DIPLOMA - COMMON ENTRANCE TEST-2017

MN	COURSE	DAY : SUNDAY DATE : 02-07-2017
	MINING	TIME : 10.00 a.m. to 1.00 p.m.

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
180	200 MINUTES	180 MINUTES

MENTION YOUR DIPLOMA CET NUMBER					QUESTION BOOKLET DETAILS	
					VERSION CODE	SERIAL NUMBER
					A - 1	232037

DOs :

1. Check whether the Diploma CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 09.50 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
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 paper seal / polythene bag 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 / polythene bag 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 BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :

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. Handover the **OMR ANSWER SHEET** to the room invigilator as it is.
7. After separating the top sheet (KEA 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.**

PART – A

APPLIED SCIENCE

1. The S.I. unit of Coefficient of Viscosity is

   (A) Poise (B) NSm^{-2}

   (C) $NS^{-1}m^2$ (D) $NS^{-1}m^{-2}$

2. The prefix used for 10^{+9} is

   (A) Mega (B) Tera

   (C) Giga (D) Hecta

3. The physical quantity which has the dimensional formula $[ML^0T^{-2}]$ is

   (A) Force (B) Surface tension

   (C) Viscosity (D) Work

4. The least count of slide callipers is given by

   (A) 1 MSD + 1 VSD (B) 1 MSD × 1 VSD

   (C) 1 MSD – 1 VSD (D) $\frac{1\,MSD}{1\,VSD}$

5. The product of force and time is

   (A) Momentum (B) Moment

   (C) Impulse (D) Acceleration

6. The change in position of a particle in a particular direction is referred to as

   (A) Speed (B) Displacement

   (C) Velocity (D) Acceleration

Space For Rough Work

7. The equation of motion of a body for distance travelled 'S_n' in the 'n^{th}' second is given by

(A) $S_n = u + \frac{a}{2}(2n-1)$ (B) $S_n = u - \frac{a}{2}(2n-1)$

(C) $S_n = u + \frac{a}{2}(2n+1)$ (D) $S_n = u - \frac{a}{2}(2n+1)$

8. A bullet of mass 0.01 kg is fired with a velocity of 960 ms^{-1} from a rifle of mass 3 kg, the velocity of recoil of rifle is

(A) $-320\ ms^{-1}$ (B) $-0.32\ ms^{-1}$

(C) $-3.2\ ms^{-1}$ (D) $-32\ ms^{-1}$

9. One of the following is not a scalar quantity :

(A) Mass (B) Density

(C) Force (D) Speed

10. If a body fixed about a point rotates in clockwise direction, the moment of force is measured as

(A) Positive (B) Negative

(C) Zero (D) Equal

11. The resultant magnitude of two forces P and Q acting in same line and in same direction is

(A) $P - Q$ (B) $P + Q$

(C) $Q - P$ (D) $\frac{P}{Q}$

Space For Rough Work

12. The resultant magnitude of two forces 6 N and 8 N acting at right angles to each other is

(A) 100 N (B) 10 N

(C) 48 N (D) 14 N

13. The value of resultant magnitude of two forces acting at a point is maximum, when the angle between the two forces is

