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COMBINED COMPETITIVE (PRELIMINARY) EXAMINATION, 2013

Serial No. _____

GEOLOGY
Code No. 10

A

Time Allowed : Two Hours | ***Maximum Marks : 300***

INSTRUCTIONS

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4. This Booklet contains 120 items (questions). Each item comprises *four* responses (answers). You will select *one* response which you want to mark on the Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each item.
5. In case you find any discrepancy in this test booklet in any question(s) or the Responses, a written representation explaining the details of such alleged discrepancy, be submitted within three days, indicating the Question No(s) and the Test Booklet Series, in which the discrepancy is alleged. Representation not received within time shall not be entertained at all.
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7. All items carry equal marks. Attempt ALL items. Your total marks will depend only on the number of correct responses marked by you in the Response Sheet.
8. Before you proceed to mark in the Response Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Response Sheet as per instructions sent to you with your Admit Card and Instructions.
9. While writing Centre, Subject and Roll No. on the top of the Response Sheet in appropriate boxes use **"ONLY BALL POINT PEN".**
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ROUGH WORK

1. The Wiechert-Gutenberg discontinuity is obseved at what depth ?
   (A) About 35 km below the surface
   (B) About 2881 km below the surface
   (C) About 3473 km below the surface
   (D) About 200 km below the surface

2. Par and Morar series are integral part of which of the following systems ?
   (A) Bijawar
   (B) Cuddapah
   (C) Gwalior
   (D) Delhi

3. Chamberlin and Moulton suggested which of the following hypothesis for the origin of the earth ?
   (A) Nebular Hypothesis
   (B) Planetesimal Hypothesis
   (C) Accretion Growth Hypothesis
   (D) Asteroidal Hypothesis

4. Most important stage in the formation of the solar system is the burning of :
   (A) Carbon
   (B) Helium
   (C) Hydrogen
   (D) Oxygen

5. Which is the fastest spreading plate on the earth ?
   (A) Indian plate
   (B) Eurasian plate
   (C) Rodanian plate
   (D) Nazca plate

6. Mohorovicic discontinuity is observed between which of the following ?
   (A) Mantle and Core
   (B) Continental and Oceanic crust
   (C) Crust and mantle
   (D) Lithosphere and asthenosphere

7. Core of the Earth is composed of :
   (A) Fe-A1 minerals
   (B) Ni-Fe minerals
   (C) Mg-Ni minerals
   (D) Fe-Mg minerals

8. Major coal production in Jharia Coal Field comes from :
   (A) Talchir series
   (B) Barakar stage
   (C) Ironstone shale stage
   (D) Raniganj stage

9. Correct age of the Earth is :
   (A) 4540 million years
   (B) 4650 million years
   (C) 4400 million years
   (D) 4600 million years

10. Who proposed the term Isostasy ?
   (A) W.D. West
   (B) James Hutten
   (C) C.E. Dutton
   (D) Aurther Holmes

11. High heat flow is observed in which of the following places ?
   (A) Cenozoic volcanic ridges
   (B) Ocean ridges
   (C) Precambrian shield
   (D) Ocean trenches

12. Concave procession of barchans is indicative of the direction of :
(A) River
(B) Moraines
(C) Coast line
(D) Wind

13. 'V' shaped valley is indicative of :
(A) Sheet wash by the river
(B) Old stage of the river
(C) Mature stage of the river
(D) Youth stage of the river

14. When soil-creep is controlled by frost and thaw such movement of soil is called :
(A) Mud-flow
(B) Lahars
(C) Terracettes
(D) Solifluction

15. Broad loop of a meander with a narrow neck cut off from one side of the deserted channel is called :
(A) Ox-bow lake
(B) Entrenched meander
(C) Free-meander
(D) Braided river

16. Horizontal beds capped by resistant bed and having steep slopes all around is called :
(A) Questa
(B) Hogback
(C) Butte
(D) Mesa

17. Fallen rock debris that accumulate at the base of the cliff is called :
(A) Elluvium
(B) Alluvium
(C) Tuffs
(D) Talus

18. Chernozem soil develop under which of the following climatic conditions ?
(A) Monsoon
(B) Borel
(C) Steppes
(D) Desert

19. A bar connecting an island to the mainland or to another island is called :
(A) Lagoon
(B) Barrier island
(C) Tombolo
(D) Barrier beach

20. Smaller pyroclastic rock fragments about the size of a pea are called :
(A) Lapilli
(B) Volcanic tuffs
(C) Tephera
(D) Volcanic bombs

