questions.

Questions

1. What is the basic difference between terrestrial planets and giant planets?
   a. Terrestrial planets have an atmosphere whereas giant planets do not have one.
   b. Terrestrial planets have a core which is not present in giant planets.
   c. Terrestrial planets are made up of rocks whereas giant planets are made up of gases.
   d. Terrestrial planets have a larger number of moons when compared to giant planets.

2. What is the molten rock material that occurs beneath the earth's crust called?
   a. Magma b. Lava c. Melt d. Mantle

3. When did the earth's atmosphere become oxygen rich like the present day atmosphere?
   a. With the first appearance of land plants b. With the first appearance of dinosaurs
   c. With the first appearance of marine algae d. It was always oxygen rich

4. Which of the following best defines a mineral and a rock?
   a. A rock has an orderly, repetitive, geometrical, internal arrangement of minerals; a mineral is a lithified or consolidated aggregate of rocks.
   b. A mineral consists of its constituent atoms arranged in a geometrically repetitive structure; in a rock, the atoms are randomly bonded without any geometric pattern.
   c. In a mineral the constituent atoms are bonded in a regular, repetitive, internal structure; a rock is a lithified or consolidated aggregate of different mineral grains.
   d. A rock consists of atoms bonded in a regular, geometrically predictable arrangement; a mineral is a consolidated aggregate of different rock particles.

5. Why is basalt finer grained than gabbro?
   a. Gabbro formed at greater depths. b. Basalt formed from quick cooling of lava.
   c. Basalt has a mafic composition. d. Gabbro has a felsic composition

6. Visible quartz and potassium feldspar grains are the main constituents in a ____.
Gabbro b. Basalt c. Rhyolite d. Granite

7. When did land plants first appear on earth?
   a. 600 million years ago b. 400 million years ago
   c. 2500 million years ago d. 20 million years ago

8. Which of the following rocks is porous but not permeable?
a. Sandstone b. Siltstone c. Shale d. Marble

9. The Andaman Island is a good example of _____.
a. Atolls b. Fringing reefs c. Coral island d. Shingle beach

10. Which of the following statements about oceanic and continental rocks is true?
   a. Oceanic rocks are older than continental rocks
   b. Continental rocks are younger than oceanic rocks

c. Continental rocks are older than oceanic rocks
d. Continental and oceanic rocks are of the same age.

11. Among the following, the softest mineral is _____
a. Mica b. Talc c. Gypsum d. Halite

12. In the correct order from the center outward, the Earth has _____.
a. Core, inner mantle, outer mantle, crust b. Inner core, outer core, mantle, crust
c. Inner core, crust, mantle, hydrosphere d. Core, crust, mantle, hydrosphere

13. What is the rate at which tectonic (crustal) plates of the earth move?
a. A few kilometers a year b. A few centimeters a year
c. A few micrometers a year d. That the earth's plates move is a fallacy

14. What type of volcanoes form by eruptions dominated by basaltic lava flows?
a. composite b. stratospheric
c. cinder cone d. shield

15. What is the main difference between a conglomerate and a sedimentary breccia?
a. Breccia clasts are angular; conglomerate clasts are rounded.
b. A breccia is well stratified; a conglomerate is poorly stratified.
c. Breccia clasts are the size of baseballs; conglomerate clasts are larger.
d. Breccia has a compacted, clay-rich matrix; conglomerate has no matrix.

16. Which of the following is the most common type of chemical sedimentary rock?
a. Limestone b. Chert c. Phosphate rock d. Quartz sandstone

17. What is the name of a rock that is composed largely of abundant mica flakes arranged in a parallel manner?
a. Gneiss b. Schist c. Shale d. Silt

18. Which of the following geological era is the youngest in the geologic time scale?
a. Precambrian. b. Mesozoic. c. Paleozoic. d. Quaternary.