(A) 0° (B) 90°

(C) 180° (D) 45°

14. Rise of liquid in a capillary tube is due to

(A) Energy (B) Viscosity

(C) Surface tension (D) Pressure

15. The ratio of volume stress to volume strain is called

(A) Bulk modulus (B) Young's modulus

(C) Rigidity modulus (D) Poisson's ratio

16. The reciprocal of bulk modulus of elasticity is called

(A) Compressibility (B) Rigidity

(C) Plasticity (D) Modulus of elasticity

17. The force of cohesion is maximum in

(A) Solids (B) Gases

(C) Liquids (D) Plasma

Space For Rough Work

18. The value of surface tension is 80 dyne/cm. What will be its value in Nm^{-1} ?

(A) $8 \times 10^{2}\ Nm^{-1}$ (B) $80\ Nm^{-1}$

(C) $8 \times 10^{-2}\ Nm^{-1}$ (D) $8 \times 10^{3}\ Nm^{-1}$

19. Pressure at the bottom of a container having base area of $10\ m^2$ filled with water to a height of 10 m is

(A) 9.8×10^{4} Pa (B) 980×10^{4} Pa

(C) 9.8×10^{-4} Pa (D) 980×10^{-4} Pa

20. 100 °C when expressed in absolute scale is

(A) 100 K (B) 0 K

(C) 273 K (D) 373 K

21. Gas law which gives the relation between pressure and volume changes is

(A) Boyle's law (B) Charles' law

(C) Gay-Lussac's law (D) Hooke's law

22. Amount of heat required to raise the temperature of one gram of water through 1 °C is

(A) Heat capacity (B) Conductivity

(C) Calorie (D) Joule

23. An example of longitudinal wave is

(A) Sound waves (B) Waves on the surface of water

(C) Light waves (D) Electromagnetic waves

Space For Rough Work

24. The relation between velocity of sound v, and absolute temperature T is

(A) $v \propto T$ (B) $v \propto \frac{1}{T}$

(C) $v \propto \sqrt{T}$ (D) $v \propto T^2$

25. The distance between a node and the next antinode in a stationary wave is equal to

(A) one wavelength (B) half wavelength

(C) twice wavelength (D) one fourth wavelength

26. Damage caused by marching military columns to the suspension bridge is due to

(A) Echo (B) Resonance

(C) Beats (D) Interference

27. During forced vibrations, if the forced frequency is F_1 and natural frequency is F_2, the body resonates if

(A) $F_1 > F_2$ (B) $F_2 > F_1$

(C) $F_1 = 2.5\, F_2$ (D) $F_1 = F_2$

28. The fundamental frequency of transverse vibrations of the stretched string is inversely proportional to

(A) tension (B) length of string

(C) square root of tension (D) square root of length of string

29. Minimum length of a hall to produce an echo is

(A) 50 m (B) 34 m

(C) 25 m (D) 17 m

Space For Rough Work

30. The property of light that Huygen's wave theory could explain is

(A) Polarisation (B) Photoelectric effect

(C) Interference (D) Compton effect

31. The spectrum of black body radiation is successfully explained by

(A) Newton's corpuscular theory of light

(B) Huygen's wave theory of light

(C) Maxwell's electromagnetic theory of light

(D) Planck's quantum theory of light

32. For constructive interference of light, the path difference should be

(A) $\frac{2n\lambda}{2}$ (B) $(2n+1)\frac{\lambda}{2}$

(C) $(2n+1)\frac{\lambda}{3}$ (D) $(2n+1)\frac{\lambda}{4}$

33. Two very close objects are just resolved if the central maximum of one object is on

(A) central maximum of another

(B) first minimum of another

(C) beyond second minimum of another

(D) between central maximum and first minimum of another

34. The light is incident at polarising angle θ_p and the angle of refraction is r, then

(A) $\theta_p + r = 0°$ (B) $\theta_p + r = 90°$

(C) $\theta_p + r = 180°$ (D) $\theta_p + r = 360°$

Space For Rough Work

35. Minimum energy required to remove an electron from the metal surface is called

(A) Kinetic energy (B) Potential energy

(C) Work function (D) Energy function

36. When the size of the scattering particle is small, the intensity of scattered light is inversely proportional to

(A) fourth power of wavelength (B) square of wavelength

(C) square root of wavelength (D) cube of wavelength

37. Time for which an atom stays in metastable state is of the order of

(A) Seconds (B) Milli-seconds

(C) Micro-seconds (D) Nano-seconds

38. If an element emits β-ray then its atomic number

(A) increases by one (B) decreases by one

(C) remains same (D) decreases by two

39. If the concentration of H^+ ions is more than 10^{-7} gm ion per litre, the solution is

(A) Base (B) Acid

(C) Neutral (D) Both Acid and Base

40. A galvanic cell is one in which

(A) chemical energy produce electric energy

(B) electric energy produce chemical energy

(C) chemical energy will not produce electric energy

(D) electric energy will not produce chemical energy

Space For Rough Work

PART – B

APPLIED MATHEMATICS

41. The value of x if $\begin{vmatrix} 1 & 2 & 3 \\ 2 & x & 3 \\ 3 & 4 & 3 \end{vmatrix} = 0$ is

(A) 0 (B) -3

(C) 3 (D) 18

42. The value of x, if $4x + y = 7$, $3y + 4z = 5$ and $3z + 5x = 2$ is

(A) 0 (B) 1

(C) 3 (D) -1

43. If $A = \begin{bmatrix} 2 & -1 \\ 3 & -4 \end{bmatrix}$, then A^{-1} is

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

(C) $-\frac{1}{11}\begin{bmatrix} -4 & -3 \\ 1 & 2 \end{bmatrix}$ (D) $-\frac{1}{11}\begin{bmatrix} -4 & 1 \\ -3 & 2 \end{bmatrix}$

