

MIZORAM PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR RECRUITMENT TO THE POST OF
GEOLOGIST UNDER COMMERCE & INDUSTRIES DEPARTMENT,
GOVERNMENT OF MIZORAM, OCTOBER-2024

GEOLOGY PAPER - III

Time Allowed : 2 hours

FM : 200

All questions carry equal mark of 2 each.
Attempt all questions.

1. Jaduguda Uranium Mine is located in -
(a) Bihar (b) Jharkhand
(c) Orissa (d) Rajasthan
2. Monazite is an important ore of -
(a) Iron (b) Barium
(c) Thorium (d) Copper
3. Which one is not a copper ore?
(a) Pyrite (b) Chalcopyrite
(c) Chalcocite (d) Azurite
4. The chief ores of Iron are in the form of -
(a) Carbonates (b) Oxides
(c) Sulfides (d) Hydroxides
5. The Banded Iron-ore Formation in Singhbhum (Bihar) belongs to -
(a) Precambrian age (b) Gondwana
(c) Triassic (d) Jurassic
6. Which of the following is hydrated nickeliferous magnesium silicate ore of Nickel?
(a) Pentlandite (b) Millerite
(c) Garnierite (d) Niccolite
7. Where is the Wynad Gold Field located in India?
(a) Karnataka (b) Tamil Nadu
(c) West Bengal (d) Kerala
8. Which of the following Silver ore is known as Silver Glance?
(a) Argentite (b) Prousite
(c) Pyrargyrite (d) Stephanite
9. Host rock of zinc deposit in Zawar mines.
(a) Dolomite (b) Granite
(c) Quartzite (d) Rhyolite
10. The primary geological occurrence of manganese is in -
(a) Metamorphic deposits (b) Igneous deposits
(c) Sedimentary deposits (d) All rock types

11. Which of the following is the mineral of lithium mica?
 - (a) Paragonite
 - (b) Biotite
 - (c) Lepidolite
 - (d) Roscoelite
12. Which mineral is associated with Kimberlite?
 - (a) Gold
 - (b) Diamond
 - (c) Silver
 - (d) Platinum
13. Which of the following is the fibrous serpentine of Asbestos?
 - (a) Asbestos proper
 - (b) Crociodolite
 - (c) Amosite
 - (d) Chrysotile
14. The late magmatic ore deposits may be accounted for -
 - (a) Residual liquid segregation.
 - (b) Dissemination in the enclosing rocks.
 - (c) Segregation due to gravitative crystallization differentiation.
 - (d) Injection into the host rocks or surrounding rocks.
15. Large deposits of hematite are found in -
 - (a) Fault and fissures filling deposits.
 - (b) Banded hematite quartzite.
 - (c) Banded iron formation.
 - (d) Titaniferous and vanadiferous magnetite deposits.
16. The SI unit for electrical resistivity is -
 - (a) Ohm
 - (b) Ohm-meter
 - (c) Ampere-meter
 - (d) Milliampere
17. Which of the following method is most suitable for iron ore deposits?
 - (a) Gravity method
 - (b) Seismic method
 - (c) Magnetic method
 - (d) Resistivity method
18. Most appropriate geophysical method for subsurface structural and stratigraphic analysis is -
 - (a) Induced Polarization method
 - (b) Self-Potential method
 - (c) Seismic Reflection survey
 - (d) Seismic Refraction survey
19. Which of the following is correct with reference to the role of geological and geophysical data in geodynamic study of the earth?
 - (a) These data has no direct relationship with geodynamics of the earth.
 - (b) Regional tectonics cannot be understood significantly.
 - (c) These data has limitation in microseismic analysis and deformation behaviour of the crust.
 - (d) Crustal seismicity with reference to lithology and structural behaviour can be well understood.
20. What is CMP stands for in seismic reflection survey?
 - (a) Critical mid-point
 - (b) Counter multilayer point
 - (c) Controlling mid-point
 - (d) Common mid-point
21. The process of reconstructing seismic section so that reflection events are repositioned under their correction surface location and at correct vertical reflection time is known as -
 - (a) Deghosting
 - (b) Migration
 - (c) Zero-offset VSP
 - (d) Velocity filtering
22. Which of the following geophysical method employed the principle and concept of Huygen's wavelets?
 - (a) Self Potential resistivity survey
 - (b) Seismic reflection survey.
 - (c) Seismic refraction survey.
 - (d) Vertical Electrical Profiling survey.

