

GEOLOGY
(FINAL)

1. Which of the following is the largest planet in the solar system?
 - (A) Jupiter
 - (B) Earth
 - (C) Venus
 - (D) Mercury

2. Which of the following is not a solid-solution pair?
 - (A) Albite – Anorthite
 - (B) Forsterite – Fayalite
 - (C) Enstatite – Diopside
 - (D) Orthoclase - Microcline

3. How old is the Earth?
 - (A) approximately 4.5 thousand years
 - (B) approximately 4.5 billion years
 - (C) approximately 4.5 million years
 - (D) approximately 4.5 trillion years

4. Age of St. Mary's Island volcanism is
 - (A) 58 Ma
 - (B) 68 Ma
 - (C) 78 Ma
 - (D) 88 Ma

5. Continental drift theory was proposed by
 - (A) Jolly
 - (B) Holmes
 - (C) Wegner
 - (D) Prat

6. James Hutton proposed the principle of
 - (A) uniformitarianism
 - (B) uniformity
 - (C) conformity
 - (D) universalism

7. Mica belongs to silicate

(A) Neso
(B) Soro
(C) Phyllo
(D) lno

8. Which is the correct chronological order?

(A) Permian – Proterozoic – Pliocene – Paleocene
(B) Proterozoic – Permian - Paleocene – Pliocene
(C) Paleocene – Proterozoic – Pliocene – Permian
(D) Proterozoic – Paleocene – Permian – Pliocene

9. Which of the following instruments is used to measure the interfacial angles in a crystal?

(A) Contact goniometer
(B) Clinometer
(C) Thermometer
(D) Restively meter

10. The concept of cycle of erosion is proposed by

(A) W.M. Davis
(B) L.C. King
(C) J Hutton
(D) A Wegner

11. Residual hill in the desert region is known as

(A) Inlier
(B) Inselberg
(C) Playa
(D) Pediment

12. Which of the minerals has piezoelectric property?

(A) Quartz
(B) Biotite
(C) Calcite
(D) Plagioclase

13. The theoretical surface that separates zones with different grades of metamorphism is called

- (A) Isogyre
- (B) Isohyet
- (C) Isograd
- (D) Isopleth

14. The Mohorovicic discontinuity is the boundary between

- (A) mantle-core
- (B) crust-mantle
- (C) lithosphere-mantle
- (D) inner core-outer core

15. The normal class of monoclinic system istype

- (A) Barite
- (B) Beryl
- (C) Gypsum
- (D) Acmite

16. Read the following sentences carefully and choose the correct answer from the four options given below:

- (I) Mineral calcite crystallizes in rhombohedral class of hexagonal system
- (II) There are three crystallographic axes present in the hexagonal system

- (A) Sentence (I) is correct and (II) is wrong
- (B) Sentence (I) is wrong and (II) is correct
- (C) Both Sentence (I) and (II) are correct
- (D) Both Sentence (I) and (II) are wrong

17. Calcite and Aragonite are the

- (A) Isomorphs of CaCO_3
- (B) Polymorphs of CaCO_3
- (C) Isomorphs of $\text{CaMg}(\text{CO}_3)_2$
- (D) Polymorphs of $\text{CaMg}(\text{CO}_3)_2$

18. Which of the following minerals has the highest hardness?

- (A) Calcite
- (B) Orthoclase
- (C) Quartz
- (D) Talc

19. Which mineral is commonly referred to as 'fool's gold' ?

- (A) Galena
- (B) Garnet
- (C) Pyrite
- (D) Hematite

20. Exfoliation is a form of

- (A) Chemical weathering
- (B) Physical weathering
- (C) Biochemical weathering
- (D) Mass wasting

21. Si-O ratio in Quartz group of minerals is

- (A) 1:2
- (B) 1:3
- (C) 4:11
- (D) 2:5

22. Which of the following minerals does not have SiO_4 Tetrahedron?

- (A) Quartz
- (B) Muscovite
- (C) Halite
- (D) Orthoclase

23. What is the hardness of fluorite?

- (A) 1
- (B) 2
- (C) 3
- (D) 4

24. What is the geological age of Cardita beaumonti?

- (A) Upper Cretaceous to Lower Paleogene
- (B) Upper Carboniferous to Triassic
- (C) Lower Cretaceous to Middle Cretaceous
- (D) Upper Jurassic to Lower Cretaceous