21. When effusion of mobile lava is dominant either from craters or fissures and the gas escaping quietly, such volcanoes are called :
(A) Strambolian type of volcanoes
(B) Vesuvian type of volcanoes
(C) Volcanian type of volcanoes
(D) Hawaiian type of Volcanoes

22. Drumlins are formed by which of the following process ?
(A) Glacial erosion (B) Wind erosion
(C) Fluvial erosion (D) Marine erosion

23. Shape of the 'atolls' is similar to which of the following ?
(A) Long wall (B) Ring
(C) Delta (D) Egg

24. Which of the following rocks is least effected by chemical weathering process ?
(A) Shale (B) Granite
(C) Basalt (D) Limestone

25. Bajadas are found in which of the following climate ?
(A) Monsoon climate (B) Desert/arid climate
(C) Tundra region (D) Antartica

26. The author of the book Principles of Geology is .....
(A) Sir Charles Lyell (B) James Hutton
(C) Charles Darwin (D) None of the above

27. Jean Jaffrays postulated which of the following hypothesis for the origin of fold mountains ?
(A) Bicausal hypothesis (B) Thermal cycle hypothesis
(C) Convection current hypothesis (D) Thermal contraction hypothesis

28. Which of the following facts are correctly associated with "Continental Drift Theory" :
(A) Carry (1958) – Continental raft – 3000 m. y.
(B) Carry (1958) – Asthenosphere – 300 m. y.
(C) Wagner (1912) – Plate tectonics – 300 m. y.
(D) Wagner (1912) – Pangea – 300 m. y.

29. Piezoelectric crystals are those which :
(A) lack in the axis of symmetry (B) lack in the plane of symmetry
(C) lack in the polar axis (D) lack in the centre of symmetry

30. How many elements of symmetry elements are recognized in the crystallography ?
(A) 8 (B) 6
(C) 2 (D) 4

31. 'x/m' notation indicates :
(A) rotational axis perpendicular to the plane of symmetry
(B) rotational axis co-planar with the plane of symmetry
(C) rotational axis with both levels of plane of symmetry
(D) rotational axis with two fold axis perpendicular to it.

32. Major oil and gas accumulation in the Cambay basin is confined to :
(A) Nawagaon Formations
(B) Wavel Formations
(C) Kalol Formation
(D) Jamnagar Formation

33. Cassiterite belongs to which of the following crystal systems ?
(A) Orthorhombic
(B) Tetragonal
(C) Hexagonal
(D) Cubic

34. In which crystal system three axes are right angles to each other but their axial parameters are different ?
(A) Triclinic
(B) Orthorhombic
(C) Monoclinic
(D) Tetragonal

35. Name the mineral in which the plane of symmetry is 7.
(A) Beryl
(B) β quartz
(C) Benitoite
(D) Barytes

36. Which mineral of the monoclinic system lacks in the centre of symmetry ?
(A) Epidote
(B) Scolecite
(C) Augite
(D) Orthoclase

37. Which of the following sequence is correct showing specific gravity increase with increasing atomic weight of cation in orthorhombic carbonates ?
(A) Aragonite, strontianite, witherite, cerussite
(B) Strontianite, aragonite, witherite, cerussite
(C) Aragonite, cerussite, strontianite, witherite
(D) Witherite, cerussite, strontianite, aragonite

38. In olivine structure the layers consisting of octahedra cross-linked by independent SiO_4 tetrahedra, lie parallel to which of the following ?
(A) {010}
(B) {100}
(C) {001}
(D) {111}

39. Which is the mineral of a cubic system whose plane of symmetry is 3 ?
(A) Pyrite
(B) Fluorite
(C) Cobaltite
(D) Garnet

40. A iii-fold axes is the characteristic feature of which of the following crystal systems ?
(A) Triclinic system
(B) Isometric system
(C) Tetragonal system
(D) Monoclinic system

41. The father of Modern Geology is .....
(A) James Hutton
(B) Willium Smith
(C) Nicolos Steno
(D) None of the above

42. Rock Gondite is associated with which of the following ?
(A) Saussars
(B) Sakolis
(C) Chilpis
(D) None of the above

43. Which of the following symmetry class whose plane symmetry is 3 and axis of symmetry is 4 II and 1 IV ?
(A) Pyrite type
(B) Scheelite type
(C) Zircon type
(D) Garnet type

44. Bhanders are integral part of :
(A) Supra-Panchet
(B) Gwaliors
(C) Lower-Gondwanas
(D) Vindhyans

45. Which of the minerals is isotropic under crossed nicol condition ?
(A) Calcite
(B) Orthoclase
(C) Quartz
(D) Garnet

46. Twinkling under the plane polarized light is seen in case of which of the following minerals ?
(A) Quartz
(B) Orthoclase
(C) Nepheleni
(D) Calcite