44. The characteristic equation of the matrix $A = \begin{bmatrix} 2 & -1 \\ 5 & -6 \end{bmatrix}$ is

(A) $A^2 + 8A - 7I = 0$ (B) $A^2 + 4A - 17I = 0$

(C) $A^2 + 4A + 7I = 0$ (D) $A^2 + 4A - 7I = 0$

Space For Rough Work

45. If $\begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} + A = \begin{bmatrix} 5 & 1 \\ 3 & 2 \end{bmatrix}$, then A is

(A) $\begin{bmatrix} 3 & 2 \\ -2 & 0 \end{bmatrix}$ (B) $\begin{bmatrix} 3 & -2 \\ 2 & 0 \end{bmatrix}$

(C) $\begin{bmatrix} -2 & 3 \\ 2 & 0 \end{bmatrix}$ (D) $\begin{bmatrix} 0 & 3 \\ -2 & 2 \end{bmatrix}$

46. The middle term of the expansion of $\left(x^2 - \frac{2}{x}\right)^{24}$ is

(A) ${}^{24}C_{10}2^{10}x^{12}$ (B) ${}^{24}C_{11}2^{12}x^{12}$

(C) ${}^{24}C_{13}2^{10}x^{10}$ (D) ${}^{24}C_{12}2^{12}x^{12}$

47. The term independent of x in $\left(x^2 - \frac{4}{3x}\right)^9$ is

(A) ${}^9C_6(4)^6$ (B) ${}^9C_6(3)^{-6}$

(C) ${}^9C_6\left(\frac{4}{3}\right)^6$ (D) ${}^9C_6\left(\frac{3}{4}\right)^6$

48. If $3i - 2j + k$, $i - 3j + 5k$, $2i + j - 4k$ are the sides of a triangle, then the triangle is

(A) Right angled triangle (B) Equilateral triangle

(C) Isosceles triangle (D) Isosceles right angled triangle

49. If $\vec{a} = (2, -1, 4)$ and $\vec{b} = (2, -3, 4)$, then projection of $\vec{a}$ on $\vec{b}$ is

(A) $\frac{23}{\sqrt{21}}$ (B) $\frac{23}{\sqrt{29}}$

(C) $\frac{-23}{\sqrt{29}}$ (D) $\frac{-23}{\sqrt{21}}$

Space For Rough Work

50. The sine of the angle between the vectors $(2i - 2j + k)$ and $2i + j + 2k$ is

(A) $\frac{\sqrt{65}}{3}$ (B) $\frac{\sqrt{65}}{\sqrt{3}}$

(C) $\frac{\sqrt{65}}{9}$ (D) $\sqrt{65}$

51. If $x \sin^2 45 = \frac{\tan^2 45 + \cot^2 30}{\sin^2 45 + \cos^2 45}$ then the value of x is

(A) 4 (B) 2

(C) 6 (D) 8

52. The value of $\frac{4}{3}\sec^2 \frac{\pi}{3} - \text{cosec}^2 \frac{\pi}{6} + \frac{3}{4}\tan^2 \frac{\pi}{4} - 2\sin^2 \frac{\pi}{3}$ is

(A) $-\frac{11}{12}$ (B) $\frac{53}{12}$

(C) $\frac{7}{12}$ (D) $-\frac{7}{12}$

53. The value of

$$\frac{\sin(90-\theta)}{\cos(360-\theta)} + \frac{\sec\left(\frac{3\pi}{2}+\theta\right)}{\text{cosec}(\pi+\theta)} + \frac{\tan(180-\theta)}{\tan(-0)} \text{ is}$$

