D-C E T – 2018

	COURSE	VERSION CODE	QUESTION BOOKLET SERIAL NUMBER
MN	**MINING**	**A**	**201521**

MAXIMUM MARKS	TOTAL DURATION	TIME
180	200 Minutes	10.00 a.m. to 1.00 p.m.

MAXIMUM TIME FOR ANSWERING	MENTION YOUR DIPLOMA CET NUMBER				
180 Minutes					

DOs :

1. Candidate must verify that the DCET number and Name printed on the OMR Answer Sheet is tallying with the DCET number and Name printed on the Admission Ticket. Discrepancy if any, report to invigilator.
2. This question booklet is issued to you by the invigilator after the **2nd bell i.e., after 9.50 a.m.**
3. The Version Code of this Question Booklet should be entered on the OMR Answer Sheet and the respective circle should also be shaded completely.
4. The Version Code and Serial Number of this question booklet should be entered on the Nominal Roll without any mistakes.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 10.00 a.m., till then;**
   - Do not remove the seal present on the right hand side of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 180 (items) questions and each question will have one statement and four answers. (Four different options / responses.)
2. After the **3rd Bell is rung at 10.00 a.m.**, remove the paper seal of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 180 minutes:
   - Read each question (item) carefully.
   - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **only one response** for each item.
   - Completely **darken / shade** the relevant circle with a **blue or black ink ballpoint pen against the question number on the OMR answer sheet.**

ಸರಿಯಾದ ಕ್ರಮ CORRECT METHOD	ತಪ್ಪು ಕ್ರಮಗಳು WRONG METHODS
① ● ③ ④	⊗ ② ③ ④ ① ② ③ ✓ ① ● ● ④
	● ② ③ ④ ① ■ ③ ④

4. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
5. After the **last bell is rung at 1.00 p.m.**, stop marking on the OMR answer sheet and affix your **left hand thumb impression** on the OMR answer sheet as per the instructions.
6. Hand over the **OMR answer sheet** to the room invigilator as it is.
7. After separating the top sheet (Dept. Copy), the invigilator will return the bottom sheet replica (candidate's copy) to you to carry home for self-evaluation.
8. Preserve the replica of the OMR answer sheet for a minimum period of **ONE year**.

[P.T.O.

DO NOT WRITE HERE

SOT25I

PART – A

It consists of **1 – 40** questions.

1. If $A = \begin{bmatrix} 3 & 0 \\ -2 & 1 \end{bmatrix}$, then $2A - 3A^T =$

(1) $\begin{bmatrix} -3 & -6 \\ -4 & 1 \end{bmatrix}$ (2) $\begin{bmatrix} -3 & 6 \\ -2 & 1 \end{bmatrix}$

(3) $\begin{bmatrix} -3 & 6 \\ -4 & -1 \end{bmatrix}$ (4) $\begin{bmatrix} -3 & 6 \\ 4 & -1 \end{bmatrix}$

2. If $\begin{bmatrix} 3 & 4 & x \end{bmatrix} \begin{bmatrix} -1 \\ 2 \\ 5 \end{bmatrix} = [2x + 8]$ then the value of x =

(1) 1 (2) –1

(3) $-\frac{1}{2}$ (4) $\frac{1}{2}$

3. If $\begin{vmatrix} 3 & m-1 \\ m+1 & 2 \end{vmatrix} = 3$, then the value of m =

(1) ±1 (2) $\pm\sqrt{2}$

(3) ±3 (4) ±2

4. In solving simultaneous linear equations $x - y = 4$, $2y + 3z = -2$ and $3x + y + 2z = 1$ using Cramer's rule, the value of determinant of co-efficients of x, y and z is

(1) 6 (2) 12

(3) –8 (4) –16

SPACE FOR ROUGH WORK

5. If $A = \begin{bmatrix} -2 & 5 \\ 2 & -3 \end{bmatrix}$, then inverse of A =

(1) $\frac{1}{4}\begin{bmatrix} 2 & -5 \\ -2 & 3 \end{bmatrix}$ (2) $\frac{1}{4}\begin{bmatrix} -3 & -5 \\ -2 & -2 \end{bmatrix}$

(3) $\frac{1}{4}\begin{bmatrix} -2 & 2 \\ 5 & -3 \end{bmatrix}$ (4) $\frac{1}{4}\begin{bmatrix} 3 & 5 \\ 2 & 2 \end{bmatrix}$

6. The characteristic roots of the matrix $\begin{bmatrix} 4 & -2 \\ -3 & -1 \end{bmatrix}$ are

(1) 2 and –5 (2) –2 and 5

(3) –2 and –5 (4) 2 and 5

7. If $\vec{a} = 2\hat{i} - 3\hat{j} + 5\hat{k}$
$\vec{b} = 3\hat{i} - 2\hat{j} - 5\hat{k}$ and
$\vec{c} = \hat{i} + 4\hat{k}$

then the scalar product of $\vec{a} + \vec{b}$ and $\vec{b} - \vec{c}$ is

(1) –9 (2) 9

(3) 20 (4) –20

8. If A, B and C are three consecutive vertices of a parallelogram with position vectors $3\hat{i} - 2\hat{j} + \hat{k}, 2\hat{i} + \hat{j} - \hat{k}$ and $\hat{i} - \hat{j} + \hat{k}$, then area of the parallelogram is