19. _____ is a residue left behind after the weathering of rocks?
a. Coal b. Pyrite c. Bauxite d. Gypsum

20. Which one of the following metallic elements is contained in monazite sands?
a. Calcium b. Uranium c. Thorium d. Platinum

21. Which of the following statements about the equator is incorrect?
a. The sun is always directly overhead at noon on the Equator.
b. Equator is a great circle
c. No cyclones form at the equator.
d. Snow cover is present on the Equator

22. Desert sand dunes are commonly asymmetrical. The steeper leeward side _____.
a. faces the downwind direction b. faces the upwind direction

c. Is oriented parallel to wind direction d. Is not oriented in any direction.

23. Which of the following surface ocean currents transports warm water from low to high latitudes?
a. The Peru and Canary Currents b. The Labrador and Benguela Currents
c. The Gulf Stream and Kuroshio Currents d. The Falkland and Brazil Currents

24. Relative humidity is "relative" to _____.
a. Moisture b. Temperature c. Water vapour pressure d. Altitude

25. One of the following statements is NOT true of a wave approaching the shore.
a. The wavelength increases because of frictional drag.
b. The orbital motion of water in a wave decreases with depth.
c. The wave height increases.
d. The wave becomes asymmetrical.

26. Circular, concentric contours that show decreasing values towards the center represent a _____.
a. Elevation b. Depression c. River valley d. Scarp

27. _____is characterized by sink-holes, disappearing streams and caves, and shaped by the dissolution of layers of soluble bedrock such as limestone or dolomite.
a. Yardang b. Hummock c. Karst d. Barchan

28. It is known that the Himalaya is rising, though at a very slow rate. Which of the following statements is true?
a. The rate at which it grows is compensated equally by erosion.
b. It started growing about 40 to 50 million years ago
c. It is not eroded because there are no rivers at that height.
d. It has stopped growing because the Tethys Sea is closed.

29. The region between ~ 30°-35° north and 30°-35° south latitudes is characterized by weak winds. This region is called _____.
a. The tropics b. The doldrums
c. The Inter-tropical Convergence Zone d. The horse latitudes

30. _____ is the scale used to measure the intensity of earthquakes.
a. Richter Scale b. Modified Mercalli Scale c. Fujita Scale d. Beaufort Scale

31. The focus of an earthquake is also known as _____.
a. Hypocenter b. Epicenter c. Antipode d. Seismicentric

32. Which type of earthquake waves causes the maximum damage and destruction?
a. P waves b. S waves
b. c. P-S waves d. Raleigh and Love waves

33. This rock is made of crystals of quartz, feldspar and mica and is used as a common building stone.
a. Pegmatite b. Granite c. Diorite d. Gabbro

34. ____ are crystals with the same composition but with a different crystal structure.
a. Isomorphs b. Polymorphs c. Polymers d. Amorphous

35. Which of the following pairs of elements is the most abundant in the Earth?

a. Fe and Mg b. Fe and O_2 c. Fe and Ni d. Si and O_2

36. On a Survey of India toposheet number 57D/11, a distance of four centimetres represents an actual ground distance of _____
a. 1Km b. 2Km c. 8 Km d. 16 Km

37. What is the rigid outer layer (about 75-150 km thick) of the earth called?
a. Asthenosphere b. Mesosphere c. Crust d. Lithosphere.

38. Identify the fossil in this picture.
a. Gastropod
b. Brachiopod
c. Ammonite
d. Tetrapod

39. _____ is a process by which empty spaces within a dead organism (spaces were filled with liquid or gas during life) get filled with mineral-rich groundwater from which minerals precipitate and occupy the empty spaces.
a. Permineralization b. Cast c. Mold d. Impression

40. What is paleoichnology?
a. Study of fish b. Study of trace fossils
c. Study of ferns d. Study of tree rings.

41. Lahar is a type of _____.
a. sea wave b. wind c. debris flow d. lava flow

42. I lived in the last Ice Age. I am a herbivore. I am a Siberian. Who am I?
a. Saber tooth tiger b. woolly mammoth b. mastodon c. giant sloth

43. Former floodplains along a river are represented by _____.
a. River terraces b. Meanders c. River valleys d. Canyons

44. _____ refers to the material deposited by a stream.
a. Alluvium b. Lacustrine sediment
c. Aeolian sediment d. Submarine sediment

45. The Great East Japan Earthquake was because of a _____
a. Normal fault b. Strike slip fault
c. Mega thrust fault d. Submarine volcanic eruption.