25. What is the average elevation of the Western Ghats?

(A) 800 m
(B) 1200 m
(C) 1600 m
(D) 2000 m

26. Which of the following crystal system has three equal and interchangeable Crystallographic axes?

(A) Hexagonal
(B) Isometric
(C) Tetragonal
(D) Triclinic

27. In a crystal system each form of normal class is called as

(A) Holohedral form
(B) Hemihedral form
(C) Hemimorphic form
(D) Enantiomorphic form

28. How many diagonal two-fold axis of symmetry are present in the Isometric system?

(A) 4
(B) 6
(C) 3
(D) 8

29. The amount of horizontal displacement in a fault is called

(A) Throw
(B) Heave
(C) Tear
(D) Strike

30. Streak is

(A) color of the mineral
(B) color of the powder of a mineral
(C) color of the rock
(D) pleochoric color of the mineral

31. Which of the following minerals shows adamantine lustre?

(A) Quartz
(B) Diamond
(C) Clay
(D) Asbestos

32. Which of the following is a non-pleochroic mineral?

(A) Hypersthene
(B) Biotite
(C) Garnet
(D) Hornblende

33. Which of the following feldspar exhibits play of colors?

(A) Sandine
(B) Labradorite
(C) Microcline
(D) Albite

34. Which of the following mineral is also called heavy spar?

(A) Beryl
(B) Barite
(C) Bornite
(D) Bauxite

35. Chalcopyrite is an ore mineral of

(A) Copper
(B) Zinc
(C) Lead
(D) Iron

36. Repetition of beds on a geological map may be due to

(A) Folding
(B) Weathering
(C) Unconformity
(D) Disconformity

37. Which of the following has a cumulate origin?

(A) Basalt
(B) Granite
(C) Anorthosite
(D) Gabbro

38. Marble is a metamorphic rock, derived from metamorphism of

(A) Granite
(B) Limestone
(C) Sandstone
(D) Shale

39. Vesicular structures are commonly found in

(A) Basalts
(B) Granites
(C) Pegmatites
(D) Lamprophyres

40. A mass of rock exposed at the Earth's surface is called

(A) Crust
(B) Bedrock
(C) Outcrop
(D) Schorl Rock

41. From which country geological hydrogen was successfully extracted for the first time?

(A) Australia
(B) Brazil
(C) Chili
(D) Mali

42. The smallest time division on the geologic time scale is a(n)

(A) era
(B) epoch
(C) eon
(D) period

43. Eparchean unconformity separates the geological units of

- (A) Early Archaean to late Archaean
- (B) Archaean to Proterozoic
- (C) Proterozoic to Paleozoic
- (D) Archaean to Phanerozoic

44. Which of the following flora belongs to lower Gondwana?

- (A) Glossopteris
- (B) Cladophlebis
- (C) Sphenopteris
- (D) Ptilophyllum

45. The regional strike of Dharwar group of rocks is

- (A) N - S
- (B) NW - SE
- (C) E - W
- (D) NNW - SSE

46. Which of the following are oldest group of rocks?

- (A) Dharwar Group
- (B) Sargur Group
- (C) Vindhyan Group
- (D) Bhima Group

47. Hematite is an ore mineral of

- (A) Iron
- (B) Manganese
- (C) Chromite
- (D) Copper

48. Bauxite deposits are of origin

- (A) Hydrothermal
- (B) Residual
- (C) Early magmatic
- (D) Late magmatic

49. The skeleton of an entire coral colony is described as

- (A) Corallum
- (B) Columella
- (C) Corallite
- (D) Coralina

50. Angadipuram laterite, a notified national geo-heritage museum is in which of the following district of Kerala?

- (A) Malappuram
- (B) Kannur
- (C) Wayanad
- (D) Palakkad

51. Gastropods exhibit

- (A) Bilateral symmetry
- (B) Radial symmetry
- (C) Biradial symmetry
- (D) Asymmetry

52. Choose the odd one out

- (A) Pyrolusite
- (B) Magnetite
- (C) Hematite
- (D) Goethite

53. Which of the following is an ore of lead?

- (A) Sphalerite
- (B) Pyrite
- (C) Galena
- (D) Chalcopyrite

54. Wayanad district of Kerala is known for deposit

- (A) Gold
- (B) Iron
- (C) Copper
- (D) Bauxite

55. Bragg's law of X-ray diffraction is expressed as

- (A) $RI = \frac{\sin i}{\sin r}$
- (B) $n\lambda = 2d \sin \theta$
- (C) $A = \pi r^2$
- (D) $A = P \left(1 + \frac{r}{n}\right)^{nt}$

