COMBINED TECHNICAL SERVICES EXAMINATION

(DIPLOMA/ITI LEVEL)

COMPUTER BASED TEST

DATE OF EXAM: 18.09.2025 FN

PAPER – II – CIVIL AND MINING ENGINEERING

(DIPLOMA STANDARD) (CODE: 574)

1. A cantilever AB of length 'l' is carrying a distributed load whose intensity varies uniformly from zero at the fixed end to 'w' per unit run at the free end. The deflection at free end is given as

(A) $\frac{wl^3}{48EI}$

(B) $\frac{wl^4}{30EI}$

(C) $\frac{6}{120}\frac{wl^4}{EI}$

(D) $\frac{11}{120}\cdot\frac{wl^4}{EI}$

(E) Answer not known

2. A cantilever of length 'l' is carrying a udl 'w' per unit run for a distance 'a' from fixed end. The slope at the free end is given as

(A) $wa^3/6EI$

(B) $wa^3/8EI$

(C) $wa^3/12EI$

(D) $wa^3/24EI$

(E) Answer not known

3. The slope and deflection at a section in a loaded beam can be found out by using strain energy concept is

(A) Macaulay's method

(B) Conjugate beam method

(C) Moment area method

(D) Castigliano's theorem

(E) Answer not known

4. Slope = area of BMD/EI, is the relation given by?

(A) Mohr's second theorem

(B) Mohr's first theorem

(C) Castigliano's theorem

(D) Macaulay's theorem

(E) Answer not known

5. In simply supported beams, the slope is ———— at supports?

(A) Maximum
(B) Minimum
(C) Uniform
(D) Zero
(E) Answer not known

6. Positive bending moment is known as

(A) Hogging
(B) Ragging
(C) Sagging
(D) Inflection
(E) Answer not known

7. What is the primary focus of strength of materials?

(A) Thermal properties
(B) Stress and strain analysis
(C) Material Composition
(D) Fluid Dynamics
(E) Answer not known

8. For a Cantilever beam of length 'L' subjected to a UDL $w\,KN/m$ over its entire length, what is the Bm at the fixed end?

(A) $\frac{WL^2}{2}$
(B) $\frac{WL}{4}$
(C) $\frac{WL}{2}$
(D) $\frac{WL^2}{4}$
(E) Answer not known

9. The beam bend with convexity upwards is called

(A) Hogging

(B) Sagging

(C) Point of Contraflexure

(D) Shearing

(E) Answer not known

10. The cantilever beam subjected the uniformly distribute load for entire span then the shape of B.M. is?

(A) Linear

(B) Parabolic

(C) Cubic

(D) Semi Circle

(E) Answer not known

11. The section modules for circular section is?

(A) $\frac{\pi r^2}{16}$

(B) $\frac{\pi d^2}{16}$

(C) $\frac{\pi r^3}{32}$

(D) $\frac{\pi d^3}{32}$

(E) Answer not known

12. The point of contraflexure occurs in

(A) Overhanging beams

(B) Cantilever beams

(C) Simply supported beam

(D) Cantilever beam with full udl

(E) Answer not known

13. Strain in a direction at right angles to the direction of applied force is known as

(A) Lateral strain
(B) Shear strain
(C) Volumetric strain
(D) Longitudinal strain
(E) Answer not known

14. The number of cycles that the material can withstand before failure is called

(A) Fatigue life
(B) Cyclic life
(C) Forging
(D) Inelastic
(E) Answer not known

15. The stress up to which the material behaves elastically is known as

(A) Compressive strain
(B) Modulus of elasticity
(C) Elastic limit
(D) Modulus of rigidity
(E) Answer not known

16. The resistance per unit area to deformation is known as

(A) Strain
(B) Stress
(C) Elasticity
(D) Rigidity
(E) Answer not known

17. State the equation of change in length, if the body deformed due to self weight?

(A) $\frac{wl^2}{3E}$

(B) $\frac{wl^2}{4E}$

(C) $\frac{wl^2}{2E}$

(D) $\frac{wl^3}{3E}$

(E) Answer not known

18. The relation between Young's modulus and modulus of rigidity 'C' is?

(A) $E = 3G(1+2\nu)$

(B) $E = 2G(1+\nu)$

(C) $E = 4G(1+\nu)$

(D) $E = 2G(1+2\nu)$

(E) Answer not known

19. Which test to be conducted to find stress - strain relation of any materials?

(A) Compression test

(B) Shear test

(C) Tension test

(D) Flexural test

(E) Answer not known

20. The ratio of Identical stress acting in three mutually perpendicular direction to corresponding volumetric strain is called?

(A) Modulus of Elasticity

(B) Modulus of Rigidity

(C) Bulk Modulus

(D) Poisson's Ratio

(E) Answer not known

21. In the pipe Appertenance the

"Valve that are located at the dead ends (or) at lowest points in the mains is

(A) Altitude valve

(B) Pressure relief valves

(C) Scour valves

(D) Reflux valves

(E) Answer not known

22. Which of the following is type of water distribution system?

(i) Radial system

(ii) Ring system

(A) Only (ii)

(B) Only (i)

(C) Both (i) and (ii)

(D) Neither (i) nor (ii)

(E) Answer not known

23. In which treatment of water is adopted to remove objectionable taste and odour is?

(A) Screening

(B) Aeration

(C) Filtration

(D) Chlorination

(E) Answer not known

24. While starting centrifugal pump, the delivery valve is kept

(A) Fully closed

(B) Fully open

(C) Half open

(D) In any position

(E) Answer not known

25. The co-efficient of discharge (Cd) of venturimeter lies within the limits

(A) 0.95 to 0.99
(B) 0.80 to 0.85
(C) 0.70 to 0.80
(D) 0.60 to 0.70
(E) Answer not known