(1) $3\sqrt{5}$ sq. units (2) $5\sqrt{3}$ sq. units

(3) $2\sqrt{5}$ sq. units (4) $5\sqrt{2}$ sq. units

9. Work done by the force 2i – 3j + 5k in moving a particle from (–3, 1, 2) to (1, –1, 1) is

(1) 3 (2) 9

(3) 6 (4) 15

SPACE FOR ROUGH WORK

10. The probability of drawing a non-diamond card from a well shuffled deck of 52 cards is

(1) $\frac{3}{4}$ (2) $\frac{1}{2}$

(3) $\frac{1}{4}$ (4) $\frac{12}{13}$

11. If $\tan\theta = \frac{2}{3}$ and $\pi < \theta < \frac{3\pi}{2}$, then $\sin\theta + \cos\theta =$

(1) $\frac{5}{\sqrt{13}}$

(2) $\frac{-1}{\sqrt{13}}$

(3) $\frac{1}{\sqrt{13}}$

(4) $\frac{-5}{\sqrt{13}}$

12. If $\tan A + \tan B + \tan A \tan B = 1$, then $A + B =$

(1) 180° (2) 90°

(3) 45° (4) 360°

13. $\sqrt{\frac{1-\cos 40°}{1+\cos 40°}} =$

(1) tan 20° (2) cot 40°

(3) tan 10° (4) tan 40°

14. If $\tan A = \frac{1}{2}$ and $\tan B = \frac{2}{3}$ then $\tan(A - B)$ is

(1) –1 (2) 1

(3) $\frac{-1}{8}$ (4) $\frac{1}{8}$

SPACE FOR ROUGH WORK

15. The numerical value of $\sin 10° \sin 50° \sin 70°$ =

(1) $\frac{\sqrt{3}}{8}$ (2) $\frac{1}{8}$

(3) $\frac{3}{16}$ (4) $\frac{1}{16}$

16. $\frac{\sin 12° + \cos 12°}{\sin 12° - \cos 12°}$ =

(1) cot 33° (2) –tan 33°

(3) –tan 57° (4) tan 57°

17. The polar form of the complex number $\sqrt{3} - i$ is

(1) $2\left[\cos\frac{\pi}{6} + i\sin\frac{\pi}{6}\right]$ (2) $2\left[\cos\frac{\pi}{6} - i\sin\frac{\pi}{6}\right]$

(3) $2\left[\cos\frac{\pi}{3} + i\sin\frac{\pi}{3}\right]$ (4) $2\left[\cos\frac{\pi}{3} - i\sin\frac{\pi}{3}\right]$

18. The value of $\lim_{x\to\infty} x\left[\sqrt{x^2+1} - x\right]$ is

(1) 1 (2) 2

(3) $\frac{1}{2}$ (4) 0

19. The value of $\underset{x\to 3}{Lt} \frac{x\sqrt{x} - 3\sqrt{3}}{\sin(x-3)}$ is

(1) $\frac{3\sqrt{3}}{2}$ (2) $3\sqrt{3}$

(3) $\frac{2}{3\sqrt{3}}$ (4) $\frac{1}{3\sqrt{3}}$

SPACE FOR ROUGH WORK

20. The value of $\lim_{x \to 0} \frac{1-\sqrt{\cos x}}{x^2}$ is

(1) 1 (2) $\frac{1}{4}$

(3) 2 (4) $-\frac{1}{2}$

21. The equation of line passing through the point (1, –3) and having slope $\frac{1}{2}$ is

(1) $x - 2y - 7 = 0$ (2) $2x - y + 7 = 0$

(3) $x - 2y - 4 = 0$ (4) $x - y + 4 = 0$

22. The equation of line passing through the point (–2, 3) and parallel to the line $5x + 3y + 5 = 0$ is,

(1) $5x + 3y - 19 = 0$ (2) $5x + 3y + 1 = 0$

(3) $5x + 3y + 19 = 0$ (4) $3x - 5y + 1 = 0$

23. If $y = e^x \log x$ then $\frac{dy}{dx}$ is

(1) $e^x\left[\frac{1}{x} + \log x\right]$ (2) $e^x\left[\frac{1}{x} - \log x\right]$

