1. At present stage of knowledge age of earth is :
   (a) 3,500 million years
   (b) 4,500 million years
   (c) 5,500 million years
   (d) 6,500 million years

2. Part of earth starting from Mohorovicic Discontinuity and extending upto Guttenberg discontinuity at 2,900 km is known as :
   (a) Inner Core
   (b) Outer Core
   (c) Mantle
   (d) Crust

3. The Shield Volcanoes are example of :
   (a) Central eruption
   (b) Fissure eruption
   (c) Fumaroles
   (d) Moraines

4. In Geological studies, a dome shaped intrusion is called a :
   (a) Volcanic Neck
   (b) Laccolith
   (c) Nuee ardente
   (d) Moraines Caldera

5. From the location of the Midoceanic Ridge the age of the rock will :
   (a) Increase on both the sides
   (b) Decrease on both the sides
   (c) Increase on one side and remains constant on the other side
   (d) Remains constant on both the sides

6. Godavari graben is an example of :
   (a) Exogeosyncline
   (b) Autogeosyncline
   (c) Zeugogeosyncline
   (d) Taphrogeosyncline

7. Wedge shaped sector of oceanic crust separated by continental blocks which originated by rotation or pulling apart of continental blocks is called :
   (a) Orocline
   (b) Sphenochasm
   (c) Seamount
   (d) Steinmann's Trinity

8. Gravity anomalies over Island Arcs are :
   (a) Intense Positive
   (b) Intense Negative
   (c) Feeble Positive
   (d) Feeble Negative

9. Thickness of Mantle is :
   (a) 3,500 km
   (b) 2,900 km
   (c) 2,500 km
   (d) 1,900 km

10. Earthquakes of shallow focus range are caused due to :
   (a) Normal faulting
   (b) Reverse faulting

(c) Thrust faulting

(d) Gravity faulting

11. "The same physical processes and laws that operate today operated throughout geological time, although not necessarily always with the same intensity as now" this statement is also known as :

(a) Principle of Uniformitarianism

(b) Principle of Consistency

(c) Principle of Sustainability

(d) Ohm's Law

12. Many physical and chemical ways by which the earth's surface undergoes modification are called :

(a) Landforms

(b) Structures

(c) Processes

(d) Orderly Sequences

13. Which one of the following is an example of endogenetic processes ?

(a) Gradation

(b) Degradation

(c) Diastrophism

(d) Infall of Meteorites

14. 'Chemically decomposed drift' in a weathering profile is referred in soil profile as :

(a) A Horizon

(b) B Horizon

(c) C_1 Horizon

(d) D Horizon

15. Valleys which show no apparent adjustment to structural or lithological control are called :

(a) Insequent valleys

(b) Resequent valleys

(c) Obsequent valleys

(d) Homoclinal valleys

16. Which of the following is NOT an example of eolian sand deposits ?

(a) Sand Shadows

(b) Sand Undulations

(c) Sand Sheets

(d) Sand Plugs

17. Subterranean cut-off and natural tunnels are the examples of which of the following landforms ?

(a) Aeolian

(b) Marine

(c) Glacial

(d) Karst

18. In aerial photography the overlap between two adjacent photos is approximately equals to :

(a) 20%

(b) 40%

(c) 60%

(d) 80%

19. Which one of the following is the spectral range (in Microns) used for

Biomass surveys and delineation of water bodies ?

(a) 0.52 – 0.60
(b) 0.63 – 0.69
(c) 0.76 – 0.90
(d) 1.55 – 1.75

20. The EM region for Band Number 5 is :
(a) Visible Red
(b) Near Infrared
(c) Thermal Infrared
(d) Middle Infrared

21. Fold having inclined axial plane and both limbs dip in same direction at different angles is known as :
(a) Isoclinal fold
(b) Recline fold
(c) Overturned fold
(d) Recumbent fold

22. All else equal, the steeper the slope, the greater the :
(a) Shearing stress
(b) Friction
(c) Normal stress
(d) Shearing strength

23. Joints developed under compression are known as :
(a) Sheet joints
(b) Shear joints
(c) Tensional joints
(d) Tectonic joints