26. The total energy line is always higher than the hydraulic gradient line, the vertical distance between the two representing

(A) The pressure head
(B) The Piezometric head
(C) The Velocity head
(D) The Datum head
(E) Answer not known

27. For the best trapezoidal section

(A) Depth of flow $\neq$ half the bed width
(B) Side slope is not equal to 45°
(C) The shape is of a half hexagon
(D) Hydraulic mean depth is minimum
(E) Answer not known

28. The equation of gradually varied flow is expressed by

S_b = Slope of the channel bed

S_e = Slope of the energy line

F_r = Froude's number

$\frac{dy}{dx}$ = Slope of free water surface

(A) $\frac{dy}{dx} = \frac{S_b - S_e}{1 - F_r^2}$

(B) $\frac{dy}{dx} = \frac{S_b - S_e}{1 + F_r^2}$

(C) $\frac{dy}{dx} = \frac{S_b - S_e}{1 + F_r^3}$

(D) $\frac{dy}{dx} = \frac{S_b - S_e}{1 - \sqrt{F_r}}$

(E) Answer not known

29. In a hydraulic jump the energy loss is expressed as

(A) $\frac{(y_2 - y_1)^2}{4y_1y_2}$

(B) $\frac{(y_2 - y_1)^3}{4y_1y_2}$

(C) $\frac{(y_2 - y_1)}{4y_1y_2}$

(D) $\frac{\sqrt{(y_2 - y_1)}}{4y_1y_2}$

(E) Answer not known

30. The kinetic energy correction factor is expressed by

A = Area of cross section

u = local velocity

$\overline{u}$ = Average velocity

dA = Elementary area

(A) $\frac{1}{A}\int_A \left(\frac{u}{\overline{u}}\right) dA$

(B) $\frac{1}{A}\int_A \left(\frac{u}{\overline{u}}\right)^2 dA$

(C) $\frac{1}{A}\int_A \left(\frac{u}{\overline{u}}\right)^3 dA$

(D) $\frac{1}{A}\int_A \left(\frac{\overline{u}}{u}\right)^3 dA$

(E) Answer not known

31. The maximum discharge for trapezoidal section is obtained, If sloping side of the channel is equal to?

(A) Half of the top width

(B) One top width

(C) One fourth top width

(D) Three fourth top width

(E) Answer not known

32. A velocity potential function exists only for

(A) Steady flow
(B) Uniform flow
(C) Irrotational flow
(D) Compressible flow
(E) Answer not known

33. In uniform flow, the velocities of fluid particles are

(A) Equal at all sections
(B) Always dependent on time
(C) Mutually perpendicular to each other
(D) The fluid particles move in well - defined paths
(E) Answer not known

34. There is no geometrical distinction between the stream line, path line and streak line in case of

(A) Steady flow
(B) Uniform flow
(C) Laminar flow
(D) Irrotational flow
(E) Answer not known

35. A metallic piece weights 80 N in air and 60 N in water. The relative density of the metal would be

(A) 8
(B) 6
(C) 4
(D) 3
(E) Answer not known

36. The depth of centre of pressure in a rectangular lamina immersed vertically in water upto height 'h' is given by

(A) $h/4$
(B) $2h/3$
(C) $3h/4$
(D) $h/2$
(E) Answer not known

37. The pressure at the bottom of water lake is 1.5 times that at half the depth. If the water barometer reads 10 m, the depth of lake is

(A) 10 m
(B) 15 m
(C) 20 m
(D) 25 m
(E) Answer not known

38. The liquid used in an inverted differential manometer should be of

(A) low density
(B) high density
(C) low surface tension
(D) high surface tension
(E) Answer not known

39. When fluids and drugs are administered directly into views via intravenous therapy, the flow is generally

(A) Laminar and Steady flow
(B) Turbulent and unsteady flow
(C) Uniform and turbulent flow
(D) Unsteady and turbulent flow
(E) Answer not known

40. Diameter of nozzle (d) for maximum transmission of power is equal to

D = Dia of pipe

f = Friction factor

l = length of pipe

(A) $\left[\frac{D^5}{4fL}\right]^{\frac{1}{4}}$

(B) $\left[\frac{D^5}{8fL}\right]^{\frac{1}{4}}$

(C) $\left[\frac{D^4}{8fL}\right]^{\frac{1}{4}}$

(D) $\left[\frac{D^3}{8fL}\right]^{\frac{1}{4}}$

(E) Answer not known

41. The Simpson's rule for determination of areas is used when the number of offsets are

(A) even

(B) 0

(C) odd

(D) infinity

(E) Answer not known

42. ———————— is one not used for computation of area based on direct field measurements.

(A) By dividing the area into a number of square

(B) By offsets to base line

(C) By co-ordinates

(D) By double meridian distance method

(E) Answer not known

43. In mid ordinate rule intervals of the ordinates to be

(A) equal
(B) inequal
(C) irregular
(D) increasing trend
(E) Answer not known

44. The shape of a vertical curve is

(A) Elliptical
(B) Circular
(C) Parabolic
(D) Hyperbolic
(E) Answer not known

45. In trapezoidal rule, boundaries between the ends of ordinates are assumed to be

(A) irregular
(B) curve
(C) straight
(D) parabola
(E) Answer not known

46. With notations carrying their usual meanings the cross sectional area of a trapezoidal embankment is given by

b = base width

s = side slope

(A) $(b + sh)\ h$
(B) $(b + h)\ h$
(C) bh
(D) $\frac{(b+sh)}{2} \times h$
(E) Answer not known

47. Let O_1, O_2, O_3 are the ordinates, 'd' be the common distance between the ordinates, then the formula for computing total area by Simpson's rule is given by

