DIPLOMA - COMMON ENTRANCE TEST-2017

CR	COURSE	DAY : SUNDAY DATE : 02-07-2017
	CERAMICS	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	233053

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.**

CR-A1

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) $\dfrac{1\,MSD}{1\,VSD}$

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) $S_n = u + \dfrac{a}{2}(2n - 1)$

(B) $S_n = u - \dfrac{a}{2}(2n - 1)$

(C) $S_n = u + \dfrac{a}{2}(2n + 1)$

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

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) $\dfrac{P}{Q}$

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) $9.8 \times 10^4 \ Pa$

   (B) $980 \times 10^4 \ Pa$

   (C) $9.8 \times 10^{-4} \ Pa$

   (D) $980 \times 10^{-4} \ Pa$

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) $v \propto \dfrac{1}{T}$

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

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

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

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

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 $\left(x^2 - \dfrac{2}{x} \right)^{24}$ 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 $\left(x^2 - \dfrac{4}{3x} \right)^{9}$ is

(A) $^{9}C_6(4)^6$

(B) $^{9}C_6(3)^6$

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

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

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) $\dfrac{23}{\sqrt{21}}$

(B) $\dfrac{23}{\sqrt{29}}$

(C) $\dfrac{-23}{\sqrt{29}}$

(D) $\dfrac{-23}{\sqrt{21}}$

Space For Rough Work

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

(A) $\dfrac{\sqrt{65}}{3}$

(B) $\dfrac{\sqrt{65}}{\sqrt{3}}$

(C) $\dfrac{\sqrt{65}}{9}$

(D) $\sqrt{65}$

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

(A) 4

(B) 2

(C) 6

(D) 8

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

(A) $-\dfrac{11}{12}$

(B) $\dfrac{53}{12}$

(C) $\dfrac{7}{12}$

(D) $-\dfrac{7}{12}$

53. The value of

$\dfrac{\sin(90-\theta)}{\cos(360-\theta)} + \dfrac{\sec\left(\dfrac{3\pi}{2}+\theta\right)}{\csc(\pi+\theta)} + \dfrac{\tan(180-\theta)}{\tan(-\theta)}$ is

(A) 1

(B) −1

(C) 3

(D) 2

54. The value of $\csc 43 \cot 43 \cot 47 \cos 47$

(A) 1

(B) 0

(C) −1

(D) 2

55. The value of $\dfrac{\tan 69° + \tan 66°}{1 - \tan 69° \tan 66°}$

(A) 1
(B) −1
(C) 0
(D) ∞

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

(A) $\dfrac{4x}{1 - x^2}$
(B) $\dfrac{4x}{1 + x^2}$
(C) $\dfrac{4x}{1 + x^4}$
(D) $\dfrac{4x}{1 - x^4}$

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

(A) 1
(B) 0
(C) −1
(D) $\dfrac{1}{2}$

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

(A) $\operatorname{cosec}^{-1}\left(\dfrac{1}{x}\right)$
(B) $\operatorname{cosec} x$
(C) $\operatorname{cosec}^{-1} x$
(D) $\dfrac{1}{\sin x}$

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

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 $\dfrac{1}{\sqrt{3}}$ respectively is
   (A) $\dfrac{\pi}{6}$ (B) $\dfrac{\pi}{3}$
   (C) $\dfrac{\pi}{4}$ (D) $\dfrac{\pi}{2}$

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. $\lim\limits_{\theta \to \pi/2} (\sec\theta - \tan\theta)$ is equal to
   (A) 0 (B) 1
   (C) $\dfrac{\pi}{2}$ (D) π

66. $\lim\limits_{x \to 4} \dfrac{x - 4}{3 - \sqrt{13 - x}}$ is equal to
   (A) 3 (B) 9
   (C) 6 (D) 0

Space For Rough Work

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

(A) $5(\log x)^4$

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

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

(D) $5x^4 \log x$

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

(A) -1

(B) 1

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

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

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

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

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

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

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

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

(A) $\dfrac{1}{(x + 2)^2}$

(B) $\dfrac{2x + 3}{(x + 2)^2}$

(C) $-\dfrac{1}{(x + 2)^2}$

(D) $\dfrac{2x - 3}{(x + 2)^2}$

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. $\displaystyle\int_{0}^{\pi/4} \tan^2 x \, dx$ 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) $-\dfrac{1}{3}$