23. The Bouguer anomaly is positive over -
(a) High continental areas (b) Ocean basins
(c) Costal areas (d) Glacial terrain
24. Love wave generated during earthquake is -
(a) Longitudinal wave (b) Transverse wave
(c) Shear wave (d) Compressional wave
25. Which of the following magnetometer automatically removed regional and temporal variations in the magnetic field?
(a) Magnetic gradiometer (b) Optically pumped magnetometer
(c) Photon magnetometer (d) Fluxgate magnetometer
26. Bouguer correction in Gravity survey is related to -
(a) Tides (b) Elevation
(c) Latitude (d) Instrumental Drift
27. Which of the following statement is correct with reference to application of Gravity Survey?
(a) The survey technique has no application in archaeological research.
(b) It is the essential part of reconnaissance survey.
(c) It is used in biostratigraphic reconstruction.
(d) It is extensively used in location of sedimentary basin.
28. The limitation of resistivity survey method lies on the fact that -
(a) it cannot provide information on geological structures and lithological variations.
(b) it could not locate freshwater-saline water contact.
(c) interpretations are ambiguous.
(d) it cannot provide information on presence of potentially unstable ground condition.
29. Which procedure of electrical resistivity survey is known as 'electrical drilling'?
(a) Vertical electrical sounding (b) Constant separation traversing
(c) Wenner configuration (d) Schlumberger configuration
30. Which one has high resistivity?
(a) Sandstone (b) Clay
(c) Shale (d) Salt water
31. Which technique can give indication of the presence of hydrocarbon?
(a) Induction method (b) Deep resistivity log
(c) Sonic log (d) Gamma ray method
32. A concentration of solid, liquid or gaseous materials on earth which can be extracted commercially at present or in future is known as -
(a) an ore. (b) deposit.
(c) resource. (d) reserve.
33. In Lindgren's Classification, magmatic deposit are formed by the process of -
(a) direct igneous emanation. (b) sublimation.
(c) metasomatism. (d) differentiation.
34. Which of the following sampling techniques is sufficient for preliminary investigation of mineral deposits?
(a) Grab sampling (b) Coning and quartering
(c) Channelling (d) Grooving

35. Which of the following sampling techniques is practice during the initial stage of surface geochemical exploration?
- (a) Pitting (b) Trenching
(c) Stack sampling (d) Sludge sampling
36. Which of the following drilling technique is feasible for sampling and evaluation of soft and loose ground?
- (a) Diamond drilling (b) Percussive and rotary drilling
(c) Reverse circulation drilling (d) Auger drilling
37. Which of the following is the pathfinder element in Kolar Gold Field of Karnataka?
- (a) Lepidolite (b) Scheelite
(c) Cummingtonite (d) Spodumene
38. Electromagnetic (EM) survey, both airborne and ground is proficient in direct detection of -
- (a) Native metals deposits (b) Base metal deposits
(c) Sulfide deposits (d) Oil deposits
39. Which method helps determine rock lithology and porosity?
- (a) Induction (b) Resistivity log
(c) Sonic log (d) Gamma ray log
40. Which of the following is the controlling factor of anomaly?
- (a) Uniform dissemination of valuable deposits close to the surface.
(b) Favourable condition for unusual processes that concentrate particular elements
(c) Direction of traverse during geochemical prospecting and exploration.
(d) Tectonic upliftment that will facilitate migration of enriched ore bodies.
41. In geochemical prospecting, the pathfinder element of Uranium deposit in sedimentary terrain is -
- (a) Se (b) Mn
(c) Cu (d) Au
42. If γ is resistivity in Ω m, A is the distance between electrodes, ΔV is the potential difference between electrodes and I is the current flowing in ampere, the formula for Wenner configuration will be -
- (a) $\gamma = 2\pi A \frac{\Delta V}{I}$ (b) $\gamma = \pi A \frac{\Delta V}{2I}$
(c) $\gamma = \pi A \frac{\Delta 2V}{I}$ (d) $\gamma = 2\pi \frac{\Delta V}{AI}$
43. If the total number of ore hole is 16, the total thickness of bed of iron ore deposit is 63, the total assay product is 193, and then assuming the drilling of bore hole in square pattern grid, what will be the average thickness of the bed?
- (a) 3.94 (b) 3.31
(c) 12.06 (d) 3.06
44. In geobotanical survey, which of the following is an accumulator plant for Copper?
- (a) *Crotalaria cobalticola* (b) *Lobelia inflata*
(c) *Melilotus alba* (d) *Polycarpea spirostylus*
45. The economically mineable part of Measured Mineral Resource is -
- (a) Proved Mineral Resources (b) Proved Mineral Reserves
(c) Probable Mineral Resources (d) Mineable Mineral Reserves