(A) 1 (B) −1

(C) 3 (D) 2

54. The value of cosec 43 cot 43 cot 47 cos 47

(A) 1 (B) 0

(C) −1 (D) 2

Space For Rough Work

55. The value of $\frac{\tan 69^\circ + \tan 66^\circ}{1 - \tan 69^\circ \tan 66^\circ}$

(A) 1 (B) -1

(C) 0 (D) ∞

56. If $\tan \frac{A}{2} = x$ then sin A + tan A is

(A) $\frac{4x}{1-x^2}$ (B) $\frac{4x}{1+x^2}$

(C) $\frac{4x}{1+x^4}$ (D) $\frac{4x}{1-x^4}$

57. The value of $\sin 70^\circ - \sin 50^\circ - \sin 10^\circ$ is

(A) 1 (B) 0

(C) -1 (D) $\frac{1}{2}$

58. $\sin^{-1} x$ is also equal to

(A) $\text{cosec}^{-1}\left(\frac{1}{x}\right)$ (B) $\text{cosec}\, x$

(C) $\text{cosec}^{-1} x$ (D) $\frac{1}{\sin x}$

59. Centroid divides the median in the ratio

(A) 2 : 1 (B) 1 : 2

(C) 1 : 1 (D) 1 : 4

60. The co-ordinates of a point which divides the line join of the points (a + b, a – b) and (a – b, a + b) in the ratio 2 : 3 is

(A) $\frac{5a+5b}{5}, \frac{5a-5b}{5}$ (B) $\frac{a+b}{5}, \frac{a-b}{5}$

(C) $\frac{5a+b}{5}, \frac{5a-b}{5}$ (D) $\frac{5a-b}{5}, \frac{a+5b}{5}$

Space For Rough Work

61. The equation of straight line whose intercepts are 3 and 5 on the axes is

(A) $5x - 3y = 15$ (B) $5x + 3y = 15$

(C) $5x + 3y = 1$ (D) $15x + 15y = 1$

62. The angle between the lines whose slopes are $\sqrt{3}$ and $\frac{1}{\sqrt{3}}$ respectively is

(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{3}$

(C) $\frac{\pi}{4}$ (D) $\frac{\pi}{2}$

63. The equation of the straight line passing through (2, 3) and x intercept is twice its y intercept is

(A) $x + 2y = 8$ (B) $x - 2y = 8$

(C) $x + y = 4$ (D) $2x + 2y = 8$

64. The equation to the line passing through the point (–6, 7) and parallel to the line joining (3, 4) and (6, –8) is

(A) $4x + y + 31 = 0$ (B) $x + 4y - 1 = 0$

(C) $x - 4y + 1 = 0$ (D) $4x + y + 17 = 0$

65. $\lim_{\theta \to \pi/2} (\sec\theta - \tan\theta)$ is equal to

(A) 0 (B) 1

(C) $\frac{\pi}{2}$ (D) π

66. $\lim_{x \to 4} \frac{x-4}{3-\sqrt{13-x}}$ is equal to

(A) 3 (B) 9

(C) 6 (D) 0

Space For Rough Work

67. If $y = (1 + \log x)^5$, then $\frac{dy}{dx}$ is

(A) $5(\log x)^4$ (B) $\frac{5}{x}(1 + \log x)^4$

(C) $5(1 + \log x)^4$ (D) $5x^4 \log x$

68. If $x = \cos^{-1} t$ and $y = \sin^{-1} t$, then $\frac{dy}{dx}$ is

(A) -1 (B) 1

(C) $\frac{1}{2\sqrt{1 - t^2}}$ (D) $\frac{2}{\sqrt{1 - t^2}}$

69. If $y = x \log y$, then $\frac{dy}{dx}$ is

(A) $\frac{\log x^x}{x - y}$ (B) $\frac{\log y^x}{x - y}$

(C) $\frac{\log y^y}{x - y}$ (D) $\frac{\log y^y}{y - x}$

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

(A) $\frac{1}{(x + 2)^2}$ (B) $\frac{2x + 3}{(x + 2)^2}$

(C) $-\frac{1}{(x + 2)^2}$ (D) $\frac{2x - 3}{(x + 2)^2}$

71. The equation of tangent to the curve $y^2 = 4x$ at (1, 2) is

(A) $x + y - 3 = 0$ (B) $x - y + 1 = 0$

(C) $2x - y = 0$ (D) $2x + y - 4 = 0$

Space For Rough Work

72. The maximum value of $7 - 8x - 2x^2$ is

(A) 15 (B) -4

(C) -2 (D) 31

73. The value of $\int \log 2x \, dx$ is

(A) $x \log 2x + x + C$ (B) $x \log 2x - x + C$

(C) $\frac{1}{2x} + C$ (D) $\frac{1}{x} + C$

74. The value of $\int \sec^4 x \cdot \tan x \, dx$

(A) $\frac{\sec^4 x}{4} + C$ (B) $4 \sec^4 x + C$

(C) $3 \sec^2 x + C$ (D) $\frac{\tan^4 x}{4} + C$

75. The value of $\int x \log x \, dx$ is

(A) $\frac{x^2}{2} \log x - \frac{x^2}{2} + C$ (B) $\frac{x^2}{2} \log x + \frac{x^2}{2} + C$