(B) 0

(C) ∞

(D) $\dfrac{1}{3}$

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

(A) $\dfrac{26\,\pi}{3}$ units

(B) $\dfrac{10\,\pi}{3}$ units

(C) $\dfrac{26}{3}$ units

(D) 4 units

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

(A)   2 and 1

(B)   1 and 2

(C)   3 and 2

(D)   2 and 3

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

CERAMICS

81. When limestone is subjected to high temperature and pressure it becomes

    (A) Sandstone   (B) Marble

    (C) Shale   (D) Slate

82. Basalt and Gabbro are the types of _____ rocks.

    (A) Sedimentary   (B) Igneous

    (C) Metamorphic   (D) None of these

83. The zone of earth which is completely made up of rocks of great varieties are called

    (A) Pyrosphere   (B) Asthenosphere

    (C) Lithosphere   (D) Hydrosphere

84. Streak of hematite is

    (A) Blue   (B) Black

    (C) Cherry red   (D) Vitreous

85. Quartz exhibits _____ fracture.

    (A) Even   (B) Uneven

    (C) Conchoidal   (D) Hackly

86. Hardness of corundum

    (A) 6   (B) 7

    (C) 9   (D) 10

Space For Rough Work

87. When the rock masses are subjected to tensional forces, fracture developed are termed as

(A) Fold
(B) Fault
(C) Joints
(D) Unconformity

88. $CaSO_4.2H_2O$ is the chemical composition of

(A) Calcite
(B) Chalcopyrite
(C) Corundum
(D) Gypsum

89. High alumina clay usually contains _____ % of alumina.

(A) 40
(B) 50
(C) 60
(D) 70

90. Fluxes are the materials which play a key role in

(A) Vitrification
(B) De-vitrification
(C) Green strength
(D) Shrinkage

91. Example for flocculant is

(A) $MgSO_4$
(B) $CaCl_2$
(C) Both $MgSO_4$ and $CaCl_2$
(D) TiO_2

92. Jiggering technique is used for

(A) Convex shape
(B) Concave shape
(C) Hollow shape
(D) Porous shape

93. Pushing a column of clay through a die is called

(A) Throwing
(B) Damping
(C) Extrusion
(D) Tape casting

Space For Rough Work

94. Heat can be supplied to the wares by _____ method.

(A) Conduction

(B) Convection

(C) Radiation

(D) All of these

95. Glazed ware is traditionally fired

(A) Once

(B) Twice

(C) Thrice

(D) None of these

96. The organic compounds begins to decompose at

(A) 200 °C

(B) 300 °C

(C) 400 °C

(D) 600 °C

97. The property of clay which enables it to take and hold any impression made on it is termed as

(A) Plasticity

(B) Elasticity

(C) Tenacity

(D) Density

98. _____ white-ware body is used for making insulators.

(A) Terra-cotta

(B) Earthenware

(C) Stoneware

(D) Porcelain

99. High refractoriness of refractory brick means

(A) High spalling resistance

(B) Low spalling resistance

(C) High resistance to fusion

(D) Low porosity

100. Grog

(A) contains both alumina and silica.

(B) is crushed fire bricks.

(C) is a non-plastic material.

(D) All of these

Space For Rough Work

101. Which is a basic refractory ?

 (A) Fire clay
 (B) Silica
 (C) Chrome - Magnesite
 (D) High alumina

102. Seger cones are used for the determination of

 (A) Softening temperature
 (B) Fatigue resistance
 (C) Electrical conductivity
 (D) Slag resistance

103. Insulation refractories should have

 (A) High porosity
 (B) Low thermal conductivity
 (C) Both High porosity and Low thermal conductivity
 (D) Neither High porosity nor Low thermal conductivity

104. Porosity of fire clay refractories is _____ %.

 (A) 5 – 10
 (B) 10 – 25
 (C) 25 – 35
 (D) 35 – 50

105. Dolomite bricks have good resistance to attack by

 (A) Molten steel
 (B) Iron oxide
 (C) Lime slag
 (D) None of these

106. RUL is quite close to the PCE for

 (A) Fire clay bricks
 (B) Silica bricks
 (C) Dolomite bricks
 (D) Very low alumina bricks

107. Silicon carbide refractories have very low

 (A) Refractoriness
 (B) Thermal conductivity
 (C) Resistance to thermal shock
 (D) None of these