46. The average depth of the oceans is about _____.
a. 1000 m b. 2000 m c. 3000 m d. 4000 m

47. Which is the most abundant dissolved gas in the ocean surface water?
a. Carbon dioxide b. Nitrogen c. Argon d. Oxygen

48. Which of the following clouds is likely to give rain?
a. Cirrus b. Stratus c. Altostratus d. Cumulonimbus

49. The direction of winds in western India during the main rainy season is from the
a. East b. North c. South-west d. North-east

50. How are fresh water resources distributed on the earth's surface?
a. Evenly b. Unevenly c. Abundantly d. Scarcely

51. What is the ratio between land and ocean in the Northern Hemisphere?
a. Almost equal b. Not equal c. 1:2 d. 1:3

52. Fresh groundwater constitutes _____of the total water present in the earth?
a. 33% b. 29% c. 0.29% d. 0.76%

The amount of fresh water trapped in polar ice and glaciers is roughly _____ per cent of the total fresh water available on earth.
a. 14 b. 75 c. 0.3 d. 11

The average annual precipitation is the highest in _____.

a. Temperate regions b. Tundra regions
c. Polar regions d. Tropical regions

55. Precipitation is normally enhanced in the vicinity of _____.
a. Oceans b. Forests c. Mountains d. Cities

In the water cycle, evaporated water _____.

a. Precipitates as rain or snow b. Becomes groundwater
c. Runs into lakes, streams, and oceans d. Condenses into clouds

The general term for the transfer of moisture from the earth's surface to the atmosphere is _____.

a. Evapo-transpiration b. Vaporization
c. Evaporation d. Evaporative cooling

"Hydrosphere" is one of Earth's major spheres. It includes _____.
a. All of the water above and below the continents
b. All of the fresh water on the planet
c. All forms of the water on the planet
d. All of the water in the oceans, sea, lakes and rivers

_____ is the process of water loss from plants through stomata.
a. Humidity b. Transpiration c. Evaporation d. Evapo-transpiration

What percent of the total freshwater on earth is present in Lake Baikal, Russia?
a. 25% b. 20% c. 15% d. 10%

Oceans, seas, lakes, and rivers provide nearly ____ of the moisture in our atmosphere due to evaporation.

a. 40% b. 50 % c. 80% d. 90%

Only _____ of the moisture in the atmosphere is contributed due to transpiration by plants.

a. 10% b. 20% c. 30% d. 40%

The total water resources of the world are about _____.

a. 1.6 billion km^3 b. 1.4 billion km^3
c. 1.2 billion km^3 d. 1.1 billion km^3

Water table drop in India is due to _____.

a. Overexploitation b. Less rainfall c. Drought d. Floods

_____ is the highest rainfall receiving state in India.

a. Kerala b. Karnataka c. Goa d. Assam

The average annual rainfall over India is _____ cm.

a. 125 b. 250 c. 400 d. 500

67. The Hubble's law states that _____
   a. the Universe is accelerating
   b. the farther the galaxy is, the grater is the velocity of recession
   c. Galaxies are expanding
   d. the Sun will be thrown out of the Milky Way

68. The rotation of the earth on its axis causes _____.
   a. a small drift of the pole star in 25000 years
   b. the summer and winter
   c. the revolution of the moon around the earth
   d. the rising and setting of stars every day

69. We have seasons because _____.
   a. the earth's orbit is elliptical and the sun is one of the foci
   b. the Arctic and Antarctic regions get sunshine only for six months
   c. circulation of air is very slow
   d. the earth's rotation axis is inclined to its orbital plane

70. If we beat a drum on the earth and an astronaut who is doing a spacewalk beats an identical drum, what will be the difference in the effects?
   a. there will be no vibration in the drum in space
   b. the drum on the earth will vibrate for a longer time.
   c. there will be vibration in space but no sound.
   d. there will be no difference in terms of sound.