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

76. $\int_0^{\pi/4} \tan^2 x \, dx$ is equal to

(A) $\frac{\pi}{4} - 1$ (B) $1 - \frac{\pi}{4}$

(C) $\frac{\pi^2}{16}$ (D) $\frac{\pi^2}{16} - 1$

Space For Rough Work

77. The value of $\int_0^1 x\sqrt{1-x^2}\,dx$ is

(A) $-\frac{1}{3}$ (B) 0

(C) ∞ (D) $\frac{1}{3}$

78. The volume generated by revolving the line $y = x + 1$ about the x-axis between the ordinates $x = 0$ and $x = 2$

(A) $\frac{26\pi}{3}$ units (B) $\frac{10\pi}{3}$ units

(C) $\frac{26}{3}$ units (D) 4 units

79. The degree and order of the differential equation $\frac{d^2y}{dx^2} = \left[1+\left(\frac{dy}{dx}\right)^2\right]^{1/3}$ are

(A) 2 and 1 (B) 1 and 2

(C) 3 and 2 (D) 2 and 3

80. The solution of differential equation $\frac{dy}{dx} + y \tan x = \sec x$ is

(A) $y \sec x = \tan x + C$

(B) $y \sin x = \sec x + C$

(C) $\log(\sec x) = \tan x + C$

(D) $y \sec x = -\cot x + C$

Space For Rough Work

PART – C

MINING ENGINEERING

It consists of **81** to **180** questions :

81. The horizontal entry to an underground working of a hilly deposit is known as .

(A) Vertical shaft (B) Inclined shaft

(C) Decline (D) Adit

82. Piling method, Caisson Method, Freezing method, Cementation Process are some special methods of _____ for loose, unstable ground with or without presence of water.

(A) Longwall mining (B) Drifting

(C) Shaft sinking (D) Crater blasting

83. Shaft location is best done on the basis of

(A) Depth of the coal seam (B) Production per year

(C) As per convenience (D) Haulage effort

84. Which of the following method is known as vertical crater retreat, VCR (Patented) method ?

(A) bord and pillar mining (B) blasting gallery

(C) sub-level stoping (D) shrinkage stoping

85. Vertical or steeply inclined opening is suitable for

(A) Shrinkage stoping (B) Cut and fill stoping

(C) Square set stope (D) Stope and pillar mining

86. Crown Pillar is

(A) at the top of the stope (B) just above the ore drawing cross-cuts

(C) on the side of the stope (D) at the base

Space For Rough Work

87. The Common Drilling Pattern adopted in sub level stoping

(A) long hole pattern (B) Ring hole pattern

(C) Wedge and pyramid pattern (D) All of the above

88. The moving front of any working place is known as

(A) Gallery (B) Heading

(C) Face (D) Back

89. The Draw point spacing in any stoping method mainly depends on

(A) Mechanisation used (B) Length of the stope

(C) Area of influence of the draw points (D) Size of the broken ore

90. Which type of ventilation is preferred for hot and deep mines ?

(A) Ascensional (B) Descensional

(C) Any of the two (D) Both

91. Coal is a _____ formation.

(A) igneous (B) metamorphic

(C) sedimentary (D) volcanic

92. Number of cutting drums in a SERD is/are

(A) 1 (B) 2

(C) 3 (D) 5

93. Of the given methods of work of underground mining of a coal seam is same geomining conditions, _____ will cause maximum surface subsidence.

