

DIPLOMA - COMMON ENTRANCE TEST-2016

MN	COURSE	DAY : SUNDAY
	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						
<table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> <td style="width: 15%;"></td> </tr> </table>							A - 1	125265

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. Hand over 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**.

MN-A1



PART – A
APPLIED SCIENCE

1. An example of basic S.I. unit is
(A) Newton (B) Joule
(C) Ampere (D) Watt

2. The prefix used for 10^{+2} is
(A) hecta (B) centi
(C) pico (D) peta

3. An example of dimensionless physical quantity is
(A) surface tension (B) strain
(C) impulse (D) period

4. The velocity of a freely falling body gradually _____ as it falls.
(A) decreases (B) increases
(C) remains same (D) increases and then decreases

5. A main scale is divided into half mm and having a vernier containing 20 divisions has a least count of _____ cm.
(A) 2.5×10^{-2} (B) 0.5×10^{-2}
(C) 0.025×10^{-2} (D) 0.25×10^{-2}

6. For a particular mass of the moving body, its friction is minimum when it is
(A) sliding (B) static
(C) rolling (D) dragged

Space For Rough Work

7. All equations of motion hold good under the condition of
(A) constant velocity (B) constant acceleration
(C) variable velocity (D) variable acceleration
8. A force of 1.5×10^{-2} N acts for 3 seconds on a body of mass 0.05 kg moving with velocity 4 m/s. The final velocity of the body is
(A) 4.9 m/s (B) 18 m/s
(C) 9 m/s (D) 7.5 m/s
9. To check the equilibrium of five coplanar concurrent forces, we use law of
(A) Parallelogram of forces (B) Triangle of forces
(C) Lami's theorem (D) Polygon of forces
10. The S.I. unit of momentum is
(A) kg m (B) $\text{kg m}^{-1}\text{s}^{-1}$
(C) kg m s^{-2} (D) kg m s^{-1}
11. When three forces acting at a point are in equilibrium, the angle opposite to biggest force is always _____ angle.
(A) biggest (B) smallest
(C) equal to other (D) obtuse
12. Towing of a boat by two forces is an illustration of
(A) Law of parallelogram of forces. (B) Lami's theorem.
(C) Law of triangle of forces. (D) Law of polygon of forces.

Space For Rough Work

13. Two forces 3N and 5N acts on a body simultaneously making an angle 60° between them. The resultant force on the body is
- (A) 8 N (B) 4 N
(C) 7 N (D) 49 N
14. Dimensional formula for stress is
- (A) $[LM^{-1}T^{-2}]$ (B) $[L^{-1}MT^{-2}]$
(C) $[L^{-1}M^{-1}T]$ (D) $[L^2M^{-1}T^{-2}]$
15. The pull in the bicycle chain is an example of
- (A) tensile stress (B) volume stress
(C) shear stress (D) shear strain
16. Viscosity of water at 20°C in centipoise is
- (A) 1.792 (B) 0.650
(C) 1.005 (D) 0.470
17. Dimensional formula of surface tension is
- (A) $[LMT^{-2}]$ (B) $[L^2MT^{-2}]$
(C) $[LM^{-1}T^{-2}]$ (D) $[L^0MT^{-2}]$
18. A steel needle can be floated on the surface of water because of the
- (A) density of steel is greater than water
(B) density of steel is less than water
(C) surface tension
(D) viscosity

Space For Rough Work

19. Thrust on the bottom of the container having a base area of 10 m^2 filled with water to a height of 6 m is
- (A) $60 \times 10^2 \text{ N}$ (B) $58.8 \times 10^4 \text{ N}$
(C) 60.8 N (D) 600 N
20. Keeping the temperature constant, if the pressure of the gas is doubled its volume
- (A) remains constant (B) doubles
(C) reduces to one fourth (D) reduces to half
21. Heat transfer in the absence of the medium is
- (A) conduction (B) convection
(C) radiation (D) absorption
22. Zero of absolute scale of temperature is at
- (A) 0°C (B) 100°C
(C) 273°C (D) -273°C
23. Ripples on water surface is an example of
- (A) electromagnetic waves (B) transverse waves
(C) waves travelling in space (D) longitudinal waves
24. The time interval between two consecutive waxing and waning of sound waves is
- (A) beat period (B) wave period
(C) beat frequency (D) wave frequency