71. Star A has a temperature of 4000 K and star B 40,000 K. If the two stars have the same radii, which of the following is NOT true?
   a. Star B is more luminous than A.
   b. Star A emits more in infrared than in UV.
   c. Star B emits more in UV than in infrared.
   d. Star A emits more in infrared than B.

72. Consider the following two statements:
   P. One can see absorption lines in the solar spectrum.
   Q. The core of the Sun has a temperature of more than 1 million degree Celsius and the solar surface has a temperature of about 6000 degree Celsius. Which of the following is correct?
   a. Statement 'P' is correct but 'Q' is incorrect.
   b. Statement 'P' is incorrect but 'Q' is correct.
   c. Both the statements are correct and 'Q' is the correct reason of 'P'.
   d. Both the statements are correct and 'Q' is not the reason of 'P'.

73. Which of the following statement(s) is true of the outer core of the earth
   i. It is in a molten state
   ii. It does not transmit 'S' (seismic waves)
   iii. Is mostly made of silicates of iron and magnesium
   iv. Is mostly made of sulphide of iron and nickel.

   a. i and ii b. i, ii and iii c. i, ii and iv d. ii, iii and iv

74. All stars become red giants _____.
   a. After 1 billion years
   b. When hydrogen is completely exhausted
   c. When helium is completely exhausted
   d. When 10% of the hydrogen at the core is exhausted

75. The sun is called a yellow star because _____
   a. It looks red at rise and set b. It emits white light
   c. It emits the maximum energy in yellow light d. Its color changes from white to red

76. The energy produced in the core of the sun is by _____.
   a. Nuclear fusion of protons p-p reactions b. Nuclear fusion C-N-O cycle
   c. Triple alpha reactions d. Nuclear fission reactions

77. The distance to farther galaxies is estimated by _____.
   a. The method of parallax b. measuring luminosities
   c. Cepheid variables d. Supernovae

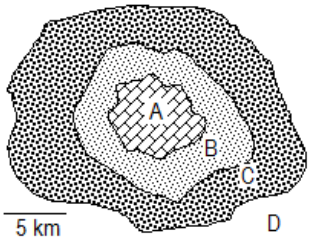
78. Astronomers prefer larger telescopes because _____.
   a. of a larger field of view
   b. of a brighter image
   c. of a larger image
   d. they are more sensitive to visible wavelengths.

79. All locations in the Northern Hemisphere have the most daylight on _____.
a. March 21 b. July 21 c. September 21 d. June 21

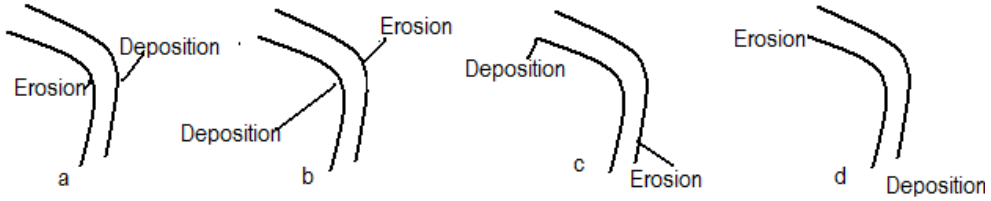
80. Increasing the size of the telescope mirror _____.
a. Improves the clarity b. Increases the magnification of the image
c. Increases the brightness of the image d. Makes the stars look bigger

81. On open water, evaporation increases when the saturation deficit _____.
a. increases and the wind speed increases
b. increases and the wind speed decreases
c. decreases and the wind speed increases
d. decreases and the wind speed decreases

82. Given below is the geologic map of an area with little relief. Rock units A through D represent the oldest to the youngest. What structure is shown on the map?
a. Dome
b. Basin
c. Anticline
d. Syncline



83. Which of the diagrams below correctly shows sites of erosion and deposition on a river meander?



84. Water molecules absorb energy during _____.
a. the formation of ice from water b. the formation of clouds from vapor
c. Runoff on land surface d. Evaporation from sea surface

85. Any of the various small, mostly tailless, extinct flying reptiles is called_____.
a. Pterodactyls b. Archaeopteryx c. Flying squirrel d. Flying fox