(3) $e^x \cdot \frac{1}{x}$ (4) $e^x + \frac{1}{x}$

24. If $y = \log(\tan x + \sec x)$, then $\frac{dy}{dx}$ is,

(1) $-\sec x$

(2) $\sec x$

(3) $\frac{\sec x}{\tan x + \sec x}$

(4) $\log(\sec^2 x + \tan x \sec x)$

SPACE FOR ROUGH WORK

25. If $\frac{x^2}{2}+\frac{y^2}{2}=1$ then $\frac{dy}{dx}$ is

(1) $\frac{1+x}{y}$ (2) $\frac{x}{y}$

(3) $\frac{-x}{y}$ (4) $\frac{1-x}{y}$

26. If $x=\frac{1}{t}$; $y=3t^3$ then $\frac{dy}{dx}$ is,

(1) $-6t^4$ (2) $-9t^4$

(3) -6 (4) -9

27. If $y=(\sin x)^{\log x}$ then $\frac{dy}{dx}$ is

(1) $(\sin x)^{\log x}\left[\log x\cos x+\frac{\log \sin x}{x}\right]$ (2) $(\sin x)^{\log x}\left[\frac{\log x}{\sin x}+\frac{\log \sin x}{x}\right]$

(3) $(\sin x)^{\log x}$ [$-\log x \cot x + \log \sin x$] (4) $(\sin x)^{\log x}\left[\log x \cot x+\frac{\log \sin x}{x}\right]$

28. If $y=e^{5x}+e^{-5x}$ then $\frac{d^2y}{dx^2}$ at $x=0$ is,

(1) 25 (2) -25

(3) 50 (4) -50

29. The rate of change of volume of a sphere with respect to radius, when its radius 3 cm is

(1) 3π (2) 6π

(3) 18π (4) 36π

30. The equation of normal to the curve $y = x^2$ at (2, 2) is

(1) $x-4y-10=0$ (2) $x-4y+10=0$

(3) $x+4y-10=0$ (4) $x+4y+10=0$

SPACE FOR ROUGH WORK

31. The value of $\int e^{5\log x}\,dx$ is

(1) $5x^4 + C$ (2) $\frac{x^6}{6} + C$

(3) $6x^6 + C$ (4) $\frac{x^5}{5} + C$

32. The value of $\int \frac{\cos x - \sin x}{\cos x} dx$ is

(1) $x - \cos x + C$ (2) $x + \cos x + C$

(3) $x + \log \sec x + C$ (4) $x - \log \sec x + C$

33. The value of $\int (2 + \sin^3 x)\cos x\,dx$ is,

(1) $2\sin x + \frac{(\sin x)^4}{4} + C$ (2) $\frac{\sin^4 x}{4} + C$

(3) $2\cos x + \frac{(\cos x)^4}{4} + C$ (4) $\frac{\cos^4 x}{4} + C$

34. The value of $\int \frac{x+5}{x^2+10x-5} dx$ is,

(1) $\log (x^2 + 10x - 5)^2 + C$ (2) $\frac{1}{2}\log (x^2 + 10x - 5) + C$

(3) $\frac{1}{2}\log (x + 5) + C$ (4) $\log (x + 5)^2 + C$

35. The value of $\int 4x \log 5x\,dx$ is,

(1) $\frac{x^2 \log 5x}{2} - \frac{x^2}{4} + C$ (2) $\frac{x \log 5x}{5} + \frac{x^2}{2} + C$

(3) $5x \log 5x + 1 + C$ (4) $2x^2 \log 5x - x^2 + C$

SPACE FOR ROUGH WORK

36. $\int_0^{\pi/4} \frac{\sec^2 x}{1+\tan x}\,dx =$

(1) $-\log 2$ (2) $\log 2$

(3) $\log 3$ (4) $\log 4$

37. The volume of a solid generated by revolving the curve $y = \tan x$ about x-axis between the lines $x = 0$ and $x = \frac{\pi}{4}$ is,

(1) $\pi + \frac{\pi^2}{4}$ cu. units (2) $1 + \frac{\pi}{4}$ cu. units

(3) $1 - \frac{\pi}{4}$ cu. units (4) $\pi - \frac{\pi^2}{4}$ cu. units

38. Order and degree of differential equation $\frac{d^2y}{dx^2} = \sqrt{1 - \frac{dy}{dx}}$ are

(1) 2 and 2 respectively (2) 2 and 1 respectively

(3) 1 and 2 respectively (4) 1 and 1 respectively

39. The differential equation obtained by eliminating the arbitrary constants from the equation $y^2 = a \sin x + b \cos x$ is

(1) $2y\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right)^2 - y^2 = 0$ (2) $\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^2 + y^2 = 0$

(3) $2y\frac{d^2y}{dx^2} - 2\left(\frac{dy}{dx}\right)^2 + y^2 = 0$ (4) $2y\frac{d^2y}{dx^2} + 2\left(\frac{dy}{dx}\right)^2 + y^2 = 0$

40. The solution of differential equation $x\frac{dy}{dx} + y = x - 1$ is

(1) $xy = x - \frac{x^2}{2} + C$ (2) $xy = \frac{x^2}{2} - x + C$

(3) $xy + \frac{x^2}{2} + x = C$ (4) $xy - \frac{x^2}{2} - x = C$

SPACE FOR ROUGH WORK

PART – B

It consists of **41 – 80** questions.