(A) $\frac{d}{5}(O_1 + 4O_2 + 2O_3 + 4O_4 + \cdots + O_n)$

(B) $\frac{d}{3}(O_1 + 4O_2 + 2O_3 + 4O_4 + \cdots + O_n)$

(C) $\frac{d}{2}(O_1 + O_n + 4\,(O_2 + O_4 + O_6 + \cdots) + 2(O_3 + O_5 + O_7 + \cdots))$

(D) $\frac{d}{3}(O_1 - O_n + 4\,(O_2 + O_4 + O_6 + \cdots) + 2(O_3 + O_5 + O_7 + \cdots))$

(E) Answer not known

48. The analytic lens provided in Tacheometer is a

(A) Convex lens
(B) Plano-concave
(C) Concave lens
(D) Biconcave lens
(E) Answer not known

49. Let, 'Q' be the top of a tower

'S' be the staff reading at B.M

'α' be the angle of elevation

'D' be the distance between the instrument station and point to be observed i.e.

'Q', then the RL of Q is equal to

(A) RL of BM + S + D tan α
(B) RL of BM – S – D tan α
(C) RL of BM – S – D cos α
(D) RL of BM + S + D cot α
(E) Answer not known

50. The process of turning the telescope over the horizontal axis through 180° in a vertical plane is known as

(A) centering
(B) levelling
(C) transiting
(D) contouring
(E) Answer not known

51. The principle of tachometry is based on the property of

(A) Isosceles triangles
(B) Right angles
(C) Parallel lines
(D) Isosceles trapezium
(E) Answer not known

52. When the base of the object is accessible, if the RL of 'P' is known RL of Q is equal to ————.

Let Assume

P = Instrument station

Q = Point to be observed

h′ = height of the instrument of at 'P'

D = horizontal distance between 'P' and 'Q'

α = Angle of elevation

(A) R.L. of P+h′+D tan α
(B) R.L. of P–h′+D tan α
(C) R.L. of P+h′+D sin α
(D) R.L. of P +h′+D cos α
(E) Answer not known

53. Assume, A be the instrument station B be the staff station when the readings of the upper and lower stadia are 3.255 and 1.365 respectively, then the horizontal distance between AB is

(A) 198 m
(B) 189 m
(C) 169 m
(D) 196 m
(E) Answer not known

54. True bearing of a survey line with respect to east declination is equal to

(A) magnetic bearing – magnetic declination
(B) magnetic bearing × magnetic declination
(C) magnetic bearing + magnetic declination
(D) magnetic bearing ÷ magnetic declination
(E) Answer not known

55. ———————— is not requires for chain surveying.

(A) Dumpy Level
(B) Arrows
(C) Pegs
(D) 30 m chain
(E) Answer not known

56. Conversion of quadrantel Bearing S 30° 14′E to whole circle bearing is

(A) 30° 14′
(B) 149° 46′
(C) 341° 40°
(D) 170° 52′
(E) Answer not known

57. A triangle is said to be well conditioned when its angles should lie between

(A) 20° and 150°
(B) 30° and 120°
(C) 15° and 130°
(D) 10° and 100°
(E) Answer not known

58. When the lower values are inside the contour loop, It indicates

(A) a hill in a terrain
(B) a depression or sink in Terrain
(C) a uniform slope in Terrain
(D) a cliff in Terrain
(E) Answer not known

59. Let, n being the number of sides of the traverse, the sum of interior angles of a closed traverse is

(A) $(2n+4)\times 90^\circ$
(B) $(2n-4)\times 90^\circ$
(C) $(2n-4)\div 90^\circ$
(D) $(2n+4)\div 90^\circ$
(E) Answer not known

60. The map which shows the boundaries of fields, houses and other properties is called ————.

(A) Topographical map
(B) Geological map
(C) Cadastral map
(D) Contour map
(E) Answer not known

61. Which Technique is not used in remote sensing image interpretation

(A) spectral analysis
(B) spatial analysis
(C) geographical analysis
(D) temporal analyse
(E) Answer not known

62. Which of the following SSOs can best represent hills in GIS?

(A) Polygon
(B) Poirus
(C) Strings
(D) Surface elements
(E) Answer not known

63. The point trust vertically below the observer's position, in celestial sphere is called

(A) Nadir
(B) Celestial point
(C) Zenith
(D) Pole
(E) Answer not known

64. The terrestrial Photogrammetry can be divided into how many branches?

(A) Two
(B) Five
(C) Six
(D) Three
(E) Answer not known

65. Displacement due to successive exposures can be given as

(A) Exposure
(B) Parallax
(C) Visual Parallax
(D) Multiple exposure
(E) Answer not known

66. The tilt in an aerial photograph is radial from

(A) Plumb point
(B) Principal point
(C) Nadir point
(D) Isocentric point
(E) Answer not known

67. The visible portion of violet spectrum can perceived by Goman beings

(A) 0.4 – 0.446 μm
(B) 0.5 – 0.65 μm
(C) 0.3 – 0.46 μm
(D) 0.5 – 0.62 μm
(E) Answer not known

68. Wein's displacement law can be mathematically stated as

I_{max} = wavelength of maximum emission

T = absolute temperature

(A) $I_{max} \times T = 3000$
(B) $I_{max}/T = 3000$
(C) $I_{max}/T = 2000$
(D) $I_{max}/T = 2500$
(E) Answer not known

69. Reflectance is defined as

(A) incident flux/reflected flux
(B) incidence/reflection
(C) reflected flux/incident flux
(D) conductance flux/modern flux
(E) Answer not known

70. In total station, data is stored in ————?

(A) Data card
(B) Pen drive
(C) Micro processor
(D) External hardware
(E) Answer not known