Space For Rough Work

25. S.I. unit of intensity of sound is
(A) watt per square meter (B) watt per meter
(C) watt square meter (D) watt meter
26. The study of characteristics of buildings with reference to sound is
(A) resonance (B) interference
(C) echo (D) acoustics
27. The distance travelled by the disturbance in the medium for one complete oscillation is
(A) wave velocity (B) wavelength
(C) wave frequency (D) wave amplitude
28. Momentum of a photon is given by
(A) $P = \frac{\lambda}{h}$ (B) $P = \frac{h}{\lambda}$
(C) $P = \lambda h$ (D) $P = \lambda^2 h$
29. The velocity of sound in case of liquids is given by
(A) $\sqrt{\frac{d}{k}}$ (B) \sqrt{kd}
(C) $\sqrt{\frac{k}{d}}$ (D) $\sqrt{\frac{d^2}{k}}$
30. A tuning fork vibrating in air is an example of
(A) damped free vibrations (B) resonant vibrations
(C) undamped free vibrations (D) forced vibrations

Space For Rough Work

31. Raman lines are
(A) unpolarised (B) polarised
(C) diffracted (D) reflected
32. A crystal which has two optic axes is
(A) calcite (B) quartz
(C) mica (D) glass
33. Electron microscope is used to
(A) study virus and bacteria
(B) view three dimensional images
(C) automatic switching on and off of street-lights
(D) electronic industry for soldering
34. Which of the following statements is correct in case of γ -rays ?
(A) Penetrating power is less than β -rays.
(B) Penetrating power is less than α -rays.
(C) Penetrating power is very high.
(D) γ particles are nothing but electrons.
35. For destructive interference of light the path difference should always be
(A) $(2n + 1) \frac{\lambda}{2}$ (B) $\frac{n\lambda}{2}$
(C) $(2n + 1) \frac{\lambda}{3}$ (D) $n\lambda$

Space For Rough Work

36. The resultant intensity of interference of two monochromatic waves having same amplitude and constant phase difference equal to ϕ is

- (A) $2a \cos\left(\frac{\phi}{2}\right)$ (B) $4a^2 \cos^2\left(\frac{\phi}{2}\right)$
(C) $4a^2 \cos\left(\frac{\phi}{2}\right)$ (D) $4a \cos^2\left(\frac{\phi}{2}\right)$

37. For two objects to be just resolved, the principle maximum should be on

- (A) first maximum (B) second maximum
(C) first minimum (D) second minimum

38. Resolving power of microscope is given by

- (A) $\frac{\lambda}{2n \sin \theta}$ (B) $\frac{n}{2\lambda \sin \theta}$
(C) $\frac{2\lambda \sin \theta}{n}$ (D) $\frac{2n \sin \theta}{\lambda}$

39. In case of acids, the concentration of H^+ ions is

- (A) more than 10^{-7} g ions/litre.
(B) less than 10^{-7} g ions/litre.
(C) equal to 10^{-7} g ions/litre.
(D) between 10^{-7} g ions/litre and 10^{-14} g ions/litre.

40. Corrosion of metal can be prevented by keeping it in

- (A) acidic medium (B) basic medium
(C) neutral medium (D) moisture

Space For Rough Work

PART – B
APPLIED MATHEMATICS

41. The value of the determinant $A = \begin{vmatrix} 1 & 1 & 1 \\ 3 & 3 & 3 \\ 4 & 5 & 6 \end{vmatrix}$ is
- (A) 1 (B) 3
(C) -2 (D) 0
42. The value 'x' by Cramer's rule in $3x + 2y = 4$ and $x - 2y = 8$ is
- (A) 12 (B) 3
(C) -13 (D) 15
43. If $A = \begin{bmatrix} 2 & -3 \\ 1 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix}$, then $A + 2B$ is
- (A) $\begin{bmatrix} 4 & 1 \\ 9 & -1 \end{bmatrix}$ (B) $\begin{bmatrix} 4 & 1 \\ 9 & 1 \end{bmatrix}$
(C) $\begin{bmatrix} 3 & -1 \\ 5 & 2 \end{bmatrix}$ (D) $\begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$
44. If $A = \begin{bmatrix} 2 & 3 & 4 \\ -2 & x & -4 \\ -5 & 6 & 7 \end{bmatrix}$ is singular, then the value of x is
- (A) -3 (B) 3
(C) $\frac{1}{3}$ (D) $-\frac{1}{3}$

