

MIZORAM PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF GEOLOGIST JUNIOR UNDER COMMERCE & INDUSTRIES DEPARTMENT, GOVERNMENT OF MIZORAM, JANUARY, 2020

GEOLOGY PAPER - III

Time Allowed : 2 hours

Full Marks : 200

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

1. If a mineral deposits is found by initial exploration efforts it is called a
 - (a) prospect
 - (b) beneficiation
 - (c) feasible
 - (d) foreseeable
2. Which one is odd in Mining stage operation
 - (a) Actual mining
 - (b) Regional exploration
 - (c) Detailed exploration
 - (d) Commercial production
3. Ore to separate and concentrate valuable minerals by the processed of milling and
 - (a) tailing
 - (b) flotation
 - (c) smelting
 - (d) crushability
4. In India, 80 percent of mining is in
 - (a) Coal
 - (b) Iron ore
 - (c) Bauxite ore
 - (d) Mica block
5. Minor minerals are come under the purview of
 - (a) Central Government
 - (b) State Government
 - (c) Both Central and State Government
 - (d) Autonomous council
6. Which state is the largest producer of Petroleum in India
 - (a) Assam
 - (b) Rajasthan
 - (c) Maharashtra
 - (d) Gujarat
7. Which of the following states is India's largest Bauxite producers?
 - (a) Odisha
 - (b) Rajasthan
 - (c) Jharkhand
 - (d) Karnataka
8. 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
9. Which Indian state is the largest producer of Diamond?
 - (a) Telangana
 - (b) Andhra Pradesh
 - (c) Madhya Pradesh
 - (d) Karnataka
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. 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
12. The hydrothermal deposits are formed within a temperature range of
 - (a) 20 to 300°C
 - (b) 50 to 500°C
 - (c) 70 to 700°C
 - (d) 90 to 900°C
13. Skarns developed in the sedimentary rocks surrounding the thermal source (pluton) is called
 - (a) Exoskarns
 - (b) Endoskarns
 - (c) Calcic skarn
 - (d) Forsterite-diopside skarn
14. Porphyry copper deposits form by magmatic concentration with hydrothermal alteration and replacement in magma intrusions into continental crust is related to
 - (a) Collision 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. At depths of a few tens of kilometres under continents and less than ten kilometres beneath the oceans seismic velocities
 - (a) Decrease sharply
 - (b) Increase sharply
 - (c) Constant
 - (d) None of the above
17. Sea floor spreading is verify with the help of
 - (a) Seismic study
 - (b) Gravity study
 - (c) Electrical study
 - (d) Magnetic study
18. The goal of gravity surveying is to locate and describe subsurface structures from the gravity effects caused by their anomalous
 - (a) densities
 - (b) magnetic field
 - (c) electric charges
 - (d) elevations
19. The magnitude of gravity depends on five factors: Topography, elevation, density, Earth tides and
 - (a) seismicity
 - (b) magnetic field
 - (c) latitude
 - (d) longitude
20. The temperature above which ferromagnetic materials lose their permanent magnetic field is called
 - (a) Neel Temperature
 - (b) Curie Temperature
 - (c) Absolute temperature
 - (d) Magnetic temperature
21. In seismic study, from a low velocity layer overlain by a high velocity layer - Refraction will
 - (a) high
 - (b) not high
 - (c) occur
 - (d) not occur
22. When the velocity is higher in the underlying layer there is a particular angle of incidence, known as
 - (a) seismic angle
 - (b) higher angle
 - (c) critical angle
 - (d) adverse angle

