

MIZORAM PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF
GEOLOGIST JUNIOR UNDER COMMERCE & INDUSTRIES DEPARTMENT,
GOVERNMENT OF MIZORAM, AUGUST, 2023

GEOLOGY PAPER - III

Time Allowed : 2 hours

Full Marks : 200

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

1. The plateau richest in minerals in India is
 - (a) Chhota Nagpur plateau
 - (b) Mysore plateau
 - (c) Deccan plateau
 - (d) Malwa plateau
2. An evaluation of a proposed mining project to determine whether the mineral resource can be mined economically is
 - (a) Mining report
 - (b) Feasibility Study
 - (c) Reconnaissance
 - (d) Prospecting
3. If a mineral deposits is found by initial exploration efforts it is called a
 - (a) prospect
 - (b) beneficiation
 - (c) feasible
 - (d) foreseeable
4. Which one among the following state is the largest producer of Salt?
 - (a) Rajasthan
 - (b) Gujarat
 - (c) Kerela
 - (d) Odhisa
5. The Jaduguda mines are famous for:
 - (a) Iron ore
 - (b) Gold deposits
 - (c) Mica deposits
 - (d) Uranium deposits
6. Diamond mine are being worked at
 - (a) Hazaribagh Jharkhand
 - (b) Kolar Karnataka
 - (c) Panna Madhya Pradesh
 - (d) Neyveli Tamil Nadu
7. Which of the following states is India's has the highest deposits of Monazite sands?
 - (a) Tamil Nadu
 - (b) Kerela
 - (c) Andhra Pradesh
 - (d) Maharashtra
8. Minor minerals are come under the purview of
 - (a) Central Government
 - (b) State Government
 - (c) Both Central and State Government
 - (d) Autonomous council
9. Ore deposits which have formed at the same time as the rock in which they occur is called
 - (a) Syngenetic deposits
 - (b) Epigenetic deposits
 - (c) Epithermal deposits
 - (d) Sedimentary deposits

10. UNFC consist of three dimensional system with the following axes : Geological assessment, Feasibility assessment and
- (a) Exploration assesment
 - (b) Processing assesment
 - (c) Mineral viability
 - (d) Economic viability
11. The bauxite in India occurs primarily as
- (a) Gibbsite
 - (b) Kaolinite
 - (c) Shieldite
 - (d) Karinite
12. Which Metallogenic epochs is known in India by the rich coal deposits of Lower Gondwana
- (a) Late Mesozoic epoch
 - (b) Tertiary epoch
 - (c) Precambrian epoch
 - (d) Late Palaeozoic epoch
13. In mineral deposit, a final class of hydrothermal deposit is called
- (a) Metallogenic Epoch
 - (b) Metallogenic Province
 - (c) Stratiform deposits
 - (d) Stratibound deposits
14. Porphyry copper deposits form by magmatic concentration with hydrothermal alteration and replacement in magma intrusions into continental crust is related to
- (a) Collison boundaries
 - (b) Divergent plate margin
 - (c) Convergent plate margin
 - (d) Cratonic basins
15. A period of time in the geological past during which notable ore formation took place is called
- (a) Metallogenic Epoch
 - (b) Metallogenic Province
 - (c) Metallogenic Affiliation
 - (d) Metallogenic Association
16. How much is P-wave velocity in Crust?
- (a) 4 Km/s
 - (b) 5 Km/s
 - (c) 6 Km/s
 - (d) 7 Km/s
17. At depths of a few tens of kilometers under continents and less than ten kilometers beneath the oceans seismic velocities increase sharply
- (a) Decrease sharply
 - (b) Increase sharply
 - (c) Constant
 - (d) None of the above
18. The order of resistivity of clay is..
- (a) 10 ohm-m
 - (b) 100 ohm-m
 - (c) 1000 ohm-m
 - (d) 5000 ohm-m
19. Sea floor spreading is verify with the help of
- (a) Seismic study
 - (b) Gravity study
 - (c) Electrical study
 - (d) Magnetic study
20. In profile of the Geophysical anomalies, the Wavelengths and half-widths are important because they are related to the sources
- (a) gravity
 - (b) depths
 - (c) size
 - (d) magnetic
21. Which of the following geophysical methods are suitable for ground water exploration?
- (a) Gravity
 - (b) Magnetic
 - (c) Electrical
 - (d) Seismic