47. Cross-hatching is observed under the cross nicol conditions in case of which of the following minerals ?
(A) Orthoclase
(B) Plagioclase
(C) Microcline
(D) Lucite

48. Cloudy extinction is the characteristic property of which of the following minerals :
(A) Nosean
(B) Garnet
(C) Diopside
(D) Quartz

49. Which of the following minerals shows extinction angle of about 120° ?
(A) Augite
(B) Chlorite
(C) Epidote
(D) Hornblende

50. Which of the following mineral contains high amount of chromium content ?
(A) Biotite
(B) Phlogopite
(C) Lepidolite
(D) Fuchsite

51. Tectosilicates are represented by which of the correct ratio of Si:O ?
(A) 1:4
(B) 2:5
(C) 1:3
(D) 1:2

52. Phenomenon of monotropy could be explained by which of the following ?
(A) Pyrite-pyrrhotite relationship
(B) Marcasite-pyrite relationship
(C) Quartz-tridymite relationship
(D) Diamond-graphite relationship

53. Magnesium garnet is termed as :
(A) Almandine
(B) Grossularite
(C) Spessartite
(D) Pyrope

54. Change in colour or intensity or both of a mineral is observed when the stage of the microscope is rotated under plane polarized light, is called :
(A) Anisotropism
(B) Polarization colours
(C) Pleochroism
(D) Birefrigence

55. Biotite is identified under the microscope by which of the following property ?
(A) High relief
(B) High order polarization colours
(C) Strong pleochroism
(D) Straight extinction

56. Angle substended between two optic axes is called :
(A) Extinction angle
(B) Angle of dispersion
(C) 2 V
(D) Angle of interference

57. Correct cleavage angle of augite ranges between :
(A) 56° – 124°
(B) 88° – 92°
(C) 56° – 88°
(D) 92° – 120°

58. Which of the following composition correctly represents Foresterite ?
(A) $(Mg, Fe)_2 SiO_3$
(B) $Mg SiO_4$
(C) $FeSiO_4$
(D) $(Mg, Fe) SiO_4$

59. $Na Al Si_3O_8$ is the correct composition of a :
(A) Hypersthene
(B) Orthoclase
(C) Hornblende
(D) Plagioclase

60. Correct shape of sanidine crystal is :
(A) Six sided
(B) Eight sided
(C) Prismatic
(D) Needle shape

61. Albite and anorthite are the two end members of the solid solution series that belongs to which of the following minerals ?
(A) Orthoclase
(B) Plagioclase
(C) Microcline
(D) Nepheline

62. Diopside and hedenbergite are the two end members of the solid solution series that belong to which of the following ?
(A) Olivine (B) Pyroxene
(C) Amphibole (D) Feldspathoids

63. Bytomite mineral belongs to which of the following ?
(A) Biotite (B) Muscovite
(C) Plagioclase (D) Orthoclase

64. Which of the following minerals is formed by alteration of ferro-magnesium minerals ?
(A) Sphene (B) Rutile
(C) Anatase (D) Chlorite

65. Nepheline and lucite can be distinguished by which of the most important character ?
(A) Relief (B) Polarization colours
(C) Pleochroism (D) Isotropism

66. East coast bauxite deposit is associated with which of the following rocks ?
(A) Gondite (B) Basalt
(C) Kodurite (D) Khondalite

67. Which of the following rock in Central India contains pyrolusite and psilmelane minerals ?
(A) Anorthosite (B) Kodurite
(C) Gondite (D) Khondalite

68. Major oil producing formation in Assam is :
(A) Dupitala formation (B) Tipam formation
(C) Surma formation (D) Disang formation.

69. Zawar Pb-Zn deposit of Rajasthan is formed by which of the following process ?
(A) Hydrothermal cavity filling process (B) Hydrothermal replacement process
(C) Magmatic reggregation process (D) Hydrothermal sublimination process.