23. Sources suitable for seismic surveying usually generate short-lived wave trains, known as
- (a) pulses
 - (b) retrograde
 - (c) Rayleigh waves
 - (d) Love waves
24. Devices used on land to detect seismic ground motions are known as
- (a) hydrophones
 - (b) geophones
 - (c) chirps
 - (d) pingers
25. Vertical electrical sounding (VES), also known as 'electrical drilling' or 'expanding probe' is used mainly in the study of
- (a) horizontal interfaces
 - (b) vertical interfaces
 - (c) water interfaces
 - (d) soil interface
26. Natural electrical potential is measured with the help of
- (a) metal electrodes
 - (b) nonmetal electrodes
 - (c) polarising electrodes
 - (d) nonpolarising electrodes
27. The instruments that measure voltage in DC and IP surveys are known as
- (a) geophones
 - (b) receivers
 - (c) wenner
 - (d) magnetometer
28. Porosity is the major control of the resistivity of rocks, and that resistivity generally increases as porosity
- (a) increases
 - (b) decreases
 - (c) gain
 - (d) enlarge
29. A correction made to gravity anomaly for the attraction of the rock between the station and the datum elevation is called
- (a) Terrain correction
 - (b) Airborne correction
 - (c) Bouguer correction
 - (d) enlarge
30. The Interpretation of gravity anomalies an ambiguity arises because any given anomaly could be caused by an infinite number of
- (a) possible outcome
 - (b) possible sources
 - (c) correction
 - (d) none of the above
31. 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
32. Choose the correct order of Stages in the life of a mine
- (a) exploration, development, prospecting, exploitation and reclamation.
 - (b) prospecting, exploitation, exploration, development and reclamation.
 - (c) prospecting, exploration, development, exploitation and reclamation.
 - (d) exploration, exploitation, development, prospecting and reclamation.
33. There are different kinds of geological map, by convention, large-scale refers to maps with a
- (a) small scale ratio
 - (b) large scale ratio
 - (c) small area ratio
 - (d) large area ratio

34. 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
35. 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
36. The normal geothermal gradient is about _____ per 1km.
- (a) 10°C
 - (b) 20°C
 - (c) 30°C
 - (d) 40°C
37. If the ore body is more disseminated (e.g., porphyry copper deposits) the most economical option for suitable mining is
- (a) open pit mining
 - (b) underground mining
 - (c) strip mining
 - (d) none of the above
38. The valueless mineral particles within an ore deposit that must be discarded is called
- (a) Smelting
 - (b) Waste
 - (c) Ore
 - (d) Gangue
39. 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
40. Small rotary percussion drills using standard recovery of broken rock to the surface are usually known as
- (a) Rotary Air Blast (RAB)
 - (b) Reverse Circulation Drilling (RC)
 - (c) Post-Hole Digger
 - (d) Hand Auger
41. Electromagnetic surveys systems work best for ore bodies within _____ of the surface.
- (a) 700 - 1000 m
 - (b) 400 - 700 m
 - (c) 200 - 400 m
 - (d) 0 - 200 m
42. _____ is often mixed with water to drill through less competent rock and fault zones, this prevents loss of water pressure and lost core.
- (a) Kaolinite
 - (b) Bentonite
 - (c) Illite
 - (d) Chlorite
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. The identified or discovered mineral resources were categorised into
- (a) prospective and prognostic categories
 - (b) proved, probable and possible categories
 - (c) prospective, probable and possible categories
 - (d) prognostic, proved and probable categories

45. The generic geostatistical method of spatial interpolation is termed
(a) Kriging (b) Cholesky
(c) Markov (d) Gaussian
46. The most favorable conditions for the formation of coal occurred in the world during
(a) Silurian Period (b) Carboniferous Period.
(c) Permian Period (d) Tertiary Period
47. The carbon content of anthracite coal is
(a) 60% (b) 70%
(c) 80% (d) 90%
48. 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
49. The maceral which shows shiny, glass like material that is considered to be composed of cellular plant is
(a) vitrinite (b) liptinite
(c) inertinite (d) exinite
50. In India, the gradation of coking coal is based on
(a) calorific value (b) moisture content
(c) ash content (d) grade
51. _____ is recognized as fungal remains.
(a) Macrinite (b) Micrinite
(c) Huminite (d) Sclerotinite
52. In the petrographic analysis of coals, florescent light microscopy was used to identify and quantify
(a) vitrinic macerals (b) liptinic macerals
(c) huminitic macerals (d) exinitic macerals
53. Which state is the largest producer of Lignite Coal in India
(a) Tamil Nadu (b) Gujarat
(c) Rajasthan (d) West Bengal
54. Which state is the largest producer of Coal in India
(a) Odisha (b) Chhattisgarh
(c) Jharkhand (d) Madhya Pradesh
55. 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
56. What is intermediate product formed during diagenesis and is the principal source of hydrocarbon generation is
(a) organic matter (b) phosphatic
(c) bitumen (d) kerogen