22. When the velocity is higher in the underlying layer there is a particular angle of incidence, known as
(a) critical angle (b) higher angle
(c) seismic angle (d) adverse angle
23. Geophysical Methods are divided into Natural field methods and Artificial sources methods, Natural field methods is called
(a) Surface Methods (b) Active Methods
(c) Ground Methods (d) Passive Methods
24. Which electrode array is best suited for Vertical Electrical Sounding surveys?
(a) Pole-Pole (b) Schlumberger
(c) Wenner (d) Dipole-Dipole
25. Vertical electrical sounding (VES), also known as 'electrical drilling' or 'expanding probe', is used mainly in the study of
(a) Horizontal interface (b) Vertical interface
(c) Inclined interface (d) Deep interface
26. A gravity survey is measuring subsurface variations in which physical property?
(a) mass (b) melting point
(c) density (d) resistivity
27. Natural electrical potential is measured with the help of
(a) metal electrodes (b) nonmetal electrodes
(c) polarising electrodes (d) nonpolarising electrodes
28. The magnetic anomaly of a body of regular shape is calculated by determining
(a) Magnetic moment/Area (b) Magnetization/Area
(c) Pole strength/Area (d) Depth/Area
29. In Seismic refraction method, the radiating shock waves are picked up by
(a) hydrophones (b) geophones
(c) chirps (d) pingers
30. Two main types of correction need to be applied to seismic traces in order that the resultant seismic sections give a true representation of geological structure are
(a) Active and passive (b) Active Methods
(c) Surface Methods (d) Static and dynamic
31. Under which section Minor minerals are prescribed by Mines and Minerals Development and Regulation (MMDR) Act, 1957
(a) section 1(e) (b) section 2(e)
(c) section 3(e) (d) section 4(e)
32. Fly Rock in opencast mining is controlled by
(a) Secondary blasting (b) Cushion blasting
(c) Muffle blasting (d) Smooth blasting
33. In mining exploration programmes where there are no pre-existing mines or prospects is called
(a) Brownfield exploration (b) Greenfield exploration
(c) Redfield exploration (d) Yellowfield exploration

34. Pegged grids are used for outcrop mapping at scales of
(a) 1:50–1:1,000 (b) 1:100–1:1,000
(c) 1:500–1:2,500 (d) 1:5,000–1:25,000
35. Skrew feed mechanism is used in
(a) Drilling (b) Digging
(c) Blasting (d) Excavating
36. The valueless mineral particles within an ore deposit that must be discarded is called
(a) Smelting (b) Waste
(c) Ore (d) Gangue
37. The acute angle between the planar surface (ellipse axis) and the drill core axis is known as
(a) angle alpha (b) angle beta
(c) angle gamma (d) angle Sluicing
38. Open-cut strip mining requires removing a series of horizontal slices through an ore body and adjacent waste rock – a process known as
(a) open mining (b) digging mining
(c) strip mining (d) flitch mining
39. Material that has been identified and can be extracted at a profit at the time of determination is called
(a) Resources (b) Reserves
(c) Deposits (d) None of the above
40. The normal geothermal gradient is about _____ per 1km.
(a) 10°C (b) 20°C
(c) 30°C (d) 40°C
41. Sub grade drilling in opencast mine is done for
(a) More fragmentation of blast (b) Avoiding toe on the bench
(c) For supporting bench (d) For controlled blasting
42. The imaginary line running along the centre of the cylindrical drill core is called
(a) Oriented Core (b) Core Axis
(c) Down Hole Survey (d) Drill Hole
43. Most of the hematite iron ore of the country (India) is on the basis of arbitrary cut off grade of _____ Fe.
(a) 35% (b) 45%
(c) 55% (d) 65%
44. Horizontal ledges situated on the non-productive side of the open pit and serving to accommodate the transportation road is called
(a) Trench (b) Berm
(c) Haul Road (d) Pit
45. Slope Stability Radar is used in Opencast mining for measurement of
(a) Compressive strength of rock (b) Rock Stress
(c) Water level (d) Rock Displacement
46. The hydrocarbon fuel in the oil shale is
(a) natural gas (b) methane
(c) petroleum (d) kerogen