24. For a larger number of materials, the relationship between stress and strain is linear and the behaviour is then called as :
(a) Hookean elasticity
(b) Atterberg elasticity
(c) Mohr's elasticity
(d) Boolean elasticity

25. Fold having smaller outer curvature and orthogonal thickness on the limb is less than that at the fold hinge, is :
(a) Class 1A fold
(b) Class 1B fold
(c) Class 1C fold
(d) Class 2 fold

26. In buckle folding developed by shear parallel to layer boundary, minimum strain occurs at :
(a) Hinge Zone
(b) Inflection Point
(c) Right Limb
(d) Left Limb

27. Younger series rest progressively on the older members of the underlying rock is called :
(a) Over step
(b) Over lap
(c) On lap
(d) Side lap

28. In a normal fault net slip is :
    (a) Maximum along the dip
    (b) Maximum along the strike
    (c) Minimum along the dip
    (d) Maximum oblique to the strike

29. Assertion (A) : In a normal fault hanging wall goes down with respect to foot wall. Reasoning (R) : Because the extension direction is horizontal parallel to dip direction.
    (a) A is correct but R is false
    (b) A is false but R is correct
    (c) Both A and R are correct and R is the correct explanation of A
    (d) Both A and R are correct and R is not the correct explanation of A

30. Assertion (A) : Refraction of slaty cleavage does not occur in a fold. Reasoning (R) : This happens as the layers vary in competence.
    (a) A is correct but R is false
    (b) A is false but R is correct
    (c) Both A and R are correct and R is the correct explanation of A
    (d) Both A and R are correct and R is not the correct explanation of A

31. In geniculate twin, twin plain is :
    (a) 100
    (b) 001
    (c) 101
    (d) 201

32. Hemihedral form in diploid, holohedral form is :
    (a) Pyritohedron
    (b) Hexa-tetrahedron
    (c) Tetrahedron
    (d) Hexa-octahedron

33. The mineral generally have a combination of positive and negative tetrahedra is :
    (a) Tetrahedrite
    (b) Zinc blende
    (c) Boracite
    (d) Galena

34. Mineral with trapezohedra form faces is :
    (a) Leucite
    (b) Galena
    (c) Diamond
    (d) Spinel

35. Index symbol of scalenohedron is :
    (a) 2020
    (b) 2240
    (c) 2131
    (d) 3031

36. Uni-axial negative mineral is :
    (a) Quartz
    (b) Coesite
    (c) Garnet
    (d) Calcite

37. If the extinction angle of Augite is 45°, then the extinction angle of Hornblende is around :
(a) 100°
(b) 92°
(c) 12°
(d) 40°

38. Pleochroic scheme of Hornblend is x-y yellow, y = blue-green and z = blue, then the absorption is :
(a) $x < y < z$
(b) $x > y > z$
(c) $y > z > x$
(d) $z < y < x$

39. Which of the following is lithium bearing mica ?
(a) Lepidolite
(b) Biotite
(c) Muscovite
(d) Sevilite

40. In a twinkling calcite, R. g. of extra ordinary ray is 1.49, then the R. g. of ordinary ray is :
(a) 1.54
(b) 1.95
(c) 1.72
(d) 1.66

41. The Si_2O_7 units are packed together regularly in a crystal, with metal atoms lying between them. The mineral is :
(a) Olivine
(b) Beryl
(c) Augite
(d) Melilite

42. Mineral diallage is a variety of :
(a) Quartz
(b) Augite
(c) Diopside
(d) Garnet

43. Aragonite is a dimorphic form of :
(a) Aragonite
(b) Aucite
(c) Rhodochrosite
(d) Calcite

44. Which of the following is an acicular form mineral ?
(a) Coesite
(b) Stishovite
(c) Natrolite
(d) Kyanite

45. Refraction indices of the Aegirine, alkali pyroxene are $\alpha = 1.763$ then β-γ are :
(a) 1.799 – 1.813
(b) 1.803 – 1.843
(c) 1.843 – 1.853
(d) 1.863 – 1.869