46. What is the best type of drilling mud?
(a) Oil-based mud (b) Water-based mud
(c) Non-aqueous mud (d) Mineral oil mud
47. Lignite at Neyveli is found in -
(a) Permian formation (b) Cambrian formation
(c) Gondwana formation (d) Tertiary formation
48. The reservoir rock of Bombay High, an offshore oilfield in the Bombay offshore basin.
(a) Limestone (b) Sandstone
(c) Shale (d) Dolomite
49. The behaviour of coal under different temperature during carbonization can be tested by -
(a) The Free-swelling index. (b) Giseler Plastometer.
(c) The Gray-King and Fischer Assay. (d) The Roga index.
50. The parameter which indicated the amount of heat liberated per unit of mass of combusted coal is -
(a) Index of ash fusion temperature limit. (b) Index of sulfur content.
(c) Hardgrove grindability index. (d) Calorific value.
51. Which of the following maceral is the inertinite maceral group?
(a) Sporinite (b) Fusinite
(c) Cutinite (d) Resinite
52. In microlithotype analysis of coal, the minimum bandwidth of the association to be measured must be -
(a) 40 μ m (b) 50 μ m
(c) 60 μ m (d) 70 μ m
53. As per ISO 7404, a total of point to be counted in maceral analysis to ensure precision is -
(a) 300 points (b) 400 points
(c) 500 points (d) 600 points
54. Analysis of the organic geochemistry of coal indicated that macerals increased in aromaticity from -
(a) liptinite-vitrinite-inertinite. (b) inertinite-liptinite-vitrinite.
(c) vitrinite-liptinite-inertinite. (d) inertinite-vitrinite-liptinite.
55. The free-swelling index (FSI) is -
(a) A measure of the increase in proportion of carbon when heated under specified conditions.
(b) A measure of the increase in volume of coal when heated under specified conditions.
(c) A technique applied to increase the volume of coal in non-cocking coal.
(d) A technique to increase the calorific value of coal.
56. Which natural material is an effective sealing material for disposing nuclear waste container?
(a) Granite (b) Shale
(c) Sandstone (d) Bentonite clay
57. State having largest reserve of coal deposit.
(a) Chhattisgarh (b) West Bengal
(c) Jarkhand (d) Odisha
58. Which one of the following coal gasifiers required the highest temperature and no tars produced?
(a) Fluidized Bed Gasifiers (b) Entrained Flow Gasifiers
(c) Fixed Bed Gasifiers (d) Moving Bed Gasifiers