47. It is generally accepted that coal originated from plant debris which accumulated and settled in
- (a) Estuarine
 - (b) Swamps
 - (c) Lagoon
 - (d) Beach
48. The carbon content of Bituminous Coal is around
- (a) 80%
 - (b) 70%
 - (c) 60%
 - (d) 50%.
49. The geochemical process that transforms plant material into coal is called
- (a) rank of coal
 - (b) grade of coal
 - (c) types of coal
 - (d) maceral
50. The most favorable conditions for the formation of coal occurred in the world during
- (a) Tertiary Period
 - (b) Permian Period
 - (c) Carboniferous Period
 - (d) Silurian Period
51. The gas which occurs above the petroleum oil trapped under the rock is called
- (a) Biogas
 - (b) Petroleum gas
 - (c) Natural gas
 - (d) Coal gas
52. In India, the gradation of coking coal is based on
- (a) calorific value
 - (b) moisture content
 - (c) ash content
 - (d) grade
53. Which state is the largest producer of Coal in India
- (a) Odisha
 - (b) Chhattisgarh
 - (c) Jharkhand
 - (d) Madhya Pradesh
54. Coal appearance with Black to dark grey, non banded coal with dull to greasy lustre, often breaks with conchoidal fracture lithotype is called
- (a) Vitrain
 - (b) Clarain
 - (c) Boghead
 - (d) Cannel
55. Coal bed methane is referred to as 'sweet gas' because it does not contain ...
- (a) Sulfur Dioxide
 - (b) methane
 - (c) Hydrogen Sulphide
 - (d) Carbon Dioxide
56. Which of the following is a type of secondary porosity?
- (a) intercrystalline porosity
 - (b) intergranular porosity
 - (c) intraparticle porosity
 - (d) extra porosity
57. Source rock quality of Good in Total Organic Carbon (TOC) Weight percent is
- (a) 0.5 -1.0
 - (b) 1.0 - 2.0
 - (c) 2.0 - 4.0
 - (d) more than 4
58. The oil window ranges from 60-150 degrees C with peak oil generation at about
- (a) 80 degrees C
 - (b) 100 degrees C
 - (c) 120 degrees C
 - (d) 140 degrees C
59. Dead organisms are transformed into petroleum and natural gas in :
- (a) Absence of Air
 - (b) Presence of Air
 - (c) Presence of Light
 - (d) Presence of water