70. Which of the following mineral assemblages is associated with GOSSANS ?
(A) Goethite + limonite + hematite (B) Chlorite + epidote + zoisite
(C) Pyrite + pyrrhotite + chalcopyrite (D) Cuprite + corellite + bornite

71. Which is the host rock in the Bombay high oil field ?
(A) Sandstone (B) Shale
(C) Conglomerate (D) Limestone

72. Large number of Uranium deposits in the world are associated with which of the following rocks ?
(A) Archaeaus (B) Precambrians
(C) Permo-carboniferous (D) Cretaceous-tertiary

73. Skarn deposits are formed by which of the following process ?
(A) Metasomatism
(B) Contact metamorphism
(C) Pyrometasomatism
(D) Hydrothermal injection

74. Saddle reefs are formed by which of the following process ?
(A) Epigenetic cavity filling process
(B) Syngenetic replacement process
(C) Secondary sulphide enrichment
(D) Volcanogenic exhalative process

75. Iron-ore orogeny in India is associated with which of the following ?
(A) Archaeaus
(B) Precambrians
(C) Palaeozoics
(D) Cenozoics

76. Which one of the following sequence is correctly associated with progressive coalification ?
(A) Peat → Lignite → Bituminous coal → Anthracite
(B) Anthracite → Bituminous coal → Lignite → Peat
(C) Bituminous coal → Anthracite → Peat → Lignite
(D) Lignite → Peat →Bituminous coal → Anthracite

77. Cassiterite deposit in India is located in :
(A) Ambaji
(B) Vajrakraroor
(C) Malanjkhand
(D) Jagdalpur

78. Molybdenite is associated with which of the following mineral deposits :
(A) Hydrothermal deposits
(B) Porphyry deposits
(C) Late magmatic deposits
(D) Early magmatic deposits

79. Structureless bands which appear like a black glass present in the coal seams is called :
(A) Clarain
(B) Durain
(C) Fusain
(D) Vitrain

80. Scheelite is the mineral which contains :
(A) Sn
(B) W
(C) Mo
(D) Zr

81. Largest accumulation of tholeiitic rocks in India is known by which of the following name ?
(A) Rajamahal Traps
(B) Sylhet Traps
(C) Bhavali Traps
(D) Deccan Traps

82. Which of the following rock is identified by virtue of ophitic texture ?
(A) Diorite
(B) Dolerite
(C) Dacite
(D) Dunite

83. Allotriomorphic texture is characteristic feature of which of the following rocks ?
(A) Aplite
(B) Allanite
(C) Andesite
(D) Adamatite

84. Which of the following composition that defines peralkaline rocks ?
(A) $Al_2O_3/(K_2O + Na_2O + CaO) < 1$
(B) $Al_2O_3/(K_2O + Na_2O + CaO) > 1$
(C) $Al_2O_3/(K_2O + Na_2O) > 1$
(D) $Al_2O_3/(K_2O + Na_2O) < 1$

85. Ptygmatic folding is due to which of the following processes ?
(A) Pneumetolysis
(B) Optalic metamorphism
(C) Pyrometamorphism
(D) Palingenesis

86. Presence of touranaline in granite is indicative of which of the following processes ?
(A) Sulphur metasomatism
(B) Fluorine metasomatism
(C) Boran metasomatism
(D) Water vapour metasomatism

87. Lherzolite is a variety of which of the following groups of rocks ?
(A) Basic igneous rock
(B) Ultrabasic igneous rock
(C) Mafic igneous rock
(D) Ultramafic igneous rock

88. Nosean is commonly associated with which of the following rocks ?
(A) Basalts
(B) Granites
(C) Lamprophyre
(D) Syenite

89. The rock kimberlite can be classified as :
(A) Basic igneous rocks
(B) Acid igneous rocks
(C) Intermediate igneous rocks
(D) Ultrabasic igneous rocks

90. Lithium mica is commonly associated with which of the following rocks ?
(A) Lemprophyre
(B) Kerotophyre
(C) Granophyre
(D) Lucitophyre

91. Which of the following rock is associated with rift magmatism ?
(A) Syenite
(B) Andesite
(C) Dacite
(D) Rhyolite

92. When oceanic lithosphere descends beneath overlying lithosphere then which of the following magmatism occurs ?
(A) Within plate magmatism occurs
(B) Continental arc magmatism occurs
(C) Island arc magmatism occurs
(D) Bac-arc magmatism occurs

93. The low viscosity lavas that produces thick, glassy sheets, tongues and lobes overlapping one another is called :
(A) Lava tubes
(B) Aa and blocky lavas
(C) Aa and pahoehoe lavas
(D) Pillow lavas

94. Vermicular intergrowth of quartz and sodic plagioclase is called :
(A) Perthite
(B) Myrmekite
(C) Intersertal growth
(D) Reaction rim

95. Stratovolcano is built of which of the following ?
(A) Rhyolitic magma
(B) Andesitic magma
(C) Phonolitic magma
(D) Basaltic magma