56. Iceland spar is the transparent variety of

- (A) Calcite
- (B) Gypsum
- (C) Barite
- (D) Quartz

57. Choose the odd one out

- (A) Labradorite
- (B) Bytownite
- (C) Anorthite
- (D) Orthoclase

58. Which of the following is not a polymorph of Al_2SiO_5 ?

- (A) Corundum
- (B) Andalusite
- (C) Kyanite
- (D) Sillimanite

59. Which of the following is orthoamphibole?

- (A) Anthophyllite
- (B) Hornblende
- (C) Tremolite
- (D) Actinolite

60. Read the following sentences carefully and choose the correct answer from the four options given below:

- (I) Mineral kyanite is usually blue in colour
- (II) Three sets cleavages are present in mineral kyanite

- (A) (I) is correct and (II) is wrong
- (B) (I) is wrong and (II) is correct
- (C) Both (I) and (II) are correct
- (D) Both (I) and (II) are wrong

61. Uniaxial minerals have optic axes

- (A) Two
- (B) Three
- (C) One
- (D) Four

62. Which of the following is a concordant intrusive body?

- (A) dyke
- (B) batholith
- (C) sill
- (D) stock

63. Quartz is a diagnostic mineral of rocks

- (A) Oversaturated
- (B) Saturated
- (C) Unsaturated
- (D) Undersaturated

64. Limestone having fish egg sized, oval shaped grains is called as limestone

- (A) Oolitic
- (B) Pisolitic
- (C) Shelly
- (D) Stromatolitic

65. Which formation of Sausar group is more important for manganese ore?

- (A) Sitasoong formation
- (B) Lohangi formation
- (C) Mansar formation
- (D) Chorbaoli formation

66. Sandur-Hospet sector of Karnataka is known for occurrence of ore deposits

(A) Iron-Manganese
(B) Gold-Silver
(C) Copper-Gold
(D) Lead-Zinc

67. Grade of the ore below which the mining is not profitable is called grade

(A) average
(B) cut-off
(C) mill
(D) run of mine

68. Which of the following minerals has two sets of good cleavage planes oriented at right angles to each other?

(A) Amphibole
(B) Calcite
(C) Mica
(D) Pyroxene

69. Which of the following minerals shows adamantine lustre?

(A) Quartz
(B) Diamond
(C) Clay
(D) Asbestos

70. Mica group of minerals exhibits

(A) Parallel extinction
(B) Inclined extinction
(C) Symmetrical extinction
(D) Wavy extinction

71. The angle between two optic axes is called as

(A) Extinction angle
(B) Optic axial angle
(C) Interfacial angle
(D) Angle of refraction

72. IUGS stands for

- (A) International Union of Geological Sciences
- (B) Indian Union of Geological Sciences
- (C) Indian United Geological Society
- (D) International United Geological Society

73. The relationship between faces, edges and solid angles in a crystal form is expressed by

- (A) Prowen's formula
- (B) Nicholas's formula
- (C) Euler's formula
- (D) Powell's formula

74. A disconformity is

- (A) an erosional surface between parallel layers of sedimentary rocks
- (B) an erosional surface between igneous and sedimentary rocks
- (C) a rock unit that does not contain fossils
- (D) a rock unit that is different from the units above or below it

75. The percentage of mafic minerals in an igneous rock is called as

- (A) chemical index
- (B) colour index
- (C) mineral index
- (D) rock index

76. Read the following sentences carefully and choose the correct answer from the four options given below:

- (I) Differentiation of magma is a magmatic evolution process
- (II) It involves mixing of two magmas of diverse composition

- (A) (I) is correct and (II) is wrong
- (B) (I) is wrong and (II) is correct
- (C) Both (I) and (II) are correct
- (D) Both (I) and (II) are wrong

77. The concept of metamorphic facies was proposed by

- (A) Winkler
- (B) Niggli
- (C) Eskola
- (D) Tillay

78. New seafloor is created at a

- (A) deep-sea trench
- (B) mid-ocean ridge
- (C) subduction zone
- (D) transform fault