46. Specific gravity of labradorite is 2.67, then specific gravity of anorthite must be :
(a) 2.63
(b) 2.65

(c) 2.74
(d) 3.14

47. Serpentine is an altered product of :
(a) Albite
(b) Anorthite
(c) Biotite
(d) Olivine

48. Albite-orthoclase intergrowth is known as :
(a) Graphic
(b) Perthite
(c) Carona
(d) Intersertal

49. Extinction angle of oligoclase is zero, then extinction angle of Bytownite is around :
(a) 10^{o}
(b) 20^{o}
(c) -20^{o}
(d) 50^{o}

50. Mohs hardness of kyanite on edges and faces are :
(a) 1 and 4
(b) 4 and 7
(c) 7 and 4
(d) 3 and 5

51. The metal content of an ore is expressed as :
(a) Tenor
(b) Grade
(c) Rank
(d) Opacity

52. Hydrothermal process is associated with :
(a) Hot fluids
(b) Cold fluids
(c) Viscous magmas
(d) Mixing of magmas

53. The commonest copper bearing ore mineral is :
(a) Azurite
(b) Chalcopyrite
(c) Native Copper
(d) Bornite

54. Chromite deposits are abundant in which of the following states ?
(a) Karnataka
(b) Rajasthan
(c) Meghalaya
(d) Odisha

55. The Huth gold deposits are of :
(a) Lateritic type
(b) Placer type
(c) Lode type
(d) BIF-hosted type

56. Which one of the following is a ceramic mineral ?
(a) Chlorite

(b) Kaolinite
(c) Quartz
(d) Calcite

57. The other use of diamond is :
(a) As a refractory mineral
(b) As an abrasive
(c) As a flux
(d) As a decarboniser

58. In terms of BTU which is the poorest quality coal ?
(a) Peat
(b) Anthracite
(c) Bituminous Coal
(d) Lignite

59. Pitchblende is an important ore of :
(a) Zinc
(b) Copper
(c) Titanium
(d) Uranium

60. Ore reserve estimation is done by using :
(a) Drilling data
(b) Pitting done
(c) Trenching data
(d) Reconnaitory data

61. The plutonic equivalent of Andesite is :
(a) Syenite
(b) Granite
(c) Pyroxenite
(d) Diorite

62. In a granitic rock, you have found perthite. You would best explain the crystallization of that granite under :
(a) Eutectic condition
(b) Subsolvus condition
(c) A condition that involves a reaction between alkali and plagioclase feldspar
(d) None of the above

63. An ultramafic rock is found to be composed of almost equal proportions of ortho-and clinopyroxene. Following Streckiesen's classification, the rock should be designated as :
(a) Dunite
(b) Harzburgite
(c) Websterite
(d) Wehrlite

64. Phacoliths are :
(a) Pipe like bodies that vertically cut across host country rocks
(b) Lens-shaped concordant igneous bodies found at crests and troughs of folds
(c) Saucer-shaped sunken igneous bodies
(d) Up-arched igneous bodies

65. In a gabbro, you have noticed corona texture. The corona testure has been formed by :
(a) Exsolution phenomenon in pyroxene

(b) Simultaneous crystallization of olivine and pyroxene

(c) Failure of reaction (along discontinous arm of Bowen's Reaction series) between crystal and magma

(d) None of the above

66. Norms and modes of igneous rocks are described as :

(a) Norms and modes are products of fractional crystallization of a basic magma

(b) Modes are theoretically possible minerals based on chemical analyses while norms refer to actually existing minerals

(c) Norms are theoretically possible minerals based on chemical analyses while modes refer to actually existing minerals

(d) None of the above

67. Normal zoning in plagioclase is represented by :

(a) Ca-content in successive rims rises and falls alternately

(b) Ca/Na ratios remain same in successive rims of plagioclase

(c) Sodic core and progressively calcic rims

(d) Calcic core and progressively sodic rims

68. In Diopside-Anorthite system (at 1 atmosphere, dry) the Degree of Freedom (F) at eutectic point is :

(a) 1

(b) 3

(c) 2

(d) 0

69. In Bowen's Reaction Series, the field of spinel is located :

(a) At the top-most part of the reaction series

(b) At the lower-most part of the reaction series

(c) In between amphibole and biotite

(d) In between olivine and pyroxene

70. Ophitic texture is :

(a) A type of texture where plagioclase and pyroxene broadly are of same size

(b) A variant of prophyritic texture where phenocryst is made up of plagioclase

(c) A special type of poikilic texture where plagioclase laths are enclosed by relatively bigger pyroxene crystal