59. According to record of the Indian Bureau of Mines, the largest lignite deposit of India is located in Tertiary sediments of-
- (a) Tamil Nadu (b) Jharkhand
(c) Kerala (d) Gujarat
60. Which of the following mineral is the host of Uranium occurred in sandstones?
- (a) Carnotite (b) Monazite
(c) Alunite (d) Uraninite
61. Rock bolting is very common in-
- (a) Railway line construction (b) Dam and reservoir construction
(c) Tunneling and underground mining (d) Highway construction
62. _____ is the part of a dam's substructure that supports its superstructure at the ends of the dam.
- (a) Spillway (b) Crest
(c) Toe (d) Abutment
63. Which of the following statement is correct with reference to the concept of soil mechanic?
- (a) Cohesion of soil is independent of particle size distribution.
(b) Cohesive soils have significantly less proportion of fine-grained particles.
(c) Noncohesive soils will stick together when dry and disaggregate when wet.
(d) Effectiveness of Cohesive soils in binding enhances with more clay content.
64. According to Unified Soil Classification in engineering purpose, CL refers to -
- (a) Inorganic clay of high plasticity.
(b) Inorganic clay of low to medium plasticity.
(c) Clayey gravels of gravel-sand-clay mixtures.
(d) Clayey sand or sand-clay mixtures.
65. In which type of tunnelling does the presence of sticky and shale beds between sandstones threatened displacement of strata when clay becomes saturated with water?
- (a) Tunnel constructed through syncline
(b) Tunnelling through anticline
(c) Tunnelling through impervious rocks
(d) Tunnelling along strike of inclined soft rocks.
66. In site selection for construction of bridges, which section should be avoided?
- (a) Inclined limbs of fold with homogenous lithology
(b) Highly jointed or fault zone.
(c) Horizontal beds with low frequency of joints and factures.
(d) Massive sandstone beds.
67. Which of the following factors does not affect shear strength?
- (a) Mineralogical composition (b) Shape of the individual particles
(c) Confining pressure (d) Pore pressure
68. In which type of soil does liquefaction usually occur?
- (a) Unsaturated gravels (b) Poorly saturated, compacted sandy soil
(c) Saturated soft granular sandy soil (d) Saturated, uncompacted clayey soil

69. According to Deere's rock quality designation of rock mass (1964), Good Quality rock ranges in RQD% between -
(a) 25-50 (b) 50-75
(c) 75-90 (d) 90-100
70. In RMR geomechanics classification system of rock mass, the parameters in design of the system is
(a) Uniaxial compressive strength of dislodge and fall of rock material.
(b) Uniaxial compressive strength of intact rock material.
(c) Triaxial strength of rock materials.
(d) Shear strength of rock materials.
71. The aseismic zone of NE India is located in -
(a) the Mikir massif of Assam.
(b) Upper Assam valley between Shillong plateau and eastern syntaxis.
(c) Eastern Himalayan arcuate of Arunachal Pradesh.
(d) Mizoram-Tripura fold belt of Surma Basin.
72. According to seismic design code of IS:4326, which of the following reinforcement ties all the walls together and resist out of plane bending of the walls?
(a) Plinth Band (b) Roof Band
(c) Gable Band (d) Lintel Band
73. The minimum recommended ratio of cement:sand mortar for earthquake resistant masonry construction is -
(a) 1:2 (b) 1:4
(c) 1:6 (d) 1:8
74. In the Engineering properties of rock, Young's modulus is related to -
(a) Tensile strength of rocks. (b) Unconfined compressive strength of rocks.
(c) Shear strength of rocks. (d) Elasticity of rocks.
75. Engineering classification of intact rock strength (Deere and Miller, 1966), Class C, Medium strength is -
(a) 28-55 Mpa (b) 55-110 Mpa
(c) 110-220 Mpa (d) More than 220 Mpa
76. Select the missing number from the given alternatives.

13	25	5	40
10	32	8	48
16	56	7	?

Select correct answer:

- (a) 42 (b) 38
(c) 68 (d) 56
77. In the following question, a series is given with one term missing. Choose the correct alternative from the given ones that will complete the series :
254 130 62 34 14 ?
(a) 12 (b) 14
(c) 10 (d) 8

78. Find the missing term in the following question:

8	19
?	1083

- (a) 192 (b) 198
(c) 218 (d) 224

79. Find the missing number:

20, 30, 42, 56, 72, ?

- (a) 82 (b) 92
(c) 88 (d) 90

80. Choose the correct alternative that will complete the given number series.

2, 9, 28, 65, _____, 217

- (a) 124 (b) 126
(c) 120 (d) 130

81. Find the wrong number in the following number series:

500, 200, 80, 42

- (a) 500 (b) 200
(c) 80 (d) 42

82. Select the related number from the given alternatives :

29 : 65 :: 43 : ?

- (a) 89 (b) 79
(c) 93 (d) 66

83. You have the following data set: 4,9,19,39,X,159,319. Find the missing number (X) in the data set.

- (a) 99 (b) 89
(c) 79 (d) 69

Direction (Question Nos. 84 – 87) : Each sentence below consists of a word or a phrase which is bold. It is followed by four words or phrases. Select the word or phrase which is closes to the OPPOSITE in meaning of the bold word or phrase.