(A) Advance Longwalling with stowing

(B) Wide and stall method

(C) Bord and Pillar working with caving

(D) Bord and pillar working with stowing

Space For Rough Work

94. Exploration drilling is best done by

(A) Diamond drilling
(B) Churn drilling
(C) Percussion drilling
(D) DTH drilling

95. Pick out the odd one.

(A) Longwall mining
(B) Bord and Pillar mining
(C) Placer mining
(D) Blasting gallery

96. Typical face length in Indian longwall mines lies in the range of

(A) 120 m to 150 m
(B) 200 m to 250 m
(C) 300 m to 350 m
(D) 350 m to 400 m

97. Pillars in bord and pillar mining help in

(A) Protect the roof rock from convergence while development
(B) Increase the recovery of coal
(C) Provide for ventilation
(D) Provide for pumping

98. Continuous miners are used in underground coal mining for

(A) Development only
(B) Depillaring only
(C) Development and Depillaring both
(D) Development of Longwall panel

99. Angle of draw is

(A) Angle between limit line of subsidence and vertical line on any side
(B) Angle between two limit lines
(C) Angle between vertical and horizontal line
(D) None of the options

Space For Rough Work

100. In India a coal seam is termed as "Thick Seam" when its thickness is equal to or more than _____ m.

(A) 2.8 (B) 1.8

(C) 2.0 (D) 4.8

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

(A) Excavator (B) Electric shovel

(C) Rope shovel (D) Dragline

102. The first opening cut in an opencast mine is known as _____

(A) Trench cut (B) Berm

(C) Box cut (D) Ramp

103. NONEL helps in reducing

(A) Fly rock (B) Explosive desenitization

(C) Ground vibration (D) Air vibration

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

(A) Swell factor (B) Bucket factor

(C) Drill factor (D) Swing factor

105. In the context of surface mine development, a box cut is defined as

(A) The initial cut made to open a mine

(B) The final cut to close the mine

(C) Any cut which must look like an open box

(D) The cut to extend haul road

Space For Rough Work

106. Fuse head of electronic detonators are placed _____.

(A) before delay element (B) after delay element

(C) outside blast hole (D) near exploder

107. Factor of safety of slope of an opencast mine _____ with increase in pore water pressure.

(A) goes up (B) reduces

(C) remains unchanged (D) fluctuates

108. VOD is a term related to

(A) air blast (B) explosive

(C) exploder (D) sand blast

109. The base charge of electric detonator is _____

(A) PETN (B) ASA

(C) ANFO (D) LOX

110. Which of the following statements is wrong in the case of blast design for opencast mines ?

(A) Burden = 25 times hole dia

(B) Spacing = 1.2 – 1.5 times burden

(C) Subgrade drilling = 8 times hole dia

(D) Bench height = 100 times hole dia

111. According to CMR 1957, CH_4% in return airway should not exceed

(A) 2.5% (B) 2.0%

(C) 1.5% (D) 0.75%

112. The ignition temperature of fire damp is

(A) 550 °C (B) 650 °C

(C) 750 °C (D) 850 °C

Space For Rough Work

113. What percentage of (CO formed/O_2 absorbed) ratio indicates existence of heating ?

(A) 0.5% (B) 1.0%

(C) 2.0% (D) 3.0%

114. Which of the following is better to carry out before cap test ?

(A) Ignition test (B) Accumulation test

(C) Percentage test (D) Sensitivity test

115. For measuring relative humidity we use

(A) Anemometer (B) Velometer

(C) Psychrometer (D) Manometer

116. Flame safety lamp can measure methane percentage from

(A) 0.1 – 5.0 (B) 0.1 – 4.0

(C) 0.1 – 10.0 (D) 1.25 – 4.0

117. For an electrical fire suitable fire extinguisher would be

(A) Foam type (B) Soda acid type

(C) Dry power type (D) None of the above

118. The supply of electric power in a district shall be cut off immediately, if the percentage of inflammable gas exceeds by

(A) 1.10% (B) 1.25%

(C) 1.00% (D) 1.05%

119. Pneumoconiosis is caused by

(A) Dust contain free crystalline silica (B) Asbestos fibres

(C) Non-fibrogeneous dust (D) Radon

Space For Rough Work

120. A booster fan can be used to ventilate a

(A) Heading
(B) Distinct
(C) Both (A) and (B)
(D) While driving a drift

121. Sandwich conveyor is a type of

(A) Cable belt conveyor
(B) High angle conveyor
(C) Chain conveyor
(D) Shaker conveyor

122. Head developed by the pump does not depend on

(A) Design of casing & impeller
(B) Speed of the impeller
(C) Speed of the pump
(D) Size of the delivery pipe

123. An attachment used with the last tub of the set of a ascending tubs is known as

(A) Automatic catch
(B) Bare stay
(C) Buffer
(D) Stop block

124. Splicing of rope is the process of

(A) Joining of two wire rope
(B) Cutting of wire rope
(C) Cleaning of rope
(D) Checking of rope