79. How many cleavage/s plane/s do sheet silicates exhibit/s?

- (A) one
- (B) two
- (C) three
- (D) four

80. Sphalerite is an ore mineral of

- (A) Copper
- (B) Lead
- (C) Zinc
- (D) Silver

81. Which of the following is an orthopyroxene?

- (A) Diopside
- (B) Augite
- (C) Enstatite
- (D) Hedenbergite

82. Which of the following mineral is isotropic under crossed polarizers?

- (A) Garnet
- (B) Hypersthene
- (C) Hornblende
- (D) Biotite

83. Diorite is plutonic igneous rock, mineralogically comprises commonly of

- (A) Plagioclase + Clinopyroxene
- (B) Plagioclase + Hornblende
- (C) Plagioclase + Orthopyroxene
- (D) Orthoclase + Orthopyroxene

84. Charnockite is a metamorphic rock

- (A) high grade
- (B) medium grade
- (C) low grade
- (D) very low grade

85. Which of the following is the diagnostic mineral of greenschist facies metamorphism?

- (A) Hornblende
- (B) Hypersthene
- (C) Chlorite
- (D) Cordierite

86. Plagioclase exhibits twining in thin section

- (A) polysynthetic
- (B) penetration
- (C) simple contact
- (D) concentric

87. According to the principle of uniformitarianism

- (A) geologic processes we observe today have operated in the past
- (B) geologic process in the past operated at the same rate as they do today
- (C) all the planets formed from a uniform solar nebula
- (D) early Earth was covered by a uniform magma ocean

88. What are the two most abundant elements in nebula (gas clouds) in the universe?

- (A) Nitrogen and oxygen
- (B) Oxygen and silicon
- (C) Hydrogen and helium
- (D) Iron and nickel

89. The descent of oceanic lithosphere into the mantle is the process of

- (A) Accretion
- (B) Subduction
- (C) Divergence zone
- (D) Contraction

90. Who is known as "Father of Geology"?

- (A) John Butler
- (B) Art Smith
- (C) James Hutton
- (D) Alfred Wegner

91. Chemical composition of mineral corundum is

- (A) Al_2O_3
- (B) Fe_2O_3
- (C) Cr_2O_3
- (D) SiO_2

92. The angle of inclination of rock bed with the respect of horizontal plane is known as

- (A) Strike
- (B) Dip
- (C) Bedding
- (D) Heave

93. The fracture planes/shear planes along which there is relative movements of blocks is called as

- (A) Folds
- (B) Joints
- (C) Faults
- (D) Intrusions

94. Which of the following is chemically formed sedimentary rock?

- (A) Sandstone
- (B) Gypsum
- (C) Breccia
- (D) Shale

95. Asbestose shows lustre

(A) Silky
(B) Vitreous
(C) Adamantine
(D) Pearly

96. Which of the following is the discontinuity between the lower and outer core?

(A) Mohorovicic discontinuity
(B) Gutenberg discontinuity
(C) Lehmann discontinuity
(D) Conard discontinuity

97. What is the age of Warkalli formation?

(A) Paleogene
(B) Neogene
(C) Quaternary
(D) Mesozoic

98. The name of the large supercontinent which existed 200 million years ago when all the continents were together is

(A) Pangea
(B) Andrea
(C) Indian
(D) Africa

99. Which of the following mineral is carbonate of Manganese?

(A) Pyrolusite
(B) Siderite
(C) Rhodochrosite
(D) Malachite

100. Mushroom shaped structures having slender colum and wide top resulting from the abrasive action of wind are known as

(A) Ventifacts
(B) Brazil null
(C) Pedestal rocks
(D) Drass

101. A fold which is having younger beds in its core may be described as a/an

- (A) Anticline
- (B) Antiform
- (C) Monocline
- (D) Synform

102. Which of the following materials might be dated using Carbon-14?

- (A) granite
- (B) iron ore
- (C) sandstone
- (D) decayed wood

103. 'Homotaxial' geological formations are

- (A) Equivalent in lithology
- (B) Equivalent in age but situated wide apart
- (C) Different in age
- (D) Different in age and situated at same place

104. Quartzite is a metamorphic derivative of

- (A) Limestone
- (B) Granite
- (C) Sandstone
- (D) Shale

105. Identify the correct sequence for the rank of coal from lowest to highest?

- (A) Bituminous - anthracite-lignite - peat
- (B) Peat - lignite - bituminous - anthracite
- (C) Peat - lignite-anthracite - bituminous
- (D) Anthracite - bituminous - lignite - peat