84. The Team leader does not think that the project was **feasible**

- (a) possible (b) practical
(c) considerable (d) impractical

85. Only in Britain could it be thought a defect to be too clever by half. The **probability** is that too many people are too stupid by three-quarters.

- (a) certainty (b) expectation
(c) likelihood (d) contingency

86. Clever **tyrants** are never punished

- (a) dictators (b) autocrats
(c) theocrats (d) democrats

87. **Exodus** was led by a prince and his followers due to oppression faced in that kingdom

- (a) invasion (b) entry
(c) flight (d) expulsion

Direction (Questions Nos. 88 – 90) : Select the word or phrase which is closes to the **SIMILAR** in meaning of the bold word or phrase.

88. The **esurient** child devoured the entire cake in a minute.

- (a) hungry
- (b) problem
- (c) mannerless
- (d) frightened

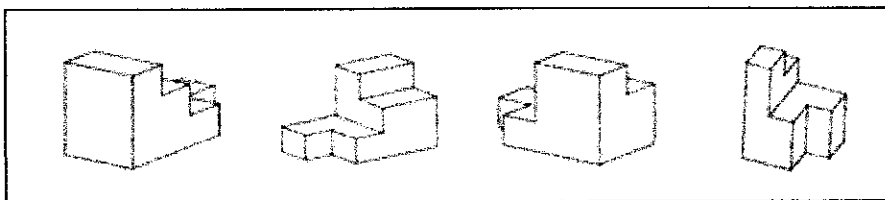
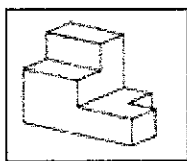
89. A bunch of **snollygosters** have entered the main door

- (a) principled persons
- (b) unprincipled persons
- (c) decent persons
- (d) low profile people

90. His **puerile** jokes did not impress anyone present in the gathering

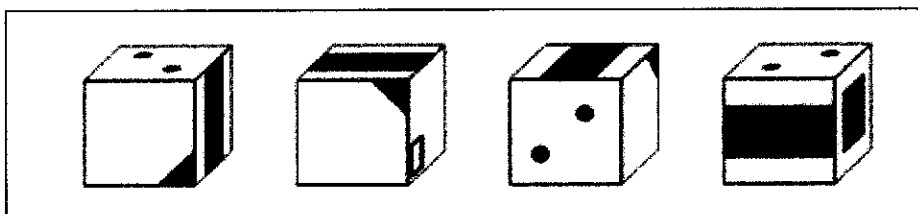
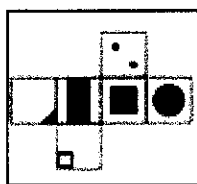
- (a) childish
- (b) cool
- (c) stand-up
- (d) witty

91. From the given object below, which figure is a rotation of the given object?



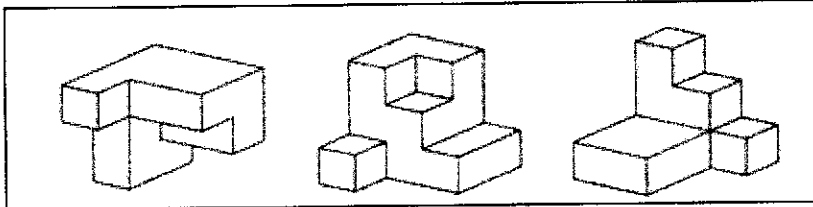
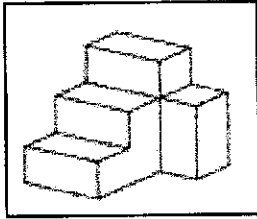
- (a) A
- (b) B
- (c) C
- (d) D

92. From the given object below, which cube cannot be made based on the unfolded cube?



- (a) A
- (b) B
- (c) C
- (d) D

93. In a given object below, which figure fits the given object, in order to make a cube?



A

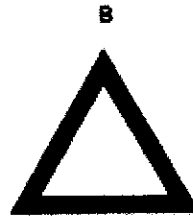
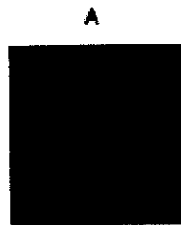
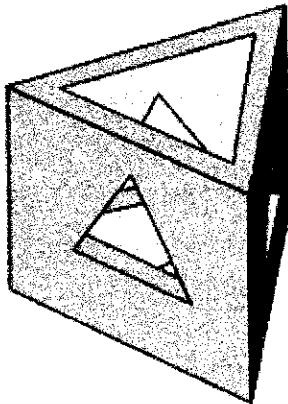
B