96. Gabbro is a plutonic equivalent of which of the following ?
(A) Basalt
(B) Norite
(C) Diabase
(D) Dolerite

97. Stylolites are what type of structures ?
(A) Organic structures
(B) Solution structures
(C) Composite structures
(D) Accretionary structures

98. Current bedding is indicative of which of the following environment ?
(A) Lake environment
(B) River environment
(C) Deep water marine environment
(D) Shallow water marine environment

99. In a folded sequence, when crest and trough are filled up by igneous material and exhibit doubly-convex lens-like form. Such structures are called :
(A) Lacoliths
(B) Lapoliths
(C) Chonoliths
(D) Phacoliths

100. Which of the following law states that the "settling velocity of a particle is proportional to the square of the particle diameter (where, density of particle, acceleration due to gravity and fluid velocity remain constant)" ?
(A) Stoke's law
(B) Krumbein's law
(C) Bragg's law
(D) Pettijohn's law

101. The sedimentary structures observed on bottom of the bedding surfaces are :
(A) Lamination
(B) Shrinkage cracks
(C) Bioturbation
(D) Flute marks

102. Which of the following sedimentary rocks were deposited under marine environment ?
(A) Karewas
(B) Vindhyans
(C) Shivaliks
(D) Gondwanas

103. Which of the following siliciclastic end members demonstrate increased diagenetic potential ?
(A) Feldspar
(B) Rock fragments
(C) Micaceous minerals
(D) Quartz

104. Compaction and cementation are associated with which of the following processes ?
(A) Lithification
(B) Burrial
(C) Metamorphism
(D) Diagenesis

105. Stromatolytes are what type of structures ?
(A) Organic structures
(B) Solution structures
(C) Composite structures
(D) Accretionary structures

106. Oolites and pisolites are distinguished by :
(A) Shape
(B) Size
(C) Composition
(D) Sphericity

107. Presence of glauconite in the sedimentary rock is indicative of which of the following environment ?
(A) Continental weathering and fresh water deposition
(B) Marine water deposition
(C) Sedimentation in lake environment is keeping pace with the subsidence of the basic floor
(D) Glacial environment

108. Apatite and zircon are indicative of which of the following provinance ?
(A) Basaltic
(B) Granitic
(C) Carbonate
(D) Arkosic

109. Gallium is associated with which of the following sedimentary rocks ?
(A) Shale
(B) Sandstone
(C) Limestone
(D) Coal

110. Limestone and dolomite can be distinguished by which of the following ?
(A) Alumina content
(B) Lime content
(C) Magnesia content
(D) Soda content

111. Jagganathpur lavas are of which age ?
(A) Precambrian
(B) Palaeozoic
(C) Cenozoic
(D) Tertiary

112. When original minerals and textures are preserved after recrystallization, then the texture is called :
(A) Xenoblastic texture
(B) Meculose texture
(C) Blastopsamatic texture
(D) Palimpsest

113. Concept of metamorphic facies was developed by :
(A) Eskola
(B) Miyashiro
(C) Turner
(D) Masson

114. Plagioclase + Hypersthene + diopside + biotite mineral assemblage represents :
(A) Amphibolite facies
(B) Green schist facies
(C) Epidote facies
(D) Pyroxene-Hornsfel facies

115. Which of the following metamorphic rocks consists of anhydrous assemblage of plagioclase + pyroxene ± quartz ± garnet ± sillimanite ± cordierite ?
(A) Granulite
(B) Eclogite
(C) Charnockite
(D) Amphibolite

116. A characteristic pyroxene found in the eclogite is :
(A) Omphacite
(B) Diopside
(C) Pigeonite
(D) Jadeite

117. Choose the correct sequence which indicates increasing order of metamorphic grade :
(A) Slate → shale → gneiss → schist
(B) Schist → gneiss → shale → slate
(C) Gneiss → shale → slate → schist
(D) Shale → slate → schist → gneiss

118. A distinctive sequence of magmatic, sedimentary and metamorphic rocks formed in an oceanic environment and made up of oceanic crust and mantle is called :
(A) Alpine peridotite
(B) Adakite
(C) Quartz normative tholerite
(D) Ophiolite

119. Regionally, thermally metamorphic rocks containing Mn-ore in Central India is represented by :
(A) Sakolis
(B) Mahakaoshals
(C) Chilpis
(D) Saussars

120. Deccan volcanism in India occurred at :
(A) Permo-Carboniferous boundary
(B) Cambrian-Precambrian boundary
(C) Triassic-Jurassic boundary
(D) Cretaceous-Tertiarry boundary

ROUGH WORK

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