86. In general, the probability of flooding decreases when there is an increase in the amount of _____.
a. Precipitation b. Infiltration c. Runoff d. Snowmelt

87. Liquid water can store more heat energy than an equal amount of any other naturally occurring substance because liquid water _____.

a. covers 71% of the Earth's surface b. has a higher specific heat

c. has a greater density at 4°C. d. changes into its gaseous phase quickly

88. Which reference line passes through both the geographic North Pole and the geographic South Pole?

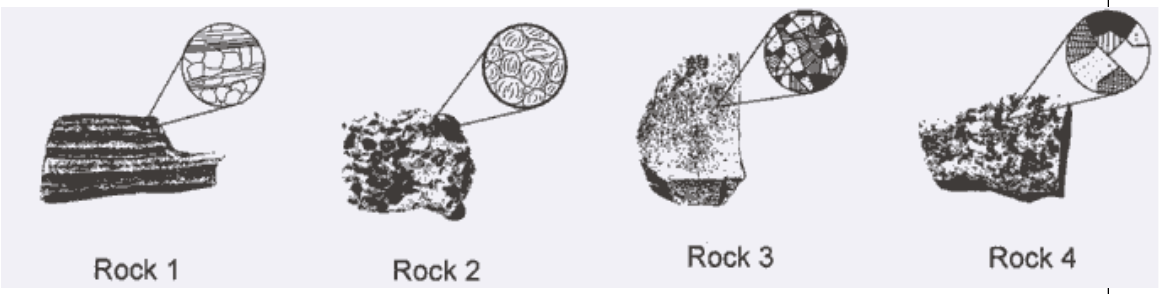
a. 0° latitude b. 0° longitude

c. Tropic of Cancer (23.5°N) d. Tropic of Capricorn (23.5°S)

89. Which of these is not a green-house gas?

a. water vapour b. methane c. ozone d. nitrogen

90. Which of the following represents a metamorphic rock?



a. Rock.1 b. Rock. 2 c. Rock.3 d. Rock. 4

91. There are obsorption lines in the specturm of stars that help us in identifying the chemical elements present in these stars. What are these lines called?

a. Fraunhofer lines b. Redshift c. Blue shift d. Doppler lines

92. To measure the distance to an object, astronomers use "parallax" - the distance an object seems to make when viewed from opposite sides of the Earth's orbit. What is this unit called?

a. Light year b. Parsec c. Pardegree d. Arcsine

93. A layer of ozone in the _____absorbs ultraviolet light from the sun.

a. Troposphere b. Stratosphere c. Mesosphere d. Exosphere

94. A hypothetical supercontinent that included all the landmasses of the earth is called _____.

a. Laurasia b. Gondwanaland c. Pangea d. Tethysia

95. We see the same face of the Moon always, because

a. The Moon does not rotate on its axis

b. The phases of the Moon make it appear so.

c. The rotation period of the Moon is the same as the period of revolution of Moon around the Earth

d. Magnetic forces due to material on Earth and Moon keep them locked in the same orientation

96. A cyclone is a system of wind in which the wind blows spirally _____.
   a. Towards the center of low pressure
   b. Towards the central high pressure region
   c. Towards a region of low pressure
   d. Outward from a region of high pressure

97. For a time difference of one hour, the longitudinal distance is equal to _____.
   a. 15^{o} b. 30^{o} c. 45^{o} d. 60^{o}

98. Which of the following types of coal is smokeless and contains 90% carbon?
   a. Anthracite b. Lignite c. Peat d. Bituminous coal

99. _____ is the largest salt water lake in the world.
   a. Caspian Sea b. Dead Sea c. Red Sea d. Sargasso Sea

100. Temperature decreases with increasing altitude because of a _____.
   a. decrease in air pressure b. increase in distance from center of the earth
   c. decrease in CO_2 d. decrease in O_2.

- THE RESULTS WILL BE PUBLISHED AT www.google.sites.com/site/ineso555 BY 15-02-2012.

- PLEASE DO NOT MAKE ANY ENQUIRIES UNTIL THEN.