(d) None of the above

71. Granule refers to sedimentary particle whose grain size lies between :

(a) 16 and 8 mm

(b) 4 and 2 mm

(c) 2 and 1 mm
(d) < 1 mm

72. The sediment produced by chemical weathering of granite is commonly known as :
(a) Cobble
(b) Sand
(c) Silt
(d) Clay

73. Herringbone cross stratification is the characteristic of :
(a) Abyssal environment
(b) Neritic environment
(c) Tidal environment
(d) Littoral environment

74. Antidunes are formed when :
(a) Flow velocity is high
(b) Flow velocity is moderate
(c) Flow velocity is low
(d) There is no flow

75. The term mud refers to :
(a) Mixture of pebble and granule
(b) Mixture of granule and sand
(c) Mixture of sand and silt
(d) Mixture of silt and clay

76. The sand sized carbonate rock in which oolites > 25% and sparite > micrite is known as :
(a) Oosparudite
(b) Oomicrudite
(c) Oosparite
(d) Oomicrite

77. Orthoquartzite is :
(a) A metamorphic rock with > 25% orthoclase
(b) A metamorphic rock with > 95% quartz
(c) A sedimentary rock with > 25% orthoclase
(d) A sedimentary rock with > 95% quartz

78. In arkose :
(a) K-feldspar > Plagioclase
(b) Plagioclase > K-feldspar
(c) K-feldspar = Plagioclase
(d) None of the above

79. The matrix of packstone is :
(a) Sand
(b) Silt
(c) Mud
(d) Clay

80. The bedding in which isolated thin drapes of mud occurs within cross laminae of sand and silt is called :
(a) Tabular bedding
(b) Flaser bedding
(c) False bedding
(d) Lenticular bedding

81. In a progressive metamorphic

sequence, the **Oligoclase isograd** in a metabasite marks the entry from :

(a) Greenschist to epidote amphibolite facies

(b) Greenschist to blueschist facies

(c) Amphibolite to granulite facies

(d) Granulite to eclogite facies

82. The mineral assemblage that is diagnostic of eclogite facies metamorphism in metabasic rocks is :

(a) Orthopyroxene + Clinopyroxene + Garnet + Plagioclase + Quartz

(b) Garnet + Clinopyroxene + Plagioclase + Quartz

(c) Garnet + Clinopyroxene + Quartz

(d) Orthopyroxene + Plagioclase + Clinopyroxene + Quartz

83. Which one of the following sequence of mineral assemblages in metapelites correctly indicates a progressive metamorphic sequence of increasing metamorphic grade ?

(a) Garnet + Muscovite + Biotite + Chlorite + Quartz → Staurolite + Biotite + Garnet + Muscovite + Quartz → Biotite + Sillimanite + K-feldspar + Garnet + Quartz → Garnet + Kyanite + Muscovite + Biotite + Quartz

(b) Biotite + Sillimanite + K-feldspar + Garnet + Quartz → Garnet + Kyanite + Muscovite + Biotite + Quartz → Staurolite + Biotite + Garnet + Muscovite + Quartz → Garnet + Muscovite + Biotite + Chlorite + Quartz

(c) Staurolite + Biotite + Garnet + Muscovite + Quartz → Garnet + Muscovite + Biotite + Chlorite + Quartz → Garnet + Kyanite + Muscovite + Biotite + Quartz → Biotite + Sillimanite + K-feldspar + Garnet + Quartz

(d) Garnet + Muscovite + Biotite + Chlorite + Quartz → Staurolite + Biotite + Garnet + Muscovite + Quartz → Garnet + Kyanite + Muscovite + Biotite + Quartz → Biotite + Sillimanite + K-feldspar + Garnet + Quartz