41. The value of 20 peta Hertz is

(1) 20×10^{9} Hz (2) 20×10^{12} Hz

(3) 20×10^{15} Hz (4) 20×10^{18} Hz

42. The total reading for Screw Gauge is found by

(1) TR = PSR + (HSR × LC) ± ZE

(2) TR = PSR + (HSR × LC) ± ZC

(3) TR = (PSR + HSR) × LC ± ZE

(4) TR = (PSR + HSR) × LC ± ZC

43. The least count of a slide calipers is 0.01 cm. In a setting the zero of the Vernier Scale lies between 3.2 cm and 3.3 cm and 5th division of the Vernier co-incides with the main scale division. The total reading is

(1) 3.35 cm (2) 3.35 mm

(3) 3.25 cm (4) 3.25 mm

44. The rectangular component of a vector R are

(1) $R_x = R\cos\theta$, $R_y = R\sin\theta$

(2) $R_x = R\sin\theta$, $R_y = R\cos\theta$

(3) $R_x = \cos\theta$; $R_y = \sin\theta$

(4) $R_x = -\cos\theta$; $R_y = -\sin\theta$

45. A body of weight 5 kg is suspended by means of a light string. It is pulled horizontally until the string makes an angle of 30° with the vertical. Then the horizontal force applied is

(1) $\frac{1}{\sqrt{3}}$ kg wt (2) 5 kg wt

(3) $5\sqrt{3}$ kg wt (4) $\frac{5}{\sqrt{3}}$ kg wt

SPACE FOR ROUGH WORK

46. Among these which is the vector quantity ?
    (1) Work (2) Energy
    (3) Surface tension (4) Power

47. The resultant of two like parallel forces P and Q acting at a point is
    (1) P + Q away from P
    (2) P + Q away from Q
    (3) P ~ Q in between P and Q
    (4) P + Q in between P and Q

48. Shock absorbers in automobiles is an example for
    (1) Tensile stress (2) Compressive stress
    (3) Shear stress (4) Breaking stress

49. The elasticity of steel compared to rubber is
    (1) More (2) Less
    (3) Equal (4) Less than or equal

50. The stress-strain graph for an elastic body within elastic limit is
    (1) Linear (2) Curved
    (3) Parabola (4) Hyperbola

51. The maximum stress of steel wire is 500 N/mm^2, if the area of cross section of wire is 0.05 m^2 then the force is
    (1) 25 N (2) 25 KN
    (3) 25 MN (4) 250 N

52. In case of concave meniscus, the angle of contact is
    (1) Acute (2) Right angle
    (3) Linear (4) Obtuse

SPACE FOR ROUGH WORK

53. The surface tension of a liquid varies as
    (1) Directly with temperature, inversely with density
    (2) Directly with both temperature and density
    (3) Inversely with both temperature and density
    (4) Inversely with temperature and directly with density

54. The thrust on the bottom of a container having base area 0.5 m^2 filled with water to a height of 6 cm is
    (1) 147 N (2) 294 N
    (3) 147 dynes (4) 294 dynes

55. The fastest mode of transfer of heat is
    (1) Conduction (2) Convection
    (3) Radiation (4) Transmission

56. Pressure is directly proportional to absolute temperature at constant volume is a statement of
    (1) Charle's law (2) Boyle's law
    (3) Gay-Lussac's law (4) Boltzmann's law

57. Boyle's law is applicable for
    (1) Isothermal process (2) Isobaric process
    (3) Isochoric process (4) Isotonic process

58. At absolute zero temperature, the pressure and volume of a given mass of gas is
    (1) 1 (2) 273
    (3) −273 (4) 0

59. In cold countries, the windows are provided with double doors because
    (1) Air between two windows behaves as a perfect insulator
    (2) Air between two windows behaves as a perfect conductor
    (3) To strengthen the windows
    (4) Security purpose

SPACE FOR ROUGH WORK

60. The sound waves and light waves can be differentiated by

(1) Interference (2) Diffraction

(3) Reflection (4) Polarization

61. The velocity of sound in gas is independent of

(1) Temperature (2) Pressure

(3) Humidity (4) Density

62. The superposition of two waves of same frequency moving in opposite direction is

(1) Progressive wave (2) Transverse waves

(3) Sound wave (4) Stationary wave

63. For every degree raise of temperature, the velocity of sound waves in gas is increased by

(1) 6 m/s (2) 60 m/s

(3) 0.6 s/m (4) 0.6 m/s

64. The angle between the particle vibration and wave propagation in a transverse wave is

(1) 0° (2) 45°

(3) 90° (4) 180°

65. The original tension in the string if the frequency of a sonometer wire is doubled, when the tension is increased by 12 kg wt is

(1) 2 kg wt (2) 4 kg wt

(3) 8 kg wt (4) 12 kg wt

66. At resonance, the body vibrates with

(1) Small amplitude (2) Large amplitude

(3) Zero amplitude (4) Same amplitude

SPACE FOR ROUGH WORK

67. Beats occurs in mining due to the presence of
(1) Ore (2) Water
(3) Contaminated air (4) Fossils

68. The statement which is correct in these is
(1) X-rays have longer wavelength than microwaves
(2) Gamma rays have shorter wavelength than microwaves
(3) UV-rays have shorter wavelength than violet rays
(4) Red rays have longer wavelength than infrared rays