Space For Rough Work

45. The characteristic roots of the matrix $A = \begin{bmatrix} 1 & 4 \\ 3 & 2 \end{bmatrix}$ is
- (A) 5, 2 (B) -5, -2
(C) 5, -2 (D) -5, 2
46. If ${}^n C_{16} = {}^n C_3$, then the value of n is
- (A) -19 (B) 19
(C) 13 (D) -13
47. The last term in the expansion of $\left(3x^2 + \frac{1}{2x^2}\right)^4$ is
- (A) $\frac{1}{8x^8}$ (B) $\frac{1}{16x^8}$
(C) $81x^8$ (D) $12x^8$
48. The unit vector of $\vec{a} = 2i - 3j + 4k$ is
- (A) $\frac{2i-3j+4k}{\sqrt{29}}$ (B) $\frac{2i-3j+4k}{\sqrt{11}}$
(C) $\frac{2i-3j+4k}{\sqrt{3}}$ (D) $\frac{\sqrt{29}}{2i-3j+4k}$
49. If $\vec{a} = i - 4j + 3k$ and $\vec{b} = -2i + j + 6k$, then the projection of \vec{a} on \vec{b} is
- (A) $\frac{24}{\sqrt{41}}$ (B) $\frac{12}{\sqrt{26}}$
(C) $\frac{-12}{\sqrt{41}}$ (D) $\frac{12}{\sqrt{41}}$

Space For Rough Work

50. The area of triangle whose two sides are $\vec{a} = 3\mathbf{i} + 4\mathbf{j} + \mathbf{k}$ and $\vec{b} = 5\mathbf{i} + 6\mathbf{j} + 2\mathbf{k}$ is

(A) 3 sq. units

(B) $\frac{1}{2}$ sq. units

(C) $\frac{3}{2}$ sq. units

(D) $\frac{9}{2}$ sq. units

51. The simplification of $\frac{1}{1 + \sin \theta} + \frac{1}{1 - \sin \theta}$ is

(A) $2 \cos^2 \theta$

(B) $2 \sec^2 \theta$

(C) $\tan^2 \theta$

(D) $2 \operatorname{cosec}^2 \theta$

52. The value of $\tan^2 30^\circ + \sin^2 45^\circ + \cos^2 90^\circ + \cos^2 60^\circ$ is

(A) $\frac{4}{3}$

(B) $\frac{13}{12}$

(C) $\frac{13}{24}$

(D) $\frac{25}{12}$

53. The simplification of $\frac{\sin(180^\circ - A) \cos(360^\circ - A)}{\tan(90^\circ + A) \sin(-A)}$ is

(A) $\sin A$

(B) $\operatorname{cosec} A$

(C) $-\sin A$

(D) $-\operatorname{cosec} A$

54. If $\cos A = \frac{-3}{5}$ where $90^\circ < A < 180^\circ$, then the value of $\cot A$ is

(A) $\frac{3}{4}$

(B) $\frac{4}{3}$

(C) $\frac{-3}{4}$

(D) $\frac{-4}{3}$

Space For Rough Work

55. The value of $\cos 105^\circ$ is

- (A) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (B) $\frac{\sqrt{3}+1}{2\sqrt{2}}$
(C) $\frac{2\sqrt{2}}{1-\sqrt{3}}$ (D) $\frac{1-\sqrt{3}}{2\sqrt{2}}$

56. If $\tan \frac{A}{2} = \frac{1-\cos A}{\sin A}$, then the value of $\tan 22\frac{1}{2}^\circ$ is

- (A) $\sqrt{2}+1$ (B) $1-\sqrt{2}$
(C) $\sqrt{2}-1$ (D) $-1-\sqrt{2}$

57. The value of $\cos 5x \cdot \cos 3x$ is

- (A) $\cos 8x + \cos 2x$ (B) $\frac{1}{2}(\cos 8x + \cos 2x)$
(C) $\frac{1}{2}(\sin 8x + \sin 2x)$ (D) $\frac{1}{2}(\cos 8x - \cos 2x)$

58. The simplified value of $\tan^{-1}\left(\frac{1}{2}\right) + \tan^{-1}\left(\frac{1}{3}\right)$ is

- (A) $\frac{\pi}{4}$ (B) $\frac{\pi}{3}$
(C) 1 (D) $\tan^{-1}\left(\frac{1}{7}\right)$

59. Distance of a point $P(-2, 5)$ from the origin is

- (A) $\sqrt{29}$ (B) $\sqrt{21}$
(C) $\sqrt{3}$ (D) 29

60. The co-ordinates of the point which divides the line joining the points $A(8, 3)$ and $B(-5, 6)$ in the ratio of $2:3$ externally is