125. Which of the following is not used as an endless haulage rope clip ?

(A) Nut & bolt clip
(B) Wedge clip
(C) Screw clip
(D) Small man clip

126. Which of the locomotive is maximum possibility of formation of co with the exhaust gas ?

(A) Battery locomotive
(B) Trolley wire locomotive
(C) Compressed air locomotive
(D) Diesel locomotive

Space For Rough Work

127. Recapping of haulage rope should be performed once at least in every

(A) 3 months (B) 6 months

(C) 2 years (D) 3 years

128. Minimum number of dead turns of this rope on drum in winder

(A) 1 turn (B) 2 turns

(C) 3 turns (D) 4 turns

129. The loop takes up system of belt conveyor is provided for

(A) tensioning and to accomodate extra belt.

(B) to avoid regular shortening of belt.

(C) used in longer lengths of conveyors.

(D) All of the above

130. AFC in longwall mining stands for

(A) Armoured flexible chain (B) Armoured flexible conveyor

(C) Armoured face conveyor (D) Armed face conveyor

131. RMR stands for

(A) Rate of Marginal Return (B) Rock Mass Rating

(C) Rating of Massive Roof (D) Roof Mass Rating

132. Friction Prop is a _____ type of support.

(A) rigid (B) yielding

(C) flat (D) diagonal

133. The subsidence that continues to occur after the completion of depillaring is called as _____ subsidence.

(A) Normal (B) Critical

(C) Sub critical (D) Residual

Space For Rough Work

134. SSR based design on RMR depends on the following :

(A) Width of the gallery
(B) Method of extraction
(C) Depth of seam
(D) All the above

135. As per Mohr's hardness scale, the hardness of calcite is _____.

(A) 2
(B) 3
(C) 4
(D) 5

136. The object of roof supporting in underground is

(A) To support immediate roof
(B) To prevent sagging of roof
(C) To prevent bed separation
(D) All of the above

137. Powered support is used in ____ mining mostly.

(A) room and pillar mining
(B) bord and pillar mining
(C) longwall mining
(D) sub level caving

138. Choice of support do not depend on

(A) Working height
(B) Nature of roof
(C) Coal strength
(D) Blast vibration

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

(A) Uniaxial compression test
(B) Brazilian tensile strength
(C) Point load test
(D) Punch shear test

140. Prop support is made up of

(A) Plastic
(B) Steel
(C) Timber
(D) Rock

Space For Rough Work

141. A vehicle transporting EXPLOSIVES shall not be driven at a speed exceeding ____ kMPH.

(A) 25 (B) 20

(C) 15 (D) 30

142. Notice of accident causing death or serious injury in connection with mining operations, in form IV 'A" shall be sent to Regional Inspector within ____ hours.

(A) 24 (B) 48

(C) 72 (D) 12

143. If any employee contracts a notified occupational disease, the Mine Management shall send notice to Regional Inspector in

(A) Form I (B) Form II

(C) Form IV C (D) Form V

144. Minimum length of safety fuss at the firing end shall not be less than

(A) 1.2 Mt (B) 2.0 Mt

(C) 1.8 Mt (D) 1.5 Mt

145. The explosives shall be transported to the site of blasting not more than ____ before commencement of charging at the holes.

(A) 30 minutes (B) 1 hour

(C) 45 minutes (D) $1\frac{1}{2}$ hour

146. As per 106 of MMR 1961, No tree, loose stone or debris shall remain within a distance of _____ from the edge or side of excavation.