69. LASER is used in
(1) LIDAR (2) RADAR
(3) SONAR (4) GPS

70. Nano means
(1) One hundredth of meter
(2) One thousandth of meter
(3) One millionth of meter
(4) One billionth of meter

71. Microphone is a
(1) Transducer (2) Receiver
(3) Channel (4) Transmitter

72. The principle behind optical fibre is
(1) Total internal refraction (2) Total internal reflection
(3) Reflection (4) Refraction

73. Faraday's I law of electrolysis is represented mathematically as
(1) $M = ZQ$ (2) $Z = MQ$
(3) $Q = MZ$ (4) $M = \frac{Z}{Q}$

SPACE FOR ROUGH WORK

74. A galvanic cell setup between two dissimilar metals in contact is called
(1) Concentration cell (2) Composition cell
(3) Stress cell (4) Secondary cell

75. In which of these cells the reaction can be reversed ?
(1) Primary cell (2) Secondary cell
(3) Solar cell (4) Photo cell

76. The statement which is true for fuel cell is
(1) They make more pollution
(2) They produce noise
(3) They liberate more heat
(4) They are heavy in weight

77. Alloy of steel is a mixture of
(1) Chromium, iron and nickel
(2) Chromium, iron and zinc
(3) Chromium, iron and aluminium
(4) Chromium, iron and tin

78. The materials with weak intermolecular forces of attraction between polymer chains are
(1) Elastomers (2) Fibres
(3) Thermoplastic (4) Thermosetting polymers

79. The type of composite material to which reinforced concrete belongs is
(1) Laminate (2) Particulate
(3) Short fibre (4) Long fibre

80. pH value of a solution is given by
(1) $-\log_{10}[H^+]$ (2) $-\log_e[OH^-]$
(3) $-\log_e[H^+]$ (4) $\log_{10}[H^+]$

SPACE FOR ROUGH WORK

PART – C

It consists of **81 – 180** questions.

81. Nystagmus is caused to an underground miner due to
    (1) Dust (2) Poisonous gas
    (3) Poor light (4) Radiation

82. Which of the following is also known as "Miner's Anaemia" ?
    (1) Ankylostomiasis (2) Nystagmus
    (3) Silicosis (4) Siderosis

83. The instrument factor is a kata thermometer is nearly
    (1) 380 (2) 580
    (3) 280 (4) 480

84. Permissible concentration of 'CO' gas in Indian underground mine is
    (1) 50 ppm (2) 500 ppm
    (3) 50.25 ppm (4) 550 ppm

85. MSA D-6 Methanometer works in the principle used for detection is
    (1) Wheatstone bridge circuit (2) Length of flame
    (3) Refractive index of methane (4) Analysing cell containing $MnO_2 + CuO$

86. Which one of the following composition of methane in air is most explosive in nature ?
    (1) 8.5% by volume (2) 9.5% by volume
    (3) 10.5% by volume (4) 11.5% by volume

87. Which of the following instrument is used to measure the cooling power of the air ?
    (1) Anemometer (2) Velometer
    (3) Manometer (4) Katathermometer

SPACE FOR ROUGH WORK

88. In the ventilation, air and the coal flow in opposite directions is called
(1) Antitropal ventilation (2) Homotropal ventilation
(3) Descensional ventilation (4) Ascensional ventilation

89. Black damp is a mixture of
(1) Carbon monoxide and excess nitrogen
(2) Carbon dioxide and carbon monoxide
(3) Carbon dioxide and excess nitrogen
(4) Carbon dioxide and hydrogen sulphide

90. The limits of inflammability of fire damp in air are
(1) 5.4% and 14.8% (2) 4.5% and 15.4%
(3) 3.8% and 14.8% (4) 4.5% and 4.8%

91. Naylor spiralarm gas detector is used to detect
(1) Fire damp (2) White damp
(3) Oxygen (4) After damp

92. Class 'B' fires involves
(1) gaseous fuels like LPG gas, butane etc.
(2) melting iron
(3) live electrical equipments
(4) inflammable liquids like diesel, petrol etc.

93. Carbon dioxide extinguisher is mostly preferred to extinguish the fires of
(1) Class-A (2) Class-B
(3) Class-E (4) Class-D

94. In a gas mask, cotton wool removes –
(1) Water vapour (2) Ammonia
(3) Dust and Smoke (4) Hydrogen sulphide

SPACE FOR ROUGH WORK

95. In a self contained breathing apparatus, which valve allows the escape of any oxygen in excess of the wearers requirement ?