- (A) $(-34, -3)$ (B) $(34, 3)$
(C) $\left(\frac{14}{5}, \frac{21}{5}\right)$ (D) $(34, -3)$

Space For Rough Work

61. The area of triangle with the vertices (5, 3), (4, 6) and (5, 8) is
- (A) $\frac{15}{2}$ sq. units (B) 15 sq. units
(C) $\frac{5}{2}$ sq. units (D) $\frac{45}{2}$ sq. units
62. The slope of the line making an angle 150° with the x -axis is
- (A) $-\frac{1}{\sqrt{3}}$ (B) $\frac{1}{\sqrt{3}}$
(C) $\sqrt{3}$ (D) $-\sqrt{3}$
63. The two point form of a straight line is
- (A) $y - y_1 = m(x - x_1)$ (B) $\frac{y - y_1}{x - x_1} = \frac{y_2 - y_1}{x_2 - x_1}$
(C) $\frac{y}{x} = \frac{y_2 - y_1}{x_2 - x_1}$ (D) $\frac{y - y_2}{x - x_2} = \frac{y_2 - y_1}{x_2 - x_1}$
64. The equation of straight line perpendicular to $2x + 5y - 8 = 0$ and passing through $(-1, 2)$ is
- (A) $2x + 5y + 9 = 0$ (B) $5x - 2y + 1 = 0$
(C) $5x - 2y + 9 = 0$ (D) $5x + 2y - 9 = 0$
65. The value of $\lim_{x \rightarrow 3} \frac{2x^2 - 7x + 3}{2x - 6}$ is
- (A) 3 (B) $\frac{2}{5}$
(C) $\frac{5}{2}$ (D) 5

Space For Rough Work

66. The value of $\lim_{x \rightarrow 0} \frac{\sqrt{1 - \cos x}}{x}$ is
- (A) $\frac{1}{\sqrt{2}}$ (B) $\sqrt{2}$
(C) $\frac{1}{2}$ (D) 1
67. If $y = e^x (\cos x - \sin x)$, then $\frac{dy}{dx}$ is
- (A) $2e^x \cos x$ (B) $-2e^x \cos x$
(C) $2e^x \sin x$ (D) $-2e^x \sin x$
68. If $x + y = \log x + \log y$, then $\frac{dy}{dx}$ at $x = -1$ and $y = 2$ is
- (A) $-\frac{1}{4}$ (B) -4
(C) 4 (D) $\frac{1}{2}$
69. If $x = a \cos^2 \theta$ and $y = b \sin^2 \theta$, then $\frac{dy}{dx}$ is
- (A) $\frac{-b}{a}$ (B) $\frac{b}{a}$
(C) $\frac{a}{b}$ (D) $\frac{-a}{b}$
70. The second derivative of $y = \log \left(\frac{1}{x} \right)$ is
- (A) x (B) 1
(C) $\frac{1}{x^2}$ (D) $\frac{-1}{x^2}$

Space For Rough Work

71. The equation of normal to the curve $y = (2x + 1)^2$ at $(-2, 0)$ is
- (A) $x - 16y + 2 = 0$ (B) $x - 12y + 2 = 0$
 (C) $x + 16y + 2 = 0$ (D) $x + 12y + 2 = 0$
72. The maximum value of the function $y = 2x^3 + 3x^2 - 36x$ is
- (A) -44 (B) -30
 (C) 81 (D) -81
73. The value of $\int \sin 3x \cos 2x \, dx$ is
- (A) $\frac{-1}{2} \left[\frac{\cos 5x}{5} + \cos x \right] + C$ (B) $\frac{1}{2} \left[\frac{-\cos 5x}{5} + \cos x \right] + C$
 (C) $\frac{1}{2} \left[\frac{\cos 5x}{5} + \cos x \right] + C$ (D) $\frac{-1}{2} [\cos 5x + \cos x] + C$
74. The value of $\int x^2 \sin(2x^3) \, dx$ is
- (A) $\frac{-\cos(2x^3)}{6} + C$ (B) $\frac{-\cos(2x^3)}{3} + C$
 (C) $12x^3 \cos(2x^3) + C$ (D) $\frac{\cos(2x^3)}{6} + C$
75. $\int \log x \, dx$ is
- (A) $\frac{1}{x} + C$ (B) $\frac{1}{x} - x + C$
 (C) $x \log x + x + C$ (D) $x \log x - x + C$