71. The data obtained from total station can be used in which among the following software direction

(A) Primavera
(B) STAADPRO
(C) Auto desk Revert
(D) Surfer
(E) Answer not known

72. GPS capability of determining

(A) Discharge and time
(B) Velocity and discharge
(C) Velocity and time
(D) Various scientific applications
(E) Answer not known

73. GPS satellites for initial operation capability was achieved in

(A) 1991
(B) 1992
(C) 1993
(D) 1994
(E) Answer not known

74. The power of radio signal transmission from the satellite is as low as

(A) 60 W
(B) 50 W
(C) 40 W
(D) 45 W
(E) Answer not known

75. The unit of measurements of sounding in hydrographic survey is ?

(A) m/Sec
(B) cm^2/Sec
(C) km/Sec
(D) fathoms
(E) Answer not known

76. The satellites constellation of GPS is?

(A) 6 satellites
(B) 12 satellites
(C) 18 satellites
(D) 24 satellites
(E) Answer not known

77. The number of segments is comprised in Global Positions System (GPS)?

(A) Two
(B) Three
(C) Five
(D) Six
(E) Answer not known

78. In case of Homogenous area of sand (or) grass is more difficult using this type of survey

(A) Plane-table Photogrammetry
(B) Terrestrial Stereophotogrammetry
(C) Vertical Photograph
(D) Oblique Photograph
(E) Answer not known

79. In a cartographic survey quality output checked using

(A) GIS
(B) GPS
(C) Total station
(D) Theodolite
(E) Answer not known

80. What is the basic output of GIS (or) spatial data analysis system?

(A) Software
(B) Locations
(C) Maps
(D) Numbers
(E) Answer not known

81. The composition of Gun powder is

_____ % charcoal

_____ % sulphur

_____ % potassium nitrate

(A) 10, 15, 75
(B) 15, 10, 75
(C) 15, 15, 70
(D) 10, 20, 70
(E) Answer not known

82. In the piling system of shaft sinking the loose deposits of sand, mud or alluvium, could be present to a dept of _____ meters.

(A) 40
(B) 60
(C) 50
(D) 20
(E) Answer not known

83. In shaft sinking, when water percolates from the strata, the system used to drain the water is called

(A) Water curb
(B) Water Garland
(C) Water Garland curb
(D) Curb
(E) Answer not known

84. In bore hole survey, in the Etch method using hydrofluoric acid, the concentration of it must be in the range between _____ %.

(A) 8 - 10
(B) 5 - 8
(C) 1 - 5
(D) 5 - 10
(E) Answer not known

85. In a rotary drilling system, the rock is broken by applying.

(A) Shearing force
(B) Compression
(C) Tension
(D) Torsion
(E) Answer not known

86. The velocity of detonation for commercial explosives varies between _____ meters/second.

(A) 240 - 6925
(B) 1450 - 6925
(C) 2450 - 7925
(D) 1450 - 7925
(E) Answer not known

87. The drilling rate is directly proportional to rate of application of

(A) Energy
(B) Power
(C) Work
(D) Momentum
(E) Answer not known

88. Uranium can be identified using.

(A) Atomic absorption
(B) Fluorimetry
(C) Colorimetry
(D) Fire assaying
(E) Answer not known

89. The method that remains the keystone of both prospecting and exploration is

(A) Geologic prospecting
(B) Reconnaissance
(C) Magnetic prospecting
(D) Ore prospecting
(E) Answer not known

90. In in-seam-seismic surveys faults that disrupt the coal seam can be detected within _____ meters.

(A) 300 - 400
(B) 100 - 200
(C) 150 - 250
(D) 200 - 300
(E) Answer not known

91. In planning of a drilling site for coal exploration, A _____ scale map is necessary.

(A) 1 : 50,000
(B) 1 : 10,000
(C) 1 : 2,000
(D) 1 : 5,000
(E) Answer not known

92. Liquid mercury is found in

(A) Sphalerite
(B) Galena
(C) Sphalerite/Galena
(D) Haematite
(E) Answer not known

93. The closing error in a compass traverse should not exceed

(A) 1 in 400
(B) 1 in 300
(C) 1 in 200
(D) 1 in 500
(E) Answer not known

94. Which of the following is a naturally occurring form of platinum?

(A) Argentite
(B) Arsenide-sperry lite
(C) Stepnanite
(D) Hessite
(E) Answer not known

95. A bed drops 100 meters vertically for a horizontal distance of 160 meters. The dip of the bed is _____ degrees.

(A) 32
(B) 23
(C) 58
(D) 85
(E) Answer not known

96. The block, that is generally long compared to its width which is raised relative to the blocks on either side is called

(A) Breccia
(B) Horst
(C) Graben
(D) Horst/Graben
(E) Answer not known

97. In a fault, the vertical component of the dip seperation is called

(A) Net slip
(B) Slip
(C) Throw
(D) Heave
(E) Answer not known

98. The surface connecting all hinges in a fold is called

(A) Hinge axis
(B) Vertical plane
(C) Horizontal plane
(D) Axial plane
(E) Answer not known

99. A Pycnometer can be used when the mineral is in the form of

(A) Crystals
(B) Small grains
(C) Large grains
(D) Irregular in shape
(E) Answer not known

100. In a monoclinic system, it includes all forms with 3 unequal axes, where one of the axial inclinations is

(A) Horizontal
(B) Vertical
(C) Oblique
(D) Diagonal
(E) Answer not known

101. Resource levelling using primavera software which one of the following data is not required to enter.

(A) Eight digit code
(B) Unit of measurement
(C) Habit of the worker
(D) The description of the resource
(E) Answer not known

102. In a large (or) complex project, it may be necessary to develop a high level "WBS" - Abbreviation is

(A) Work between structure
(B) Work breakdown symbol
(C) World breakdown structure
(D) Work breakdown structure
(E) Answer not known