84. Which one of the following polymorphic transformations is likely to be the product of shallow contact metamorphism ?

(a) Kyanite → Sillimanite

(b) Calcite → Aragonite

(c) Andalusite → Sillimanite

(d) β-quartz → Coesite

85. The mineral assemblage that is produced by granulite facies metamorphism of impure marly (calcareous) sediments is :

(a) Wollastonite + Scapolite + Calcite + Clinopyroxene + Quartz

(b) Garnet + K-feldspar + Sillimanite + Cordierite + Quartz

(c) Tremolite + Calcite + Quartz + Dolomite + Diopside

(d) Forsterite + Diopside + Dolomite + Talc + Enstatite

86. The main agents of metamorphism that can produce a "**Snowball Garnet**" are :

(a) Lithostatic Pressure and Temperature

(b) Deviatoric (directed) Pressure and Temperature

(c) Lithostatic and Deviatoric (directed) Pressures

(d) Temperature, Lithostatic and Deviatoric (directed) Pressures

87. The metamorphic facies that indicates the maximum thermal gradient during metamorphism is :

(a) Sanidinite

(b) Granulite

(c) Greenschist

(d) Blueschist

88. Thermal metamorphism of shale produces :

(a) Cataclasite

(b) Gneiss

(c) Hornfels

(d) Mylonite

89. Paired metamorphic belt shows the occurrence of the following pair of metamorphic facies series of the same age next to one another at :

(a) High pressure-low temperature and medium pressure-medium temperature

(b) Low pressure-high temperature and medium pressure-medium temperature

(c) High pressure-hight temperature and low pressure-high temperature

(d) Low pressure-high temperature and high pressure-low temperature

90. In a Barrovian metamorphic sequence, the second sillimanite isograd is marked by which mineral reaction ?

(a) Kyanite $\rightarrow$ Sillimanite

(b) Muscovite + Quartz $\rightarrow$ K-feldspar + Sillimanite + H_2O

(c) Staurolite + Muscovite + Quartz $\rightarrow$ Garnet + Sillimanite + Biotite + H_2O

(d) Garnet + K-feldspar + Melt $\rightarrow$ Biotite + Sillimanite + Quartz

91. Which of the following has sinistrial coiling ?

(a) **Turritella**

(b) **Planorbis**

(c) **Voluta**

(d) **Murax**

92. Which of the following has no bedical opening ?
(a) **Terebratula**
(b) **Productus**
(c) **Lingula**
(d) **Rhynchonella**

93. When the septal neck project towards the protoconch, the condition is known as :
(a) Retrosiphonate
(b) Siphuncle
(c) Probiphonate
(d) None of the above

94. The suture line cuts at the margin behind the genal angle is called :
(a) Proparian suture line
(b) Opisthoparian suture line
(c) Gonatoparian suture line
(d) None of the above

95. Ventral valve is larger in :
(a) **Pecten**
(b) **Rhynchonella**
(c) **Arca**
(d) **Trigonia**

96. Madreporic plate is found in :
(a) Ammonoids
(b) Trilobites
(c) Grabtolites
(d) Echinoids

97. Dimyarian fossil is :
(a) **Pecten**
(b) **Ostrea**
(c) **Cardita**
(d) **Exogyra**

98. Those fossils which have short geological range and wide geographical distribution is called as :
(a) Toto Fossil
(b) Trace Fossil
(c) Derived Fossil
(d) Index Fossil

99. Siwalik is mainly known for :
(a) Cephalopods
(b) Trilobites
(c) Vertebrates
(d) None of the above

100. Ptilophyllum is found in :
(a) Lower Gondwana
(b) Carboniferous
(c) Late Cretaceous
(d) Upper Gondwana

101. Which of the following has an exoskeleton ?
(a) Man
(b) Horse
(c) Mollusc
(d) None of the above

102. Nodes and nodules are found in :
(a) **Perisphinctes**
(b) **Nautilus**
(c) **Belemnites**
(d) **Acanthoceras**

103. Fossils are not found in :
(a) Granite
(b) Lime stone
(c) Sand stone
(d) Shale

104. Which of the following has globular shell ?
(a) **Physa**
(b) **Nautica**
(c) **Trochus**
(d) **Cerithium**

105. Which of the following has spiney test ?
(a) **Cidaris**
(b) **Micraster**
(c) **Schizaster**
(d) **Clypeaster**

106. Law of Faunal and Floral succession was given by :
(a) James Hutton
(b) William Smith
(c) Charle's Lyell
(d) None of the above

107. Strata in two different areas are said to be correlatable if they :
(a) Are synchronous
(b) Have similar lithology
(c) Occupy same position in sequence
(d) Have same structures above and below