57. The process in which hydrocarbons move along a porous and permeable layer to its final accumulation is called
- (a) primary migration (b) secondary migration
(c) oil phase migration (d) migration in solution
58. How many major sedimentary basins are there in India?
- (a) 22 (b) 24
(c) 26 (d) 28
59. An Instruments used for measuring beta particles is
- (a) scintillation counter (b) spectromet
(c) geiger counter (d) radon emanometer
60. Natural Gamma ray logging is used to distinguish between
- (a) shale and non shale (b) carbonate and non carbonate
(c) dolomite and limestone (d) gypsum and salt
61. In Rock Quality Designation (RQD) sound core having a minimum length of
- (a) 50mm (b) 750mm
(c) 100mm (d) 125mm
62. Engineering classification of rocks (UCS) medium strength is
- (a) 280-560 kg/sqcm (b) 560-1120 kg/sqcm
(c) 1120-2240 kg/sqcm (d) None of the above
63. A size of Fine aggregates is
- (a) less than 4.5 mm (b) 4.5 to 10.5 mm
(c) 10.5 to 16.5 mm (d) bigger than 16.5 mm
64. Opening in the dam near the base, provided to clear the silt accumulation in the reservoir is called
- (a) Spill way (b) Diversion tunnel
(c) Abutment (d) Sluice way
65. In Engineering Properties of Rock study Rock Mass Rating (RMR) is proposed by
- (a) Deere (b) Bieniawski
(c) Barton et al. (d) Hoek & Brown
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. An impermeable rock with static water held in poorly connected voids is called
- (a) aquifer (b) aquitard
(c) aquifuge (d) aquiclude
69. Tunnel boring machine is now increasingly used, though often uneconomic in tunnels less than
- (a) 0.5 km (b) 1 km
(c) 3 km (d) 5 km

70. Name two types of construction are employed to build cut and cover tunnels
(a) bottom-up and top-down (b) bottom-down and top-up
(c) side-first and bottom-next (d) bottom-first and side-next
71. Poor geological conditions of dam foundation can be improved in 2 ways-improving load bearing properties and
(a) gravity drainage (b) more diversion channel
(c) reduce water level (d) controlling seepage
72. The space between the highest level of water in the reservoir and the top of the dam.
(a) Dead Storage level (b) Free board
(c) Gallery (d) parapet wall
73. What is considered as intermediate earthquake focal depth
(a) 20 - 100 km (b) 50 - 200 km
(c) 70 - 300 km (d) 90 - 400 km
74. If the Factor of safety of a slope is greater than 2 means
(a) slope will fail (b) slope will suddenly fail
(c) slope is quite stable (d) slope is extremely stable
75. Which fault is considered as a plate boundary fault between India and Burma plates?
(a) Sagaing Fault (b) Churachandpur–Mao Fault
(c) Chittagong -Coastal Fault (d) Kabaw Fault

Directions (Questions No. 76 - 79) : Find the missing number from the given series:

76. 4, 8, 24, 96,?....., 2880
(a) 225 (b) 360
(c) 480 (d) 556
77. 0.5, 1.5,?....., 13.5, 40.5
(a) 2.5 (b) 4.5
(c) 8.5 (d) 12.5
78. 5, 9, 17, 29, 45,?.....
(a) 48 (b) 52
(c) 56 (d) 65
79. 2, 5, 9, 14,?....., 27
(a) 16 (b) 18
(c) 20 (d) 24

Directions (Questions No. 80 - 83) : Find the wrong term out of the given series:

80. 24, 27, 31, 33, 36, 39
(a) 24 (b) 31
(c) 33 (d) 39
81. 196, 169, 144, 121, 80
(a) 80 (b) 121
(c) 169 (d) 196

82. 3, 10, 27, 4, 16, 64, 5, 25, 125

- (a) 3 (b) 4
(c) 10 (d) 27

83. 89, 78, 86, 80, 85, 82, 83

- (a) 83 (b) 78
(c) 82 (d) 86

Directions (Questions No. 84 - 87) : Each sentence below has a blank, indicating that something has been omitted. Beneath the sentence there are four words. Chose the word that best fits the sentence as a whole.