103. The axis which is not accessible for 2D drafting is

(A) X axis
(B) Y axis
(C) Z axis
(D) WCS
(E) Answer not known

104. The document were prepared and aligned by using _____ tab?

(A) Layout
(B) Insert
(C) Draw
(D) Design
(E) Answer not known

105. The application is use to prepare scheduling of project is

(A) MS word
(B) MS excel
(C) MS access
(D) MS project
(E) Answer not known

106. Abbreviation of GUI

(A) Grammar User Interface
(B) Graphical User Interface
(C) Geographical User Interface
(D) Geometry User Interface
(E) Answer not known

107. The term "Disaster" refers to by meaning

(A) Bad luck
(B) Sorrow
(C) Bad star
(D) Sad time
(E) Answer not known

108. The two types of loyalty in ethics in engineering is

(A) Good and bad
(B) Public and personal
(C) Legal and right
(D) Agency and attitude
(E) Answer not known

109. Completion of an activity on CPM network diagram, is generally known

(A) Event
(B) Node
(C) Connector
(D) All of the above
(E) Answer not known

110. Moral is concerned with the principles of

(A) Wrong behavior
(B) Right and wrong behavior
(C) Right Behavior
(D) None of the above
(E) Answer not known

111. What is the focal depth from the earth surface, the shallow earthquake occurs?

(A) < 5 kms
(B) > 10 kms
(C) < 60 kms
(D) > 20 kms
(E) Answer not known

112. Because of the occurance of disaster, what is the percentage loss to notational GDP of Indian economy.

(A) 10% to 20%
(B) 5% to 15%
(C) 2% to 20%
(D) 4.5% to 10%
(E) Answer not known

113. Which place faced, the first atom bomb attack (man made disaster)?

(A) Nagasaki
(B) Hiroshima
(C) Newyork
(D) Alaska
(E) Answer not known

114.

(1)	Fall of person from height	:	48%
(2)	Fall of objects from height	:	11%
(3)	Collapse of excavation /structures	:	8%
(4)	Vehicles	:	14%
(5)	Electrocution	:	6%
(6)	Pressed under loads	:	6%
(7)	Others	:	7%

(A) (1), (2), (3), (4) is correct
(B) (1), (2), (3), (4), (5) is correct
(C) (1), (2), (3), (4), (5), (6) is correct
(D) (1), (2), (3), (4), (5), (6), (7) is correct
(E) Answer not known

115. A research organization with the mission of improving the competitiveness of the construction industry is

(A) ASCE (American Society of Civil Engineers)
(B) ASME (American Society of Mechanical Engineers)
(C) AGC (Associated General Contractors of America)
(D) CII (Construction Industry Institute)
(E) Answer not known

116. Fire protection is most effective, when it involves

(A) Fire fighting personnel and fire extinguisher

(B) Fire fighting personnel, combustible materials and fire alarms

(C) Fire fighting equipment and sprinkler system

(D) Fire fighting personnel, combustible materials control, fire fighting equipment, Fire extinguisher and other safety measures

(E) Answer not known

117. Match the following

(a)	CPM	1.	Event oriented
(b)	PERT	2.	Activity oriented
(c)	Gantt milestone charts	3.	Activity with reference to time
(d)	BAR chart	4.	Specific events with reference to time

	(a)	(b)	(c)	(d)
(A)	2	1	4	3
(B)	4	3	2	1
(C)	2	1	3	4
(D)	2	3	4	1

(E) Answer not known

118. Which one of the following is not mentioned in the tender notice?

(A) Name of the work

(B) Earnest money deposit

(C) Time limit for completion

(D) Name of the contractor

(E) Answer not known

119. What is the primary goal of project management?

(A) To satisfy all stake holders

(B) To maximize profit

(C) The complete the project on time and with in budget

(D) The ensure the project is the most innovative

(E) Answer not known

120. The performance of a specific task in CPM, is known as

(A) Activity

(B) Event

(C) Dummy

(D) Contract

(E) Answer not known

121. Snake hole are

(A) Vertical drill hole

(B) More or less horizontal drilled hole at the foot of high fench

(C) Inclined drill hole

(D) Vertical drill hole with lateral opening

(E) Answer not known

122. The process which involves reacting the ore with liquid solvent that will dissolve the mineral at low or moderate temperature and pressure is called,

(A) Pyro metallurgical

(B) Hydro metallurgical

(C) Bio leaching

(D) Heap leaching

(E) Answer not known

123. The stowing pipes in pneumatics stowing made of

(A) High carbon steel
(B) Mild steel
(C) Steel
(D) Nickel
(E) Answer not known

124. Mining Sirdar shall check the presence of loose stone, material or trees within _____m of the edge in open cast.

(A) 2
(B) 3
(C) 2.5
(D) 3.5
(E) Answer not known

125. A proximity warning device is to be filled as an additional feature in a _____?

(A) Water tank
(B) Dumper
(C) Wagon drill
(D) Excavator
(E) Answer not known

126. Overall slope of spoil tank shall not exceed

(A) 1.5 vertical to 2.5 horizontal
(B) 1 vertical to 1.5 horizontal
(C) 1.5 vertical to 1 horizontal
(D) 1 vertical to 1 horizontal
(E) Answer not known

127. In SMP, removing hazard or hazardous work from a mine is known as _____.

(A) Elimination
(B) Controlling
(C) Isolation
(D) Substitution
(E) Answer not known

128. Stripping ratio of mechanized open cast working in India with dragline is

(A) 1 in 5
(B) 1 in 7
(C) 1 in 8
(D) 1 in 10
(E) Answer not known

129. High explosive-contain

(A) Nitroglycerine
(B) Sodium Nitrate
(C) Ammonium Nitrate
(D) Charcoal Sulphur
(E) Answer not known