(1) Inhalation valve (2) Exhalation valve

(3) Relief valve (4) Main valve

96. Specific gravity of methane is

(1) 0.559 (2) 0.070

(3) 0.590 (4) 1.53

97. Atmospheric air pressure is measured using

(1) Barometer (2) Manometer

(3) Water gauge (4) Anemometer

98. Nystagmus is a Miner's disease associated with

(1) Liver (2) Lung

(3) Eye (4) Stomach

99. The air travels from the rise side of a district to the lower levels along the working places is referred as

(1) Ascensional ventilation (2) Descensional ventilation

(3) Artificial ventilation (4) Reverse ventilation

100. The gases which are normally expected to be found near the roof and near the floor are

(1) CH_4 and CO_2 (2) CO and CO_2

(3) CO and CH_4 (4) CH_4 and N_2

101. Quartz is a mineral because it is

(1) A white rock

(2) Natural, inorganic and has a crystalline structure

(3) An element

(4) Composed of more than one element

SPACE FOR ROUGH WORK

102. When sandstone undergoes metamorphism process, it results in the formation of _____ rock.

(1) Marble (2) Limestone

(3) Quartzite (4) Phyllite

103. The Morh's scale of hardness in the given sequence from 7 to 10 are

(1) Quartz, corundum, topaz, diamond

(2) Topaz, quartz, corundum, diamond

(3) Quartz, topaz, corundum, diamond

(4) Diamond, corundum, topaz, quartz

104. In the process of weathering, which of the following accounts as a main agents of chemical weathering ?

(1) Frost and wind

(2) Heating and cooling

(3) Water and organisms

(4) None of the above

105. Obsidian is a type of _____ rock.

(1) Igneous rock (2) Sedimentary rock

(3) Metamorphic rock (4) Salt rock

106. _____ is defined as a gently curved surface below the ground at which the Vadose zone ends and the saturation zone begins.

(1) Zone of saturation (2) Zone of aeration

(3) Water table (4) Artesian well

107. The placer deposits which is formed along the hill slopes are

(1) Stream placers (2) Eluvial placers

(3) Beach placers (4) Eolian placers

SPACE FOR ROUGH WORK

108. The zig-zag fold, which their crests and troughs becomes nearly sharp and angular.
(1) Overturned fold (2) Recumbent fold
(3) Symmetrical fold (4) Chevron fold

109. Any water bearing formation which stores ground water and transmit sufficient quantity of water to a pumping well is
(1) Aquifuge (2) Aquiclude
(3) Aquifer (4) Storing well

110. _____ is the hot rich mineralized watery solution derived from an intrusive magma.
(1) Hydrothermal solution (2) Residual liquid
(3) Immiscible liquid (4) Magmatic solution

111. Porosity of a rock sample is defined as ratio of the volume of voids to the _____
(1) Volume of solids (2) Total volume of samples
(3) Volume of water (4) Volume of air

112. In addition to the environment, rock strength depends on the following
(i) Size of the rock
(ii) Rate of loading
(iii) Cycle of loading
(iv) Loading condition
Out of the above statements.
(1) (i) and (ii) are correct (2) (iii) and (iv) are correct
(3) All of the above (4) None of the above

113. If a rock specimen is being tested for unconfined compression strength and there is smooth confact between loading platens and ends of the specimen during testing patterns of cracks which will appear will be
(1) Horizontal (2) Diagonal
(3) Vertical (4) No specific crack pattern

SPACE FOR ROUGH WORK

114. In a point load test on 50 mm dia core sample rupture was observed at a load of 5000 kg. The point load strength of the specimen was _____ kg./cm^2.

(1) 200 (2) 400

(3) 300 (4) 500

115. The L/D ratio for unconfined compressive strength is

(1) 0.5 : 1 (2) 1 : 2

(3) 2 : 3 (4) 0.25 : 1

116. The L/D ratio for Brazilian tensile strength is

(1) 0.5 : 1 (2) 1 : 2

(3) 2 : 3 (4) 0.25 : 1

117. The L/D ratio for shear strength of rock is

(1) 0.5 : 1 (2) 1 : 2

(3) 2 : 3 (4) 0.25 : 1

118. RMR stands for

(1) Roof Mass Rating (2) Rating of Massive Roof

(3) Rock Mass Rating (4) Rate of Marginal Return

119. In which test, we can determine the shear strength of rock ?

(1) Point load index (2) Brazilian tensile strength

(3) Punch shear test (4) Unconfined compression test

120. Length to diameter ratio for bending test is kept as

(1) 1 : 2 (2) 2 : 10

(3) 3 : 7 (4) 2 : 3

121. No drill shall be bored a shot hole unless it allows a clearance of atleast _____ over the diameter of cartridge of explosive which it is intended to use.

(1) 2 mm (2) 2.5 mm

(3) 4 mm (4) 3 mm

SPACE FOR ROUGH WORK

122. A vehicle transporting explosives shall not be driven at a speed exceeding _____ kmpH.

(1) 25 (2) 35 (3) 40 (4) 30

123. First-Aid room shall have floor space not less than _____

(1) 5 sq. mtr. (2) 10 sq. mtr.

(3) 50 sq. mtr. (4) 15 sq. mtr.

124. No working shall be made within road or building _____ meters of any railway or public work.

(1) 60 (2) 200 (3) 45 (4) 500

125. Minimum length of safety fuse at the firing end shall not be less than

(1) 1.2 meter (2) 2 meter

(3) 1.8 meter (4) 1.5 meter

126. According to Mines Act, 1952, calender year means

(1) 1st April to 31st March (2) 1st Jan. to 31st Dec.