106. The hydrolysis of orthoclase results in the formation of

- (A) shale
- (B) kaolin
- (C) lime
- (D) hydrochloric acid

107. Which of the following mineral is used both as electrical, thermal and sound insulator?

- (A) Graphite
- (B) Mica
- (C) Asbestos
- (D) Clay

108. Which of the following pyroxene is diagnostic of Charnockite?

- (A) Augite
- (B) Hypersthene
- (C) Hedenbergite
- (D) Jadeite

109. Glaucophane is the characteristic mineral of facies

- (A) blue schist
- (B) green schist
- (C) amphibolite
- (D) zeolite

110. A terrigenous sedimentary rock in which the particles are mostly of silts and clay size is called

- (A) Sandstone
- (B) Conglomerate
- (C) Shale
- (D) Breccia

111. Arkose is derived from weathering of

- (A) Gabbro
- (B) Granite
- (C) Ultrabasic rocks
- (D) Marble

112. Mechanical sedimentary rocks show texture

- (A) Clastic
- (B) Non-clastic
- (C) Coloform
- (D) Reaction

113. Choose the odd one out

- (A) Ripple marks
- (B) Gaded Bedding
- (C) Cross bedding
- (D) Mud cracks

114. Which of the following is a monomineralic rock consisting almost exclusively of olivine?

- (A) Hazburgite
- (B) Dunite
- (C) Wehrlite
- (D) Picrite

115. The term Anatexis denotes

- (A) partial melting of rock
- (B) partial recrystallization
- (C) complete recrystallization
- (D) complete melting of rock

116. The western continental margin of India is an example of

- (A) Active Margin
- (B) Passive Margin
- (C) Subduction Zone
- (D) Collision Zone

117. A conglomerate formed by the consolidation clasts ejected volcanic eruption is called as

- (A) Diamictite
- (B) Orthoconglomerate
- (C) Paraconglomerate
- (D) Agglomerate

118. Which of the following is a biogenic sedimentary structure?

- (A) Ripple mark
- (B) Graded bedding
- (C) Crawling trail
- (D) Cross bedding

119. A gneiss which is derived from metamorphism of an alumina- rich sedimentary rock is

- (A) orthogneiss
- (B) paragneiss
- (C) augen gneiss
- (D) porphyritic gneiss

120. Choose the odd one out

- (A) Albite
- (B) Sanidine
- (C) Oligoclase
- (D) Andesine

121. Wavy/undulose extinction is characteristically exhibited by

- (A) Quartz
- (B) Biotite
- (C) Hornblende
- (D) Hypersthene

122. Malanjkhand is known for deposits

- (A) Iron
- (B) Manganese
- (C) Copper
- (D) Bauxite

123. Which of the following is the most abundant element in the Earth's crust?

- (A) O
- (B) Si
- (C) Al
- (D) Fe

124. Feldspar group of minerals crystallizes in which of the following crystal systems?

- (A) Isometric
- (B) Tetragonal
- (C) Orthorhombic
- (D) Monoclinic and Triclinic