Space For Rough Work

76. The value of $\int_0^{\pi/2} \sqrt{1 + \sin 2x} \, dx$ is

- (A) 0 (B) 1
(C) 2 (D) -2

77. $\int_0^1 \frac{x}{1+x^4} \, dx$ is

- (A) $\frac{\pi}{4}$ (B) $\frac{\pi}{8}$
(C) $-\frac{\pi}{8}$ (D) $-\frac{\pi}{4}$

78. The area formed by the curve $y = (2x + 1)^3$ between the ordinates $x = -1$ and $x = 1$ is

- (A) $\frac{41}{4}$ sq. units (B) 2 sq. units
(C) 20 sq. units (D) 10 sq. units

79. The order and degree of differential equation $\left[1 + \left(\frac{dy}{dx}\right)^4\right]^{2/3} = \frac{d^2y}{dx^2}$ is

- (A) order 2 and degree 3 (B) order 2 and degree 1
(C) order 1 and degree 2 (D) order 1 and degree 4

80. The solution of differential equation $\sec^2 x \tan y \, dx + \sec^2 y \tan x \, dy = 0$ is

- (A) $\tan^2 x + \tan^2 y = C$ (B) $\tan x + \tan y = C$
(C) $\tan x \tan y = C$ (D) $x + y + \log(\sec x \sec y) = C$

Space For Rough Work

PART – C
MINING ENGINEERING

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

- 81.** The Mining terminology, exploitation or winning is
(A) The process of blasting
(B) The process of extracting the economic minerals from the earth
(C) The process of ventilation
(D) The process of surveying
- 82.** The openings in the Mine, which serve as a means of entry is known as
(A) Shaft (B) Edits
(C) Stope (D) Goaf
- 83.** Cut and Fill stoping can be operated
(A) Only for underhand stopes
(B) Only for overhand stopes
(C) Both underhand and overhand stopes
(D) For Flat deposits
- 84.** Special chemicals are used to extinguish the spark produced during blasting in
(A) Permitted explosives (B) LOX
(C) Emulsion explosives (D) ANFO
- 85.** Which of the following explosive have maximum strength ?
(A) Gun powder (B) Black power
(C) ANFO (D) LOX
- 86.** As per provision of regulation of MMR-1961, danger zone is an area falling a radius of
(A) 500 M (B) 200 M
(C) 150 M (D) 250 M

Space For Rough Work

87. Emulsion explosive is a mixture of
(A) Ammonium nitrate, hollow microballons
(B) Ammonium nitrate fuel oil
(C) Ammonium nitrate and water
(D) Ammonium nitrate, water, hollow microballons
88. The width of the ore body which can be economically mined is
(A) Stopping width (B) Assay width
(C) Actual width (D) Grady width
89. Long-hole drilling with crater blasting is used for construction of
(A) Winze (B) Shaft
(C) Raise (D) Decline
90. High Explosives contains
(A) Nitroglycerene (B) Charcoal
(C) Sodium nitrate (D) Sulphur
91. A district seperated from other district by a barrier which may be of solid coal is known as
(A) Panel (B) Stope
(C) Goaf (D) Block
92. In the development of steep seam by bord and pillar method, the shape of the pillar becomes
(A) Square (B) Rectangle
(C) Rhombus (D) Circle
93. During depillaring, a gallery driven in the pillar to form a small pillar is known as
(A) Split (B) Strike gallery
(C) Level gallery (D) Dip gallery

Space For Rough Work

94. A roof fall which takes place soon after the withdrawal of supports is called
(A) Strata fall (B) Local fall
(C) Rock burst (D) Air blast
95. Coal is available in every shift, continuously is
(A) Cyclic Longwall Mining (B) Non-Cyclic Longwall Mining
(C) Skip Mining (D) Placer Mining
96. A modified method of longwall retreating with sand stoving in a seam already developed on bord and pillar method of mining is by
(A) Barry face (B) Short face
(C) Long face (D) Coal face
97. Female labour can be employed in
(A) Underground Metal Mine (B) U/G Coal Mine
(C) Open Cast Mining (D) U/G Zn Mine
98. To give the undercut in the coal developmental headings, which machine is used ?
(A) Jack hammer (B) Coal cutting machine
(C) Wagon drill (D) Well hole drill
99. As per the regulations only permitted explosives are used in _____ mine.
(A) Copper (B) Gold
(C) Coal (D) Aluminium
100. The introduction of _____ blasting eliminates the undercut in coal face.
(A) Muffled blasting (B) Cyote blasting
(C) Solid blasting (D) Pop shooting