(3) 1st Jan. to 30th Sep. (4) 1st Oct. to 31st Dec.

127. Run away ramps can be seen at

(1) Benches (2) Haul roads

(3) OB dumps (4) Workshop

128. "Super Elevation" is a term used for designing

(1) Benches (2) Haul roads

(3) Dumps (4) Magazine

129. The explosives shall be transported to the site of blasting not more than _____ commencement of charging of holes.

(1) 30 minutes (2) 1 hour

(3) 45 minutes (4) 1½ hour

SPACE FOR ROUGH WORK

130. The annual returns submitted to the DGMS as per first schedule of which form ?

(1) Form – I (2) Form – II

(3) Form – III (4) Form – IV

131. Duties and responsibilities of mine foreman is specified in regulation number _____ of MMR – 1961.

(1) 44 (2) 45 (3) 46 (4) 47

132. As per MMR 1961, where the inclination of ladder is more than 60 degrees from the horizontal, the platform or sollars shall be provided at an intervals of not more than _____

(1) 12 meters (2) 20 meters

(3) 15 meters (4) 10 meters

133. No winding rope which has been in use for more than _____ years shall be used for winding purposes.

(1) Three and a half years (2) Two and a half years

(3) Two years (4) Three years

134. According to the mine regulations every travelling roadways shall be not less than _____ meter high throughout.

(1) 1.8 (2) 1.5

(3) 1.7 (4) 1.6

135. No locomotives shall be used where the gradient exceeds

(1) 1 in 16 (2) 1 in 15

(3) 1 in 17 (4) 1 in 18

136. As per the mining regulations, no working shall be made within a distance of _____ of the boundary of any mine.

(1) 7.7 meters (2) 7.6 meters

(3) 7.5 meters (4) 7.8 meters

SPACE FOR ROUGH WORK

137. For the purpose of regulations, a place shall not be deemed to be in a safe for persons to work or pass there in, if the air contains either

(1) less than 19% oxygen (or) more than 0.5% CO_2

(2) less than 20% oxygen (or) more than 0.4% CO_2

(3) less than 20.5% oxygen (or) more than 0.3% CO_2

(4) less than 19.5% oxygen (or) more than 0.2% CO_2

138. While dealing with misfire, relieving hole shall be so placed and drilled in such a direction that at no point shall be nearer than _____ from the misfired hole.

(1) 30 centimeters (2) 20 centimeters

(3) 10 centimeters (4) 25 centimeters

139. A person who has completed his eighteenth year is

(1) Adolescent (2) Adult

(3) Child (4) Agent

140. As per the Section 28 of the Mines Act, no person shall be allowed to work in a mine on more than _____ in any one week.

(1) six days (2) seven days

(3) five days (4) four days

141. Which of the following equipment is most suited for side casting in opencast coal mine ?

(1) Rope shovel (2) Electric shovel

(3) Dragline (4) Back-hoe

142. Which of the following factor is considered for calculation of cycle time of excavating machine ?

(1) Swing factor (2) Drill factor

(3) Swell factor (4) Bucket fill factor

SPACE FOR ROUGH WORK

143. A box cut is defined as

(1) Any cut which must look like an open cut

(2) The cut to extend haul road

(3) The initial cut made to open a mine

(4) The final cut to close the mine

144. Emulsion explosives is a mixture of

(1) Ammonium nitrate and water

(2) Ammonium nitrate and hollow micro ballons

(3) Ammonium nitrate and fuel oil

(4) Ammonium nitrate, water, hollow micro-ballons

145. As per MMR 1961, mine plan of a mine having large open cast working shall be on a scale having a representative factor of

(1) 1000 : 1 (2) 2000 : 1

(3) 4000 : 1 (4) 200 : 1

146. Dumper arrives at a shovel at a constant rate of 10 per hour. The service rate is constant at 15 per hour. At a time, the expected number of dumpers in the queue is

(1) 5 (2) 4

(3) 3 (4) 2

147. To open a mine for deep seated, the cut used

(1) Deep cut (2) Internal box cut

(3) External box cut (4) Trench

148. The water which is directly entrapped in the sedimentary rock is

(1) Connate water (2) Meteoric water

(3) Juvenile water (4) Spring water

SPACE FOR ROUGH WORK

149. Angle of draw is

(1) Angle between two limit lines

(2) Angle between vertical and horizontal line

(3) Angle between limit line of subsidence and vertical line on any side

(4) All of the above

150. Prospecting means

(1) Estimation of ore reserves (2) Opening up of deposit

(3) Search of ore (4) None of the above

151. VOD is a term related to

(1) Exploder (2) Air blast

(3) Ground vibration (4) Explosive

152. In case of opencast blasting, the danger zone comprises of area within the radius of _____ m.

(1) 300 (2) 600

(3) 400 (4) 500

153. Contiguous seams means, the parting between two seams is within _____ m.

(1) 7 (2) 8

(3) 9 (4) 10

154. Spiralarm F.D. detector is used to detect

(1) N_2 (2) CO

(3) O_2 (4) CH_4

155. In an open cast mine, the bench height depends upon the

(1) Width of the shovel (2) Height of the dumper

(3) Height of the drill machine (4) Height of the boom of the shovel

SPACE FOR ROUGH WORK

156. A drill mounted and generally used for horizontal drilling

(1) Wagon drill (2) DTH

(3) Stoper (4) Drifter

157. Match the following :

Blast problem	Causes
P. Misfire	1. Poor stemming
Q. Vibration	2. Low current
R. Brown-out-shot	3. Excess charge
S. Cut off shot	4. Improper delays