125. Chemical composition of Orthoclase is

- (A) $KAlSi_3O_8$
- (B) $NaAlSi_3O_8$
- (C) $CaAlSi_3O_8$
- (D) Al_2SiO_5

126. What is the streak of Hematite?

- (A) Black
- (B) Cherry red
- (C) White
- (D) Yellow

127. Most of the rocks of the Central Indian Tectonic Zone evolved during

- (A) Archean
- (B) Proterozoic
- (C) Paleozoic
- (D) Mesozoic

128. Zawar Mines are famous for

- (A) gold
- (B) diamond
- (C) lead and zinc
- (D) graphite

129. Which of the following rock could be an important source of diamonds?

- (A) Komatiite
- (B) Gabbro
- (C) Eclogite
- (D) Kimberlite

130. Which of the following mineral is the carbonate of copper?

- (A) Malachite
- (B) Rhodochrosite
- (C) Cerussite
- (D) Strontianite

131. The ore deposits which are formed simultaneously with the enclosing/host rock are called

- (A) Epigenetic
- (B) Syngenetic
- (C) Syncogenetic
- (D) Cynogenetic

132. Folds with two hinges and three planar limbs are called as folds

- (A) conjugate
- (B) cheveron
- (C) cuspatate
- (D) cylindrical

133. Choose the odd one out

- (A) Fault Gouge
- (B) Fault Breccia
- (C) Mylonite
- (D) Kaolinite

134. The ozone layer is found in the which of the fallowing layer of atmosphere?

- (A) Troposphere
- (B) Stratosphere
- (C) Mesosphere
- (D) Thermosphere

135. Hot molten silicate material erupted from volcano is called as

- (A) Lava
- (B) Magma
- (C) Pyroclasts
- (D) Tephra

136. Which of the following type of igneous rock has highest silica content?

- (A) Ultra-mafic
- (B) Mafic
- (C) Intermediate
- (D) Felsic

137. Which of the following is an example of native mineral?

(A) Diamond
(B) Hematite
(C) Quartz
(D) Calcite

138. In which of the following geological period mammals first appeared on the earth?

(A) Cretaceous
(B) Triassic
(C) Jurassic
(D) Tertiary

139. Which of the following is the age of fish?

(A) Devonian
(B) Silurian
(C) Cambrian
(D) Ordovician

140. Which of the following is a non-clastic sedimentary rock?

(A) Conglomerate
(B) Chalk
(C) Sandstone
(D) Shale

141. Which of the following sedimentary rock is of glacial origin?

(A) Tillite
(B) Shale
(C) Limestone
(D) Lignite

142. Ophitic texture is commonly shown by

(A) Granite
(B) Trachyte
(C) Andesite
(D) Dolerite

143. Which of the following minerals belong to the cubic system?

- (A) Orthoclase
- (B) Quartz
- (C) Garnet
- (D) Apatite

144. Age of the Panjal Traps

- (A) Cambrian
- (B) Carboniferous
- (C) Permian
- (D) Devonian

145. A sandstone with less than 15% matrix content is known as

- (A) Siltstone
- (B) Mudstone
- (C) Greywacke
- (D) Arenite

146. Coesite is higher polymorph of

- (A) Quartz
- (B) Aluminosilicate
- (C) Garnet
- (D) Plagioclase

147. Which of the following is in decreasing order of particle size?

- (A) Sandstone, Siltstone, Conglomerate
- (B) Sandstone, Conglomerate Siltstone
- (C) Conglomerate, Sandstone, Siltstone
- (D) Siltstone, Sandstone, Conglomerate

148. In a binary system, two crystallization curves join at a point where simultaneous crystallization of two mineral phases takes place is called as

- (A) eutectic point
- (B) peritectic point
- (C) cotectic point
- (D) anatetic point

149. Graphic texture in an igneous rock is indicative of

- (A) crystal settling
- (B) eutectic crystallization
- (C) magma mixing
- (D) fractional crystallization

150. Choose the odd one out

- (A) Enstatite
- (B) Bronzite
- (C) Hypersthene
- (D) Anthophyllite

FOR REFERENCE ONLY

ANSWER KEY

Subject Name:		GEOLOGY							
SI No.	Key	SI No.	Key	SI No.	Key	SI No.	Key	SI No.	Key
1	A	31	B	61	C	91	A	121	A
2	C	32	C	62	C	92	B	122	C
3	B	33	B	63	A	93	C	123	A
4	D	34	B	64	A	94	B	124	D
5	C	35	A	65	C	95	A	125	A
6	A	36	A	66	A	96	C	126	B
7	C	37	C	67	B	97	B	127	B
8	B	38	B	68	D	98	A	128	C
9	A	39	A	69	B	99	C	129	D
10	A	40	C	70	A	100	C	130	A
11	B	41	D	71	B	101	A	131	B
12	A	42	B	72	A	102	D	132	A
13	C	43	B	73	C	103	B	133	D
14	B	44	A	74	A	104	C	134	B
15	C	45	D	75	B	105	B	135	A
16	A	46	B	76	A	106	B	136	D
17	B	47	A	77	C	107	B	137	A
18	C	48	B	78	B	108	B	138	B
19	C	49	C	79	A	109	A	139	A
20	B	50	A	80	C	110	C	140	B
21	A	51	D	81	C	111	B	141	A
22	C	52	A	82	A	112	A	142	D
23	D	53	C	83	B	113	D	143	C
24	A	54	A	84	A	114	B	144	C
25	B	55	B	85	C	115	A	145	D
26	B	56	A	86	A	116	B	146	A
27	A	57	D	87	A	117	D	147	C
28	B	58	A	88	C	118	C	148	A
29	B	59	A	89	B	119	B	149	B
30	B	60	C	90	C	120	B	150	D