Space For Rough Work

101. Under CMR, the gallery in a seam should not be more than _____ M wide.
(A) 4.9 (B) 4.8
(C) 5.2 (D) 5.8
102. A method of mining involves mining and washing together of generally unconsolidated rock near the ground surface.
(A) Placer Mining (B) Glory hole Mining
(C) Horizon Mining (D) Systematic Mining
103. In an open cast mine, the bench height depends upon the
(A) height of the wagon drill (B) height of the damper
(C) width of the shovel (D) height of the boom of shovel
104. The surface mine machine used for levelling or spreading earth, grading and compacting temporary roads, pushing material into bucket is
(A) Dipper Shovel (B) Bull dozer
(C) Drag line (D) BWE
105. A drill mounted and generally designed for horizontal drilling
(A) Rotary M/C (B) A drifter
(C) Percussive M/C (D) LHD
106. A charge of explosive is laid on the surface of the boulder, then covered with a clay and blasted in
(A) Pop shooting (B) Plaster shooting
(C) Coromant cut (D) Line drilling
107. A building where explosives and detonators are stored is called
(A) Magazine (B) Store room
(C) Stock room (D) First Aid room

Space For Rough Work

108. The base charge of an electric delay detonator is
(A) ASA (B) LOX
(C) PETN (D) ANFO
109. The term 'box cut' is related to
(A) U/G Mining (B) Open cast Mining
(C) Dredging (D) Stopping
110. The ratio of thickness of overburden and thickness of mineral deposit is called
(A) Stripping ratio (B) Powder factor
(C) Poisson's ratio (D) Power factor
111. To prevent the passage of flame from inside to the outside of the flame safety lamp, _____ is used.
(A) Wire gauge (B) Magnetic locker
(C) Handle (D) Telescopic prob
112. The hopkalite used in CO detector is a mixture of MnO_2 and
(A) Charcoal (B) Silica gel
(C) Sulphur (D) Sodium nitrate
113. Self rescuer can be used upto _____ of CO.
(A) 1.5 (B) 2.5
(C) 3 (D) 3.5
114. According to CMR 1957, CH_4 % in return airway should not exceed
(A) 2.5% (B) 2.0%
(C) 1.5% (D) 0.75%

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115. In the Coward flammability diagram, the respective percentages of methane and oxygen at the explosibility limits are approximately
- (A) 5.4 to 14.8% (B) 3.4 to 14.8%
(C) 4.4 to 14.8% (D) 6.4 to 14.8%
116. Nystagmus is a Miner's disease associated with
- (A) Liver (B) Lung
(C) Eye (D) Stomach
117. A Drager Gas Mask does not filter
- (A) Water vapour (B) Nitrous fumes
(C) Carbon monoxide (D) Carbon dioxide
118. Which of the following instruments is used to measure the cooling power of the air ?
- (A) Thermometer (B) Anemometer
(C) Kata thermometer (D) Aneroid barometer
119. The wet bulb temperature in development faces should not exceed
- (A) 33°C (B) 34°C
(C) 35°C (D) 36°C
120. In watergas explosion the two highly explosive gases that are involved are
- (A) H₂ and CO (B) H₂ and CO₂
(C) H₂ and O (D) H₂ and CaCl₂
121. A method of joining two wire ropes without using special fittings is
- (A) Rope splicing (B) Recapping
(C) Rope joints (D) Re-attaching

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122. A steel frame work on the shaft mouth, to guide the cage to the banking level is
(A) Keps (B) Detaching hook
(C) Headgear (D) Safety catches
123. The angle of fleet, which is the angle between the _____ and the rope when the cage is at the pit top or pit bottom.
(A) Horizontal plane of the pulley (B) Vertical plane of the pulley
(C) Direction of the shaft (D) Inclination of the shaft
124. A cage which can accommodate two lubs is called
(A) Skip cage (B) random cage
(C) Men cage (D) tandem cage
125. Which device is attached inbetween Rope capel and a triangular plate by means of D-link and a chain ?
(A) King detaching hook (B) Back stays
(C) Keps (D) Safety catches
126. Safety catches is fitted in headgear, as a safeguard against failure of a _____ to hold the cage.
(A) Rope capel (B) detaching plate
(C) Sheave wheel (D) Winder
127. A safety device used behind an ascending set of tubs on a direct haulage on a endless rope haulage is
(A) Backstay (B) Stop block
(C) Surge wheel (D) Drop worrick
128. A conveyer consists essentially of stationary steel troughs, connected together end to end, and endless chain with flights moving in the troughs is
(A) Aerial ropeways (B) Scraper chain conveyor
(C) Cable belt conveyor (D) Python conveyor