C

- (a) A
- (c) C

- (b) B
- (d) None of these

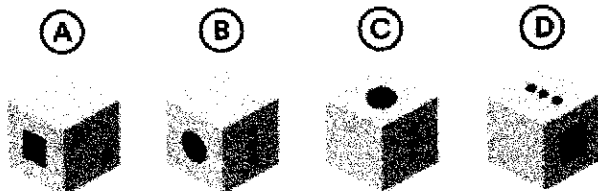
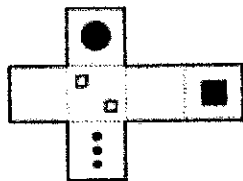
94. Which of the shadows on the right can result from casting light on one of the 3D-shape's sides?



- (a) A only
- (c) Both A & B

- (b) B only
- (d) None of these

95. If the net was folded into a cube, which of the given shapes would it look like?



- (a) A
- (c) C

- (b) B
- (d) D

96. In a class of 40 students, Kima is 13th from the left and Zuali is 32th from the right end. How many students are there between Kima and Zuali?

- (a) 5 (b) 3
(c) 4 (d) 2

97. Siami is 200 days older than Rina and Kunga is 40 weeks older than Siami. If Kunga was born on Thursday, on which day was Rina born?

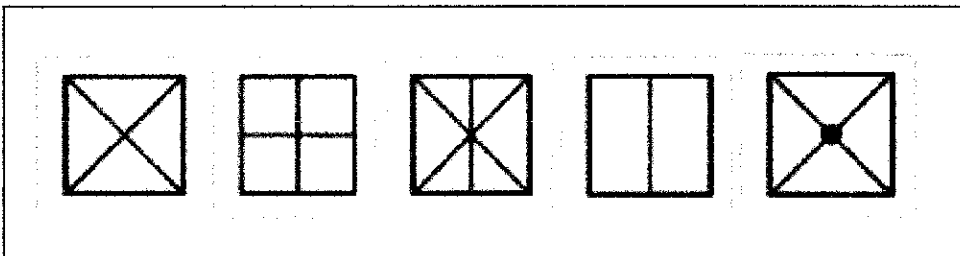
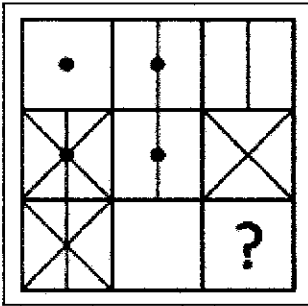
- (a) Monday (b) Tuesday
(c) Sunday (d) Friday

98. Read the directions carefully and answer the following question.

Among John, David, Andrew, Victor and Andy each having a different height, Victor is shorter than David. Andy is shorter than John. Andrew is taller than David but shorter than Andy. Who among them is the shortest?

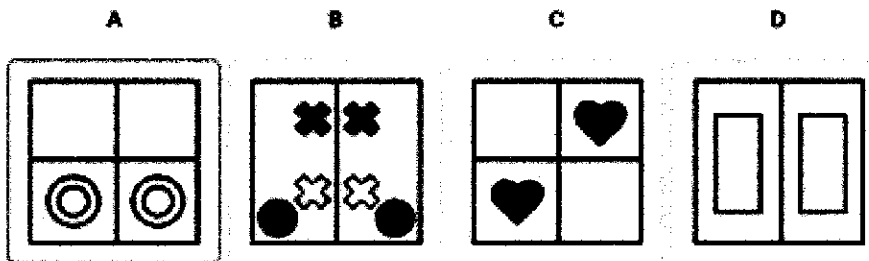
- (a) John (b) Andrew
(c) Victor (d) Andy

99. Which of the following boxes should replace the question mark (?) to complete the pattern in a given box?



- (a) The first box (b) The second box
(c) The third box (d) The fifth box

100. Choose the odd one out:



- (a) A (b) B
(c) C (d) D