130. Without derrick holes can be drilled depth of

(A) 15 m
(B) 25 m
(C) 10 m
(D) 50 m
(E) Answer not known

131. The depression of ground surface and the structure is called,

(A) Subsidence
(B) Pressure arch
(C) Bed separation
(D) Roof bending
(E) Answer not known

132. VOD of Detonating fuse is,

(A) 2000 m/s
(B) 3200 m/s
(C) 6000 m/s
(D) 6500 m/s
(E) Answer not known

133. The turning speed of safety fuse

(A) 100-120 mm/s
(B) 100-120 s/mm
(C) 100-120 mm/min
(D) 100-120 min/mm
(E) Answer not known

134. The sensitiser in Emulsion explosive is,

(A) AN
(B) TNT
(C) Starch
(D) Microspheres
(E) Answer not known

135. In freezing method of shaft sinking which is used for circulation?

(A) HCl
(B) HNO_3
(C) $CaCl_2$
(D) NaCl
(E) Answer not known

136. Bentonite chemical is used for?

(A) Sealing cracks
(B) Preparing mud flush
(C) Surveying fore hole deviation
(D) Blasting
(E) Answer not known

137. Manual drilling is possible upto max depth of?

(A) 15 m
(B) 30 m
(C) 45 m
(D) 60 m
(E) Answer not known

138. What is the purpose of lining in the borehole?

(A) Prevent caving of sides
(B) Prevent water percolation
(C) Easy to drilling
(D) Easy to feast
(E) Answer not known

139. In percussive drilling the rock is broken by following action?

(A) Crushing
(B) Chipping
(C) Grinding
(D) Rotation
(E) Answer not known

140. Sandwich conveyor is a type of

(A) High angle conveyor
(B) Cable belt conveyor
(C) Mean conveyor
(D) Stacker conveyor
(E) Answer not known

141. As per environment protection act 1986, the power to delegate is as per rule

(A) 21
(B) 22
(C) 23
(D) 19
(E) Answer not known

142. As per granite conservation and development rules, notice of opening of quarry is in form

(A) A
(B) D
(C) B
(D) C
(E) Answer not known

143. The application form for getting the clearance for projects (for environment impact assessment, 1994) is in schedule

(A) 4
(B) 1
(C) 2
(D) 3
(E) Answer not known

144. As per the notification on environmental impact assessment, the clearance shall be granted for a period of _____ years from the commencement/operation of the project.

(A) 2
(B) 3
(C) 5
(D) 1
(E) Answer not known

145. The environmental impact assessment notification shall be applicable for small scale industrial sector with investment less than _____ crore/crores.

(A) 3
(B) 2
(C) 1
(D) 4
(E) Answer not known

146. As per forest conservation act 1980 the penalty for contravention of the provisions of the act is as per rule

(A) 3A
(B) 3B
(C) 4
(D) 5
(E) Answer not known

147. As per forest conservation act 1980 offences by authorities and government departments are as per rule

(A) 3A
(B) 3B
(C) 2
(D) 4
(E) Answer not known

148. As per environment protection act, the power to take sample and the procedure to be followed is as per rule

(A) 11
(B) 10
(C) 12
(D) 9
(E) Answer not known

149. As per environment protection act the rules to regulate environmental pollution is under rule

(A) 5
(B) 4
(C) 6
(D) 7
(E) Answer not known

150. As per environment protection act 1986, an environment pollutant cannot be _____ present in such concentration as may be injurious to the environment.

(A) Solid substance
(B) Liquid substance
(C) Gaseous substance
(D) Rock
(E) Answer not known

151. As per the TamilNadu minor minerals concession rules 1959, after what date is the sale of coloured or multi coloured granites to be regulated by the State Government.

(A) 10th June 1992
(B) 10th June 1993
(C) 10th July 1992
(D) 10th August 1991
(E) Answer not known

152. As per the Tamil Nadu minor mineral concession rules 1959, before executing the lease deed, the amount to be deposited as security would be rupees

(A) 2000
(B) 1000
(C) 3000
(D) 5000
(E) Answer not known

153. As per the Tamil Nadu minor minerals concession rules 1959, the period of lease granted for quarrying stone shall be for a maximum period of _____ years.

(A) 5
(B) 10
(C) 2
(D) 3
(E) Answer not known

154. As per Granite Conservation and Development Rules 1999, a record of all Boreholes shall be maintained in

(A) Form-G
(B) Form-F
(C) Form-I
(D) Form-H
(E) Answer not known

155. As per Granite Conservation and Development Rules 1999, the State Government shall forward Form-F and Form-G, to the controller general, Indian Bureau of Mines within _____ days, from the date of such receipt.

(A) 60
(B) 10
(C) 30
(D) 15
(E) Answer not known

156. As per Granite Conservation and Development Rules 1999, every holder of a prospecting licence for granite shall submit. A prospecting scheme within a period of _____ days from the issue of licence.

(A) 60
(B) 120
(C) 30
(D) 90
(E) Answer not known

157. As per Granite Conservation and Development Rules 1999, the maximum period for which a lease can be granted shall not exceed _____ years.

(A) 20
(B) 30
(C) 10
(D) 40
(E) Answer not known

158. As per Reg.177 of MMR 1961, every fence erected on the surface shall once atleast in every week be

(A) Manager
(B) Assistant Manager
(C) Foreman
(D) Competent Person
(E) Answer not known

159. Diesel locomotives are not allowed where CH_4 percentage exceeds _____ in general body of air.

(A) 0.5 %
(B) 1.25 %
(C) 1 %
(D) 0.75 %
(E) Answer not known

160. Air borne dust survey shall be done

(A) Atleast in a quarter
(B) Atleast in a year
(C) Atleast in a month
(D) Atleast in six month
(E) Answer not known

161. Latrine shall be cemented upto the height of

(A) 0.75 m
(B) 1.25 m
(C) 1.5 m
(D) 0.5 m
(E) Answer not known

162. The scale of latrine accommodation shall be atleast one seat for every _____ males or female employed in every mine.