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129. Clifton pulley is used in
(A) Direct rope haulage (B) Belt conveyor
(C) Scraper (D) Endless rope haulage
130. Separate run with one cage is possible in
(A) Drum winding (B) Koepe winding
(C) Friction winding (D) Endless rope haulage
131. Poisson's ratio is a relationship between
(A) Longitudinal strain and lateral strain
(B) Longitudinal strain and stress
(C) Stress and strain
(D) Load Vs area
132. Fly rocks during opencast blasting is controlled by
(A) Line drilling (B) Muffled blasting
(C) Deck charging (D) Secondary blasting
133. The branch of Mechanics concerned with the response of rock and rock masses to the force fields of their physical environment.
(A) Engineering Mechanics (B) SOM
(C) Rock Mechanics (D) Applied Mechanics
134. In pertaining to subsidence, angle of draw is the angle between the vertical and _____.
(A) Initial line of break (B) Middle line of break
(C) Horizontal line of break (D) Final line of break
135. Which of the following supports bear heavy load in the developmental openings ?
(A) Crib set (B) Prop
(C) Stull (D) Yielding prop

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136. The property of the material to deform continuously and permanently without rupture is known as
- (A) Plasticity (B) Elasticity
(C) Porosity (D) Tenacity
137. Which of the following minerals has its hardness 8 ?
- (A) Talc (B) Topaz
(C) Corundum (D) Gypsum
138. Which of the following reduces ground vibration ?
- (A) Delay period of blasting (B) Tenor of ore
(C) Grade of ore (D) Percentage of metal content
139. Injection of a liquid of variable viscosity under pressure through a hole to seal crack is
- (A) Shotcreting (B) Grouting
(C) Cementing (D) Freezing
140. Angle of repose should be _____ of bench rock.
- (A) more than angle of repose (B) more than 90°
(C) more than or equal to 90° (D) equal or less than the angle of repose
141. Which will regulate progress of production activity according to the schedule prepared ?
- (A) Following (B) Check up
(C) Inspection (D) Directing
142. The fitness of the product for the purpose at lowest cost is
- (A) Quality (B) Inspection
(C) Quality control (D) Fineness

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143. The Judging the quality of product, but it is essential to minimise the wastages
- (A) Quality Control (B) Check up
(C) Inspection (D) Quantity Control
144. The material issued to the department will be returned to the store by
- (A) Material return note (B) Material request note
(C) Indent (D) Invoice
145. Any materials first entered into the stores will be entered into
- (A) Receipt register (B) Condemned articles
(C) Loan register (D) Surplus register
146. 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
147. Getting goods from the manufacturer to customer is called
- (A) Goods Management (B) Carrier Management
(C) Customer Management (D) Logistics Management
148. The important aspect of TQM is
- (A) Quality improvement (B) Control of production
(C) Profit earning (D) Customer satisfaction
149. Effective TQM is not results in
- (A) Customer satisfaction (B) Increased productivity
(C) Less waste (D) Decreased productivity

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150. The oldest method of production is
- (A) Job production (B) Mass production
(C) Batch production (D) Continuous production
151. As per CMR the recapping of rope is done once atleast in every _____ months.
- (A) 7 (B) 8
(C) 6 (D) 9
152. Notice of diseases shall be submitted in _____ of first schedule to the regional Inspector.
- (A) Form-V (B) Form-VI
(C) Form-IV (D) Form-III
153. Reportable injury means any injury other than serious bodily injury, which involves the enforced absence of injured person from work for a period of
- (A) 48 hours (B) 24 hours or more
(C) 48 hours or more (D) 72 hours or more
154. Factor of safety for winding rope is
- (A) 10 (B) 5
(C) 6 (D) 4
155. As per the regulations, life of winding rope is
- (A) 4¾ years (B) 2½ years
(C) 3½ years (D) 3¼ years
156. Runaway switch is used in
- (A) Friction winding (B) Drum winding
(C) Rope haulage (D) Belt conveyor