108. The basic and fundamental unit of Lithostratigraphic classification is :
(a) Supergroup
(b) Group
(c) Formation
(d) Member

109. Permian / Triassic transition datum plane is placed at :
(a) 65 m. y.
(b) 230 m. y.
(c) 2,500 m. y.
(d) 320 m. y.

110. Biostratigraphic zone delineated on the basis of maximum development of taxa is called :
(a) Epibole
(b) Acme Zone
(c) Peak Zone
(d) All of the above

111. Chronostratigraphic equivalent of Geochronologic Unit Epoch is :
(a) Stage
(b) Series

(c) System
(d) Erathem

112. Eparchaean unconformity is between :
(a) Palaeogene / Neogene
(b) Archaean / Proterozoic
(c) Palaeoproterozoic / Meso-proterozoic
(d) Tertiary / Quaternary

113. Krol / Tal succession constitute one of the boundary **stratotype** for :
(a) Permo / Triassic boundary
(b) Precambrian / Cambrian boundary
(c) Cretaceous / Tertiary boundary
(d) Palaeogene / Neogene boundary

114. The oldest litho-unit of Dharwar Province is referred to as :
(a) Closepet Granite
(b) Babubudan Group
(c) Sargur Schists
(d) Chitardurga Group

115. The basal part of Gondwana sequence is marked by :
(a) Talchir Boulder Beds
(b) Balaini Boulder Beds
(c) Boulder Conglomerates
(d) None of the above

116. **Gangmopteris** beds in Palaeozoic succession of Kashmir are located at :
(a) Below Panjal traps
(b) Above Panjal traps
(c) Between the different flows of traps
(d) All of the above

117. Middle Gondwana is characterized by :
(a) **Glossopteris** Flora
(b) **Dicroidium / Thinfeldia** Flora
(c) **Ptilophyllum** Flora
(d) **Rhacopteris** Flora

118. The lower part of Semeri Series in Sone Valley is represented by :
(a) Basal Stage
(b) Khenjua Stage
(c) Rohtas Stage
(d) Procellanite Stage

119. The uppermost litho-unit of Gondwana Sequence is :
(a) Jabalpur Formation
(b) Karharbari Formation
(c) Mahadeva Formation
(d) Umia Formation

120. The basal part of Siwalik Group is referred to as :
(a) Pinjore Formation
(b) Chinji Formation
(c) Kamlial Formation
(d) Nagari Formation

ANSWER KEY

SUBJECT: GEOLOGY

Q. No.	Answer	Q. No.	Answer
1	B	11	A
2	C	12	C
3	A	13	C
4	A	14	B
5	A	15	A
6	D	16	D
7	B	17	D
8	A	18	C
9	B	19	C
10	C	20	D

21) C
22) A
23) B
24) A
25) C
26) A
27) B
28) A
29) C
30) B

31. c
32. d
33. b
34. a
35. c
36. d
37. c
38. a
39. a
40. d
41. d
42. c
43. d
44. c
45. a
46. c
47. d
48. b
49. d
50. c

51	a
52	a
53	b
54	d
55	c
56	b
57	b
58	a
59	d
60	a

Q.61	d
Q.62	b
Q.63	C
Q.64	b
Q.65	C
Q.66	C
Q.67	d
Q.68	d
Q.69	a
Q.70	C

Geology

ANSWER KEY

Q. No.	Answer
71.	b
72.	d
73.	c
74.	a
75.	d
76.	c
77.	d
78.	a
79.	c
80.	b

Q. No.	Ans
Q.81	(a)
Q.82	(c)
Q.83	(d)
Q.84	(c)
Q. 85	(a)
Q.86	(d)
Q.87	(a)
Q.88	(c)
Q.89	(d)
Q.90	(b)

Q. No.	Ans
91.	b
92.	c
93.	a
94.	c
95.	b
96.	d
97.	c
98.	d
99.	c
100.	d
101.	c
102.	d
103.	a
104.	b
105.	a

Q. No.	Ans
106	b
107	a
108	c
109	d
110	d
111	a
112	b
113	b
114	c
115	a
116	d
117	b
118	a
119	d
120	c