(A) 25
(B) 50
(C) 100
(D) 150
(E) Answer not known

163. The number of members are nominated in the safety committee is?

(A) 5
(B) 10
(C) 13
(D) 15
(E) Answer not known

164. The workmen inspector shall be employed if number of person employed exceeds?

(A) 500
(B) 1500
(C) 1000
(D) 100
(E) Answer not known

165. Every year _____ of the person employed at the mine undergo the medical examination every year.

(A) $1/2$
(B) $1/3$ rd
(C) $1/4$ th
(D) $1/5$ th
(E) Answer not known

166. Reportable injury in terms of mining many injury due to which a person has been absent for?

(A) more than 12-24 hours
(B) more than 72 hours
(C) more than 24-72 hours
(D) more than 24-48 hours
(E) Answer not known

167. Which is the following is not included in the report of the shotfirer for open cast working?

(A) Crimper
(B) Detonator
(C) Safety fuse
(D) Explosive
(E) Answer not known

168. Fencing along footpath and benches where required is attended by

(A) Shotfirer
(B) Overman
(C) Manager
(D) Sirdar
(E) Answer not known

169. Maximum speed of the dumper shall be restricted to _____ km/h?

(A) 25
(B) 20
(C) 40
(D) 30
(E) Answer not known

170. Which regulation outline the duties and responsibilities of Sirdar as per CMR 2017?

(A) 50
(B) 47
(C) 49
(D) 48
(E) Answer not known

171. GIS stands for

(A) Global Information System

(B) Geological Information System

(C) Geographical Information System

(D) Group Information System

(E) Answer not known

172. The effect of refraction in levelling is an error which is

(A) Additive

(B) Subtractive

(C) Multiplicative

(D) Divisive

(E) Answer not known

173. The magnetic bearing of a line AB is S 32° E and the magnetic declination is 4° E. The true bearing of the line AB is

(A) 126°

(B) 152°

(C) 36°

(D) 28°

(E) Answer not known

174. The fore bearing of a line AB is N 36° W. What will be the back bearing of the line AB?

(A) N 36° W

(B) S 36° E

(C) N 54° W

(D) S 54° E

(E) Answer not known

175. If in the length of one 100 m chain along a slope the ground rises 5 m, find the correction factor of 1 chain length.

(A) 0.125
(B) 0.325
(C) 0.250
(D) 0.050
(E) Answer not known

176. The length of a line measured with 20 m chain was found to be 536 m. It was afterwards found that the chain was 0.05 too short. What will be the true length of the line?

(A) 568.1
(B) 534.7
(C) 523.5
(D) 512.3
(E) Answer not known

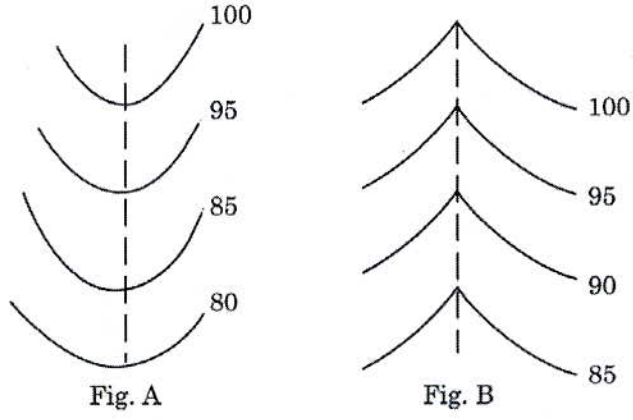
177. Match the devices with their intended applications.

(P) Ground penetrating Radar	1. Spatial positioning of a point
(Q) Tactile sensor	2. Measurement of borehole deviation
(R) GNSS	3. Robotic arm
(S) Digital Inclinometer	4. Locating subsurface features

	(P)	(Q)	(R)	(S)
(A)	1	2	3	4
(B)	4	3	1	2
(C)	3	4	2	1
(D)	4	3	2	1

(E) Answer not known

178. In fig A and B represent contour plots in a terrain, then correct the statement is



(A) Fig A shows ridge and Fig B shown valley

(B) Fig A shows Anticline and Fig B shown Syncline

(C) Fig A shows Syncline and Fig B shown Anticline

(D) Fig A shows Valley and Fig B shows Ridge.

(E) Answer not known

179. Minerals A and B are produced from a depict minerals A and B will be called co-products if

(A) Economics of mining depends upon the extraction of either A or B

(B) Economics of mining depends upon the extraction of both mineral A and B

(C) Mineral B is produced economically and mineral A is an additional benefit

(D) Minerals A and B are produced in equal quantity

(E) Answer not known

180. The three segments, whose synchronous functioning is essential for GPS operations, are

(A) Space, control and user
(B) Signal, control and user
(C) Space, control and geo-registration
(D) Signal, control and geo-registration
(E) Answer not known

181. The bearing of a line that is measured with magnetic north (or south) in a clockwise direction is termed as?

(A) Reduced Bearing
(B) True Bearing
(C) Whole circle bearing
(D) Fore bearing
(E) Answer not known

182. In an old map; a line AB was drawn to a magnetic bearing of 5° 30'; the magnetic declination at the time being 1° East. To what magnetic bearing should the line be set now if the present magnetic declination is 8° 30′ East.