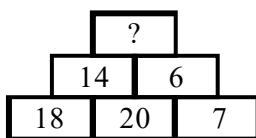
60. The most harmful (external hazard) radiation emit by Radioactive materials is
(a) Alpha (b) Beta
(c) Gamma (d) Proton
61. Engineering classification of rocks (UCS) medium strength is
(a) 280-560 kg/sqcm (b) 560-1120 kg/sqcm
(c) 1120-2240 kg/sqcm (d) 2240 kg/sqcm above
62. Modulus of elasticity is
(a) strain/stress (b) strain/strength
(c) stress/strain (d) stress/strength
63. In total volume of Reinforced concrete, the aggregate (fine and coarse) fill up percent is
(a) 50-65% (b) 60-75%
(c) 70-85% (d) 80-95%
64. In Engineering Properties of Rock study Rock Mass Rating (RMR) is proposed by
(a) Deere (b) Barton et al.
(c) Hoek& Brown (d) Bieniawski
65. In RQD the core sample recovered 50-70 % is designated as
(a) very poor (b) poor
(c) fair (d) good
66. Earthquake-Resistant Buildings Design method is called the strong-column and
(a) weak-beam (b) strong-beam
(c) resistivity-beam (d) moderate-beam
67. The Plasticity Index (PI) of soil is the difference between the plastic limit and
(a) shrinkage (b) attenberg limit
(c) liquid limit (d) flow limit
68. The use of mat foundation is for columns and walls foundations, where the loads from the structure on columns and walls are
(a) very low (b) low
(c) moderate (d) very high
69. In a Dam, structure built to support or reinforce the height of a masonry wall is called
(a) diversion (b) buttress
(c) embankment (d) coffer
70. A size of Fine aggregates is
(a) less than 4.75mm (b) less than 6.75mm
(c) less than 14.75mm (d) less than 16.75 mm
71. The point on the earth's surface directly above the focus of an earthquake is called
(a) Epicenter (b) Hypocenter
(c) Focal point (d) Originate
72. What is considered as Shallow earthquake focal depth?
(a) 0 - 150 km (b) 0 - 100 km
(c) 0 - 70 km (d) 0 - 40 km

73. Non-displaced ground adjacent to the highest portion of the main scarp of a landslide is called
(a) Head (b) Main scarp
(c) Crown (d) Toe
74. For all buildings which are more than 3 stories in height, the minimum grade of concrete shall be
(a) M 10 (b) M 20
(c) M 30 (d) M 40
75. Which seismic zone does India's north eastern region belong to?
(a) Zone - II (b) Zone - III
(c) Zone - IV (d) Zone - V

Directions (Questions No. 76 - 83) : Find the missing number:

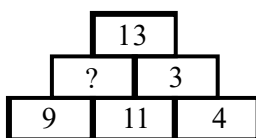
76. 2, 7, 9, 3, 8, 11, 4, 9, 13, ...?..., 10, 15
(a) 2 (b) 3
(c) 4 (d) 5
77. 21, 32, 45, 60, ...?..., 96, 117, 140
(a) 75 (b) 70
(c) 77 (d) 63
78. 17, 18, 20, 23, ...?..., 32, 38
(a) 25 (b) 27
(c) 30 (d) 33
79. 5, 4, 20, 6, 5, 30, 7, 6, 42, ...?..., 7, 56
(a) 5 (b) 6
(c) 8 (d) 10
80. 118, ...?..., 104, 97, 90, 83
(a) 115 (b) 111
(c) 107 (d) 105

81.



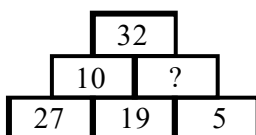
- (a) 24 (b) 25
(c) 28 (d) 20

82.



- (a) 7 (b) 8
(c) 9 (d) 10

83.



- (a) 9 (b) 3
(c) 81 (d) 24

Directions (Questions No. 84 - 90) : Read the following passage carefully and answer the questions that follow:

The current global food situation is very serious and hence, we need to understand the reasons for such a dramatic increase in food prices in a short period.

It is argued that increases in energy costs are resulting in cost push inflation but contribution of energy costs to overall costs in agriculture may not explain the huge increase in food prices.

Related to the current elevated energy prices there has been a diversion of corn and edible oils to bio-fuels, which is significantly influenced by policy mandates. Very clearly this diversion to bio-fuels is a policy induced new reality, which coincided with price escalation in precisely those products and hence, is noteworthy.