(A) 5 m (B) 4 m

(C) 3 m (D) 2 m

Space For Rough Work

147. Persons of ____ years of age shall not be deployed as apprentices or trainees except under supervision

(A) 14 – 16 (B) 16 – 18

(C) 15 – 18 (D) 14 – 20

148. Notice of accident shall be submitted to the concerned authorities within _____ of any such occurrence.

(A) 3 days (B) 15 days

(C) 24 days (D) 48 hours

149. M.V.T. Rules 1966 shall not apply to the following persons.

(A) Timber man (B) Coal driller

(C) Mine manager (D) Haulage attendents

150. Which one of the following is not a notified disease under the provision of Mines Act, 1952.

(A) Pneumoconiosis (B) Silicosis

(C) Asbestosis (D) Tuberculosis

151. Which will regulate progress of production activity according to the schedule prepared ?

(A) Following (B) Check up

(C) Inspection (D) Directing

152. The material issued to the department will be returned to the store by

(A) Invoice (B) Material request note

(C) Indent (D) Material return note

153. The detailed list of movable goods such as raw materials, finished products, work in progress is known as

(A) Inventory (B) Stock

(C) Raw stock (D) Finished goods

Space For Rough Work

154. The important aspect of TQM is

(A) Quality improvement (B) Control of Production

(C) Profit earning (D) Customer satisfaction

155. The oldest method of production is

(A) Mass production (B) Continuous production

(C) Batch production (D) Job production

156. The professional discipline and business function that overseas an organizations human resources is called

(A) Personal Management (B) Human Factor Management

(C) Human Resource Management (D) Business Management

157. Which of the following analysis is mostly used for inventory control ?

(A) Lead time analysis (B) PERT analysis

(C) CPM analysis (D) ABC analysis

158. Which of the following attributes is not desirable for an organization developing as good in the market ?

(A) Flexibility (B) Work centralization

(C) Appropriate levels of control (D) Grant of Authority

159. Which of the following costs are used in determining price of the products, accepting an offer or in decision making on replacing machinery etc ?

(A) differential cost (B) marginal cost

(C) incremental cost (D) standard cost

160. The fitness of the product for the purpose at lowest cost is

(A) Quality (B) Inspection

(C) Quality control (D) Fineness

Space For Rough Work

161. The length of a link in a chain is

(A) 20 cm (B) 30 cm

(C) 35 cm (D) 40 cm

162. A level cannot be used for

(A) Profile levelling (B) Reciprocal levelling

(C) Vertical angles (D) Contouring

163. The magnetic bearing of a line is S30°20'E. What will be the true bearing of the line if the magnetic declination is 4°10' East ?

(A) 145°30' (B) 153°50'

(C) 63°50' (D) 65°30'

164. The multiplicative constant in a tacheometer with focal length 'f' and stadia wire 'i', is

(A) i/f (B) f/i

(C) i + f (D) i × f

165. For ranging a line, the number of ranging rods required is

(A) At least two (B) At least three

(C) At least four (D) At least five

166. Most important factor in selecting survey station is

(A) Distance between two stations

(B) Intervisibility

(C) Intervisibility and well conditioned triangle

(D) Accessibility and distance

Space For Rough Work

167. On a change point

(A) Only a backsight is taken

(B) Only a foresight is taken

(C) Both backsight and foresight are taken

(D) An intersight is taken

168. Prismatic compass gives the

(A) Quadrantial Bearing (B) Reduced Bearing

(C) Whole circle Bearing (D) Quadrantial and Reduced Bearing

169. Surveys which are carried out to depict mountains, rivers, waterbodies, wooded areas and other cultural details, are known as

(A) City surveys (B) Guide map surveys

(C) Topographical surveys (D) Cadastral surveys

170. The closing error in a closed traverse is adjusted by

(A) Lehmann's rule (B) Slide rule

(C) Bowditch's rule (D) Trapezoidal rule

171. The water that is obtained from the atmospheric precipitation is called

(A) Connate water (B) Juvenile water

(C) Run off water (D) Meteoric water

172. Which of the following is a metamorphic rock ?

(A) Diorite (B) Dolerite

(C) Granite (D) Marble

173. In which type of fault, hanging wall moves up relative to the footwall block ?

(A) Reverse fault (B) Normal fault

(C) Strike fault (D) Step fault

Space For Rough Work

174. Which of the following is concordant igneous intrusion ?

(A) Sill (B) Lopolith

(C) Dyke (D) Batholith

175. The strata resting on the orebody is known as

(A) Hanging wall (B) Foot wall

(C) Sill (D) Dyke

176. Which of the physical properties characterize Galena ?

(A) Cherry red streak (B) High specific gravity

(C) Vitreous luster (D) Even fracture

177. Magnetite is an ore of

(A) Iron (B) Magnesite

(C) Copper (D) Chromium

178. Quartz exibits _____ fracture.

(A) Even fracture (B) Uneven fracture

(C) Conchoidal fracture (D) Hackly fracture

179. Which of the following term is not use to describe a geological fault ?

(A) Gradient (B) Throw

(C) Hade (D) Upthrow

180. When _____ is subjected to high temperatue and pressure it becomes marble.

(A) Sand stone (B) Shale

(C) Slate (D) Lime stone

Space For Rough Work