(A) 358° 00′
(B) 158° 00′
(C) 258° 00′
(D) 58° 00′
(E) Answer not known

183. The following are observed Fore-bearings of the lines.

(i) AB 12° 24′

(ii) BC 119° 48′

(iii) CD 266° 30′

(iv) DE 354° 18′

Find their back bearings

Choose the correct set of answers :

(A) (i) 192° 24′ (ii) 299° 48′ (iii) 86° 30′ (iv) 174° 18′

(B) (i) 12°24′ (ii) 12°24′ (iii) 12° 24′ (iv) 12° 24′

(C) (i) 82° 24′ (ii) 72°24′ (iii) 82° 24′ (iv) 72° 24′

(D) (i) 102° 24′ (ii) 12° 24′ (iii) 62°24′ (iv) 82° 24′

(E) Answer not known

184. The EDM (Electronic Distance Measurement) method is based on

(A) Manual chaining and taping techniques

(B) Theodolite readings and angular measurements

(C) Generation, propagation, reflection and reception of electromagnetic waves

(D) Photographic triangulation methods

(E) Answer not known

185. A 20 m chain was found to be 10 cm too long after chaining a distance of 1500 m. It was found to be 18 cm too long at the end of day's work after chaining a total distance of 2900 m. Find the true distance if the chain was correct before the commencement of the work?

(A) 2913.55 m
(B) 2915.55 m
(C) 2919.55 m
(D) 2920.55 m
(E) Answer not known

186. A mine needs to transport 10,000 tonnes of ore per shift. Each truck carries 20 tonnes per trip and the cycle time per truck is 25 minutes. If the shift duration is 10 hours, how many trucks are required?

(A) 10 trucks
(B) 15 trucks
(C) 19 trucks
(D) 21 trucks
(E) Answer not known

187. A haul truck fleet consists of 8 trucks, each carrying 25 tonnes of ore per trip. The average cycle time per truck is 40 minutes. If the mine operates for 12 hours per shift, how much ore is transported per shift?

(A) 2400 tonnes
(B) 3600 tonnes
(C) 4500 tonnes
(D) 6000 tonnes
(E) Answer not known

188. A mine operates a fleet of 6 trucks, each carrying 20 tonnes of ore per trip the average cycle time per truck is 30 minutes. If the mine operates for 10 hours per shift, how much ore is transported per shift?

(A) 1200 tonnes
(B) 1800 tonnes
(C) 2400 tonnes
(D) 3600 tonnes
(E) Answer not known

189. A group of 6 miners can extract 180 tons of ore in 10 days. How many days will 10 miners take to extract 300 tons of ore, assuming the same efficiency?

(A) 10 days
(B) 12 days
(C) 9 days
(D) 8 days
(E) Answer not known

190. A shovel operates 300 days in a year, 2 shifts in a day and 4 hours in a shift to achieve the target production of 30 Million tonne per Annum. The following parameters relate to the loading operations:

Bucket capacity of shovel : 15 m^3, shovel cycle time : 44s Bucket fill factor : 0.85 Bulk density of the muck = 3.00 tonne/m^3. The minimum number of shovels required to achieve the production is

(A) 10
(B) 8
(C) 6
(D) 4
(E) Answer not known

191. In a direct rope haulage operating along a 1500 m long inclines, 180 tonne of coal is hauled in 7 hours. The average rope speed is 7.5 km/h the set changing time for the tubs is 2 minutes each at the top and bottom of the incline. If the tub capacity is 1.0 tonne, the number of tubs in the set is

(A) 20
(B) 14
(C) 12
(D) 10
(E) Answer not known

192. A 10 m thick coal block is excavated by a contractor at a cost of Rs. 40 per m^3. The excavated area, measured in the mine plan, is found to be 50 cm^2. If the mine plan has been drawn to a scale of 1 : 1000, the payment to be made to the contractor, in Lakhs of Rs. is

(A) 10
(B) 15
(C) 20
(D) 25
(E) Answer not known

193. The following data are provided for a surface mine to be excavated by a shovel.

Production target	:	10000 te/shift
Available hours per shift	:	6 hrs
Shovel loading cycles per hour	:	106
Bank density of the material mined	:	2400 kg/m^3
Swing factor at 120° swing	:	0.91
Bucket fill factor	:	0.64
Utilization of available time	:	83%
No of working days in a year	:	300
No of shifts per day	:	3

The Annual production target is M te is

(A) 5.76 (B) 7.00

(C) 8.19 (D) 9.00

(E) Answer not known

194. A Jumbo drill operates at 20 mtr/hr. If it works for two 6 hours shifts at 85% efficiency how much drilling will it complete?

(A) 240 m (B) 204 m

(C) 220 m (D) 216 m

(E) Answer not known

195. If the blast hole depth is 9 mtr. and the sub drill in 1 meter what is the planned bench height?

(A) 8 mtr (B) 9 mtr

(C) 10 mtr (D) 7 mtr

(E) Answer not known

196. A truck carries 100 tonnes per trip and completes a cycle in 20 minutes, How much material can one truck move in a 8 hour shift.

(A) 2,400 t
(B) 1,800 t
(C) 2,000 t
(D) 2,800 t
(E) Answer not known

197. If a conveyer belt moves material at 1200 t/hour how much material will it transport in a 12 hours/shift

(A) 10,000 t
(B) 12,000 t
(C) 14,400 t
(D) 16,800 t
(E) Answer not known

198. A mine operates 3 shift per day, each lashing 8 hrs. If the production rate is 1500 t/shift, what is the daily production?

(A) 1,500 t
(B) 3,000 t
(C) 4,500 t
(D) 6,000 t
(E) Answer not known

199. If a shovel has a bucket capacity of 10 m^3 and the fill factor in 90%. how much material can be loaded in one scarp.

(A) 8 m^3
(B) 9 m^3
(C) 10 m^3
(D) 11 m^3
(E) Answer not known

200. Which of the following in not a common source of funding for mining projects?

(A) Government grants

(B) Initial Public Offering (IPO)

(C) Bank loans

(D) Crowdfunding on social media

(E) Answer not known