(1) P – 3 Q – 2 R – 4 S – 1 (2) P – 4 Q – 1 R – 2 S – 3

(3) P – 2 Q – 3 R – 1 S – 4 (4) P – 1 Q – 2 R – 4 S – 3

158. Match the following :

Mining method	Operation
P. Bord and Pillar	1. Longhole radial drilling
Q. Sublevel caving	2. Splitting and slicing
R. Longwall retreating	3. Loosening under strata pressure
S. Integrated caving	4. Mechanical cutting

(1) P – 1 Q – 2 R – 3 S – 4 (2) P – 4 Q – 3 R – 2 S – 1

(3) P – 2 Q – 1 R – 4 S – 3 (4) P – 3 Q – 4 R – 2 S – 1

159. An instrument used to measure the area of the map of any shape

(1) Anemometer (2) Planimeter

(3) Kata thermometer (4) Hygrometer

160. Deflagration is

(1) Rapid Explosion

(2) Explosion and burning

(3) Rapid burning, but not an explosion

(4) None of the above

SPACE FOR ROUGH WORK

161. The rise and fall method of levelling provides a complete check on

(1) Back sight (2) Fore sight

(3) Intermediate sight (4) All of the above

162. In an internal focussing type of telescope, the lens provided is

(1) Concave (2) Convex

(3) Plano-convex (4) Plano-concave

163. The RL, of a point 'A' which is on the floor is 100 m and back sight reading on A is 2.455 m. If the foresight reading on the point B which is on the ceiling is 2.745 m, the RL of point 'B' will be

(1) 94.80 M (2) 99.71 M

(3) 100.29 M (4) 105.20 M

164. Contour interval is

(1) inversely proportional to the scale of the map

(2) directly proportional to the flatness of ground

(3) larger for accurate work

(4) larger if the time available is more

165. The gas which has more affinity for the Haemoglobin of the blood is

(1) CO_2

(2) CO

(3) H_2S

(4) CH_4

166. Bowditch rule is applied to

(1) an open traverse for graphical adjustment

(2) a closed traverse for adjustment of closing error

(3) determine the effect of local attraction

(4) none of the above

SPACE FOR ROUGH WORK

167. The angle between the prolongation of the preceding line and the forward line of a traverse is called

(1) deflection angle (2) included angle

(3) exterior angle (4) direct angle

168. For a tacheometer the additive and multiplying constants are respectively

(1) 0 and 100 (2) 100 and 0

(3) 0 and 0 (4) 100 and 100

169. Contours of different elevation can cross each other only at

(1) vertical cliff (2) overhanging cliff

(3) valley (4) depression

170. Latitudes and longitudes are the

(1) Linear co-ordinates (2) Plane co-ordinates

(3) Spherical co-ordinates (4) Angular co-ordinates

171. The line passing through zero declination is known as

(1) Isogonic line (2) Agonic line

(3) Dip line (4) Contour line

172. Tacheometry is mostly preferred to determine

(1) Horizontal and vertical distances

(2) Horizontal angles

(3) Vertical angles

(4) Vertical distances only

173. The sum of interior angles of a closed traverse of 'N' sides is equal to

(1) $(N - 1) \times 90°$ (2) $(N + 1) \times 90°$

(3) $(2N - 4) \times 90°$ (4) $(2N + 4) \times 90°$

SPACE FOR ROUGH WORK

174. The WCB of a line whose QB is S 19° 30′ E is

(1) 19° 30′ (2) 109° 30′

(3) 160° 30′ (4) 199° 30′

175. The back bearing of a line is 44°, what will be fore bearing of the line AB ?

(1) 144° (2) 54°

(3) 316° (4) 136°

176. What will be the angle between the two line OA and OB whose bearings are 50° and 100° respectively ?

(1) 150° (2) 50°

(3) 160° (4) 60°

177. Most important factor in selecting survey station is

(1) Distance between two stations

(2) Intervisibility

(3) Accessibility and distance

(4) Elevation between two points

178. Both foresight and backsight are taken as a

(1) Ending point (2) Turning point

(3) Starting point (4) Intermediate point

179. The magnitude of latitude of the survey line is

(1) $l \sin \theta$ (2) $l \cos \theta$

(3) $l \sec \theta$ (4) $l \operatorname{cosec} \theta$

180. In which type of rock would you expect to find fossils ?

(1) granite (2) obsidian

(3) shale (4) marble

SPACE FOR ROUGH WORK

A

SEAL