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157. In which lay of construction of ropes, all layers of wires have the same pitch or length of lay ?
- (A) Half locked (B) Equal lay
(C) Full locked (D) Unequal lay
158. The pouring temperature of white metal in rope capping, should not exceed,
- (A) 300 °C (B) 265 °C
(C) 315 °C (D) 365 °C
159. The oremerod detaching hook consists of _____ mild steel plates.
- (A) 2 (B) 3
(C) 4 (D) 5
160. A haulage without any motor or external sources of power is
- (A) Endless rope haulage (B) Main and Tail haulage
(C) Direct rope haulage (D) Gravity haulage
161. The pentagraph is used for _____ of the map.
- (A) measuring area (B) drawing contours
(C) enlarging or reducing (D) determining heights
162. Correction for pull applied to a tape during linear measurements is given by C_p equal to
- (A) $(P + P_0) L/AE$ (B) $(P - P_0) AE/L$
(C) $(P - P_0) L/AE$ (D) $(P + P_0) LE/A$
163. The total station measures _____ parameters at a station.
- (A) Horizontal angle and vertical angle
(B) Horizontal angle and slope distance
(C) Horizontal angle, vertical angle and slope distance
(D) Vertical angles only

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164. The magnitude of departure of the survey line is

- (A) $l \sin \theta$ (B) $l \cos \theta$
(C) $l \sec \theta$ (D) $l \operatorname{cosec} \theta$

165. The capacity of the reservoir is calculated using prismoidal rule.

- (A) $V = \frac{h}{3} [A_1 + 4(A_2 + A_4 + \dots) + 2(A_3 + A_5 + \dots) + A_n]$
(B) $V = h \left[\frac{A_1 + A_n}{2} + A_2 + A_3 + \dots \right]$
(C) $V = h [A_1 + 4(A_2 + A_4 + \dots) + 2(A_3 + A_5 + \dots) + A_n]$
(D) $V = \frac{h}{3} \left[\frac{A_1 + A_4}{2} + A_2 + A_3 + \dots \right]$

166. The horizontal and vertical distances of points are obtained by optical means in

- (A) Trigonometric Survey (B) Tacheometric Survey
(C) Compass Survey (D) Correlation Survey

167. The error of closure in a closed traverse is given by

- (A) $e = \sqrt{(\Sigma L)^2 + (\Sigma D)^2}$ (B) $e = \sqrt{(\Sigma L)^3 + (\Sigma D)^3}$
(C) $e = \sqrt{\Sigma L - \Sigma D}$ (D) $e = \sqrt{\Sigma L + \Sigma D}$

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

- (A) Pentagraph (B) Planimeter
(C) Edigraph (D) Clinometer

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169. The vertical distance between any two consecutive contours is
- (A) Horizontal equivalent
 - (B) Contour interval
 - (C) Contour gradient
 - (D) Vertical equivalent
170. The process of forming clear image of the object in the plane of cross-hairs is called
- (A) Focusing the eye-piece
 - (B) Focusing the objective
 - (C) Removing the parallax
 - (D) Transiting
171. In which fault, hanging wall moves up relative to the foot wall block ?
- (A) Reverse fault
 - (B) Normal fault
 - (C) Step fault
 - (D) Strike fault
172. A fracture in a sedimentary rocks, where there has been no displacement is called
- (A) Fault
 - (B) Joint
 - (C) Fold
 - (D) Unconformity
173. In which fold older rock lies in the centre ?
- (A) Synclorium
 - (B) Syncline
 - (C) Laccolith
 - (D) Anticline
174. Which of the following is concordant igneous intrusion ?
- (A) Sill
 - (B) Lopolith
 - (C) Dyke
 - (D) Batholith

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175. Marble is a metamorphic rock that forms from a _____ parent.
- (A) Granite (B) Limestone
(C) Sand stone (D) Shale
176. Which of the following metallic minerals is obtained from veins and lodes ?
- (A) Zinc (B) Limestone
(C) Rutile (D) Mica
177. Which of the following is an example of Igneous rock ?
- (A) Gneiss (B) Schist
(C) Marble (D) Basalt
178. Which of the following physical properties characterize Haematite ?
- (A) Prismatic form (B) Cherry red streak
(C) Yellow colour (D) High sp. gravity
179. Which of the following is the Acid Hypabyssal Igneous rock ?
- (A) Granite (B) Granite porphyri
(C) Synite (D) Obsidian
180. A large igneous rockmass has a basin like shape and a gradually decreasing width with increasing depth.
- (A) Sill (B) Dyke
(C) Laccolith (D) Lopolith

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