84. He was so convinced that people were driven _____ motives that he could not believe that anyone could be unselfish.

- (a) selfless (b) altruistic
(c) intrinsic (d) ulterior

85. His theories were so _____ that few could see what he was trying to establish

- (a) nebulous (b) logical
(c) scholarly (d) erudite

86. After several _____ attempts to send the missile into space, the spacecraft was finally launched successfully

- (a) difficult (b) excellent
(c) abortive (d) experimental

87. His _____ remarks are often embarrassing because of their frankness

- (a) sadistic (b) ingenuous
(c) sarcastic (d) urbane

Directions (Questions No. 88 - 90) : Read the following passage carefully and choose the best answer to each of the questions out of the four alternatives:

Narcotics are drugs that increase relaxation and relieve pain and anxiety. Two of the most powerful narcotics, morphine and heroin, are derived from the poppy seed pod. Although morphine is used medically to control severe pain, heroin is illegal in the United States. This status has not prevented its widespread use. Heroin users usually inject the drug directly into their veins with a hypodermic needle. The immediate effect has been described as a “rush” of positive feeling, similar in some respects to a sexual orgasm—and just as difficult to describe. After the rush, a heroin user experiences a sense of well-being and peacefulness that lasts 3 to 5 hours. When the effects of the drug wear off, however, the user feels extreme anxiety and a desperate desire to repeat the experience. Moreover, larger amounts of heroin are needed each time to produce the same pleasurable effect. These last two properties are all the ingredients necessary for physiological and psychological dependence: The user is constantly either shooting up or attempting to obtain ever-increasing amounts of the drug. Eventually, the life of the addict revolves around heroin. Because of the powerful positive feelings the drug produces, heroin addiction is particularly difficult to cure. One treatment that has shown some success is the use of methadone. Methadone is a synthetic chemical that satisfies a heroin user’s physiological cravings for the drug without providing the “high” that accompanies heroin. When heroin users are placed on regular doses of methadone, they may be able to function relatively normally. The use of methadone has one substantial drawback, however: Although it removes the psychological dependence on heroin, it replaces the physiological dependence on heroin with a physiological dependence on methadone.

88. The antonym for “synthetic” is
 (a) real (b) fake
 (c) artificial (d) imitate
89. The synonym for “drawback” is
 (a) advantage (b) design
 (c) importance (d) snag
90. The following are true of the passage, except
 (a) morphine is a legal drug
 (b) methadone cures heroin dependence
 (c) Heroin is derived from a plant
 (d) the life of an addict revolves around the drug

Directions (Questions No. 91 - 95) : Given below are problem figures. Choose the best alternative among the answer figures:

91.

+	+ -	* + -	+ * - @	- + * @ o
@ - + / o	/ @ - o *	@ - + / o	@ - / o *	
(a)	(b)	(c)	(d)	

92.

* @ - +	- + * =	= * + /	+ / * o	* o / #
o \$ / #	/ # o \$	o \$ / #	/ # o \$	
(a)	(b)	(c)	(d)	

93.

qqqqqqq oo	ooo qqqqqqq	qqqqq oooo	ooooo qqqq	qqq oooooo
qq ooooooo	oooooo qq	qqq ooooooo	ooooooo qq	
(a)	(b)	(c)	(d)	

94.

A B 8	@ 8 \$	Q @)	= Q +	# + X
B + *	B # *	B X *	B * X	
(a)	(b)	(c)	(d)	

95.

+ * ↑	↓ + * ↑	* + ↑	↓ + * ↑	* + ↑
+ * ↑	↓ * + * ↑	* + * ↑	+ * ↑	* + * ↑
(a)	(b)	(c)	(d)	

Directions (Questions No. 96 - 100) : The following questions involve letter coding, number coding and mixed letter coding. Each letter in a word is replaced by certain other alphabet/number according to a specific rule. Choose the best answer to each of the questions:

96. ROMAN → QMONA :: ITALIAN → ?

- | | |
|-------------|-------------|
| (a) JUBMJBO | (b) HSZKHZM |
| (c) HATLIBM | (d) HATILNA |

97. SECOND → RDBNMC :: FINISH → ?

- | | |
|------------|------------|
| (a) EHNJRG | (b) EHOJSG |
| (c) EHMJTI | (d) EHMHRG |

98. BANDRA → 40 :: DUMDUM → ?

- | | |
|--------|--------|
| (a) 76 | (b) 40 |
| (c) 46 | (d) 60 |

99. CONSUMER → 365103459 :: PRODUCER → ?

- | | |
|-------------------|-------------------|
| (a) 1191223624229 | (b) 1618154213518 |
| (c) 18165910117 | (d) 79643359 |

100. SCIENCE → 193951435 :: SOCIAL → ?

- | | |
|---------------|---------------|
| (a) 191539112 | (b) 191639113 |
| (c) 191539120 | (d) 191431912 |