The financialization of commodity trade and current extraordinary conditions in global financial markets could have influenced the spurt in prices. The recent reductions in interest rates in the US and the injection of liquidity have resulted in investors seeking new avenues such as commodity markets, in view of the turbulence in financial markets and the low returns in treasuries. The relatively easy liquidity and low interest rates, by themselves make holding of inventories attractive and thus induce greater volatility in commodity markets. The weakening of the US dollar is also advanced as a reason for the recent volatility in commodity markets, including food items. It is evident that this phenomenon is now also coinciding with the across the board rise in food prices.

In brief, while there are demand and supply side pressures on food items, there is considerable merit in the argument that the recent extraordinary increases in food prices are closely linked to public policy responses to high energy costs in advanced economies and the turbulence in financial markets and financial institutions. It is said that the impact of such policy induced diversion of food to bio-fuels is significant at this juncture and reflects a preference to fill the fuel tanks of automobiles rather than fill the empty stomachs of people. Similarly, it is sometimes held that the weight accorded to financial stability in public may now be at the expense of stability in real sector-especially of sensitive commodities like food. At the same time, there is a general consensus that public policy in regard to food in many economies around the world has not provided adequate incentive to farmers to increase the supply of food and other agricultural products to comfortably match the growing demand over the medium term.

84. The passage lays emphasis on which of the following central theme(s)?

- A. The abysmally throwaway prices offered for food commodities.
- B. The worldwide acute shortage of food commodities.
- C. Promoting the use of bio-fuel for automobiles.

- (a) A only
- (b) B only
- (c) C only
- (d) None of these

85. Which of the following statements is FALSE in the context of the passage?

- A. Unusual conditions in global financial markets have aggravated the food price.
- B. No government would prefer fueling vehicles to feeding the hungry.
- C. Maintenance of financial stability in public policy will be at the cost of stability in the real sector.

- (a) Both A & B
- (b) B and C
- (c) B only
- (d) C only

Direction (Questions No. 86 - 88) : Choose the word which is most opposite in meaning of the word given in bold as used in the passage.

86. consensus

- (a) deviant
- (b) disagreement
- (c) dejection
- (d) denial

87. elevated

- (a) raised (b) stabilised
(c) inclined (d) fallen

88. volatility

- (a) agitation (b) effervescence
(c) optimism (d) inactivity

Direction (Questions No. 89 - 90) : Choose the word/group of words which is most nearly the same in meaning as the word given in bold as used in the passage.

89. incentive

- (a) acceleration (b) surplus
(c) baiting (d) encouragement

90. advanced

- (a) put forward (b) set aside
(c) taken over (d) marched forward

Directions (Questions No. 91 - 95) : In each of the questions given below, find out the correct answer out of the four answer figures, if the problem figures continue in the same sequence:

91.

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VV #####	##### VV	VVV #####	##### VV
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- (a) (b) (c) (d)

92.

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- (a) (b) (c) (d)

93.

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- (a) (b) (c) (d)

94.

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(a) (b) (c) (d)

95.

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(a) (b) (c) (d)

Directions (Questions No. 96 to 100): Study the following information to answer the questions given below:

- (i) Eight persons E, F, G, H, I, J, K and L are seated around a square table-two on each side.
- (ii) There are three lady members and they are not seated next to each other.
- (iii) J is between L and F.
- (iv) G is between I and F.
- (v) H, a lady member, is second to the left of J.
- (vi) F, a male member, is seated opposite to E, a lady member.
- (vii) There is a lady member between F and I.

96. Who among the following are the three lady members?

- (a) E, H and J
- (b) E, G and J
- (c) G, H and J
- (d) None of these

97. Which of the following is true about J?

- (a) J is a male member
- (b) Sex of J cannot be determined
- (c) Position of J cannot be determined
- (d) None of the above

98. Who among the following is seated between E and H?

- (a) G
- (b) J
- (c) F
- (d) None of these

99. Who among the following is to the immediate left of F?

- (a) I
- (b) J
- (c) I
- (d) Cannot be determined

100. How many persons are seated between K and F?

- (a) One
- (b) Two
- (c) Three
- (d) Cannot be determined