Space For Rough Work

108. Hot metal runner in blast furnace are lined with _____ bricks.

(A) Silica

(B) Carborandum

(C) Fireclay

(D) Magnesite

109. Which one of the following is a advanced alumina structural ceramic product ?

(A) Refractories

(B) Wall tiles

(C) Electrical porcelain

(D) Cutting tools

110. From the following _____ is an organic binder.

(A) Kaolin

(B) Ball clay

(C) Refined starch

(D) Bentonite

111. The distribution of particle sizes in a processing system has significant effect on

(A) Particle packing

(B) Pore structure

(C) Behaviour during firing

(D) All of these

112. Air or gas enclosed with a thin film of liquid is known as

(A) Foam

(B) Lubricant

(C) Flocculant

(D) Emulsion

113. Undercut recesses, contoured surfaces and threaded surfaces are produced by

(A) Screen printing

(B) Laminating

(C) Punching

(D) Surface grinding and turning

114. Chemical diffusion and segregation is greatly restricted by

(A) Sedimentation

(B) Polymerisation

(C) Flocculation

(D) Terminal velocity

Space For Rough Work

115. The LEHR is a

    (A) Storing chamber   (B) Mixing chamber

    (C) Annealing chamber   (D) Feeding chamber

116. In glass sulphur plays an important role as

    (A) Fining   (B) Annealing

    (C) Cooling   (D) Mixing

117. The thermal expansion of glass is measured by

    (A) Dial guage apparatus   (B) Refractrometer

    (C) Screw guage apparatus   (D) Fire point and flash point apparatus

118. Glass is a _____ conductor of heat and electricity.

    (A) Good   (B) Poor

    (C) Semi   (D) Super

119. Any non-glassy material embedded in a piece of glass is termed as

    (A) Stone   (B) Chord

    (C) Bubble   (D) Seed

120. In glass SiO_2 is treated as

    (A) Acidic oxide   (B) Basic oxide

    (C) Neutral oxide   (D) Amphoteric oxide

121. The melting point of CaO

    (A) 1000 °C   (B) 2000 °C

    (C) 2800 °C   (D) 3000 °C

Space For Rough Work

122. More than 95% of all manufactured glasses are composed of

(A) Soda – lime type

(B) Potash – lime type

(C) Potash – lead type

(D) Special type

123. Which is known as Salt cake ?

(A) Na_2SO_4

(B) $NaCl$

(C) B_2O_3

(D) P_2O_5

124. Pot furnace is used for the manufacture of

(A) Optical glass

(B) Soda-lime glass

(C) Borosilicate glass

(D) Potash lead glass

125. Cement was invented by

(A) Albert Einstein

(B) Joseph Aspidian

(C) Alexander Gram Bell

(D) Wright Brothers

126. The waste product from iron and steel industry is used in

(A) White cement

(B) Quick setting cement

(C) Blast furnace cement

(D) Low heat cement

127. _____ is the harmful constituent of cement.

(A) Alkali oxide

(B) Magnesium oxide

(C) Both Alkali oxide and Magnesium oxide

(D) None of these

Space For Rough Work

128. Gypsum acts as _____ in cement.

 (A) Retarder   (B) Accelerator

 (C) Plasticizer   (D) Binder

129. Cement has _____ phases.

 (A) 2   (B) 3

 (C) 4   (D) 5

130. Cement clinker is reduced to fine size by

 (A) Roller crusher   (B) Disc crusher

 (C) Tube mill   (D) Hammer mill

131. Clinkers are cooled in _____ coolers.

 (A) Rotary   (B) Grater

 (C) Planetary   (D) All of these

132. IST and FST of cement is tested by

 (A) Le-Chatlier's apparatus   (B) MoR apparatus

 (C) Vicat apparatus   (D) Autoclave apparatus

133. The strength to the cement in early period of setting is imparted by

 (A) C_2S (B) C_3S

 (C) C_3A (D) C_4AF

134. Cement is defined as

 (A) Inorganic material   (B) Hydraulic binder

 (C) Polyphase   (D) All of these

Space For Rough Work

135. Unit of heat is

(A) Calorie

(B) Kilo calorie

(C) British thermal unit

(D) All of these

136. A freshly cut wood contains _____ % moisture.

(A) 10 – 15

(B) 25 – 50

(C) 15 – 20

(D) 50 – 70

137. The percentage of carbon in petrol is

(A) 60%

(B) 70%

(C) 84%

(D) 90%

138. Bio-gas is produced by

(A) Anaerobic fermentation

(B) Aerobic fermentation

(C) Distillation

(D) Filteration

139. Shuttle Kiln is used for firing

(A) Coke

(B) Cement

(C) Table ware

(D) Glass ware

140. Ports are present in which furnace ?

(A) Blast furnace

(B) Glass tank furnace

(C) Electric furnace

(D) Salt bath furnace

141. Example for neutral refractory is

(A) Chromite

(B) Graphite

(C) Carbon

(D) All of these

Space For Rough Work

142. Natural gas is generally associated with

(A) Petroleum deposits   (B) Coal deposits

(C) Soil deposits   (D) Sand deposits

143. Glaze is a mixture of

(A) Silicates   (B) Non-silicates

(C) Clays   (D) Colours

144. A good way to create glaze is by

(A) Empirical formula method   (B) Trignometric formula method

(C) Algebric formula method   (D) Theoritical formula method

145. Stencilling is the process of

(A) Glaze decoration   (B) Sand decoration

(C) Clay decoration   (D) Stone decoration

146. Which is the excellent method to apply glaze ?

(A) Spraying   (B) Brushing

(C) Dipping   (D) Pouring

147. The chief factors which affect the colour are

(A) Colouring agent   (B) Kiln atmosphere

(C) Firing temperature   (D) All of these

148. To prepare salt glaze _____ is used.

(A) NaCl   (B) BaCl

(C) MgCl   (D) CaCl

Space For Rough Work

149. Glaze surface is attacked by which acid ?

    (A)   HF   (B)   NF

    (C)   CF   (D)   KF

150. The flow of glaze during firing is considerably influenced by

    (A)   Surface tension

    (B)   Angle of contact

    (C)   Both Surface tension and Angle of contact

    (D)   None of these

151. Which of the following is a network modifying oxide ?

    (A) ZnO (B) PbO

    (C) Cr_2O_3 (D)   All of these

152. Chipping of glaze under compression is called

    (A)   Peeling   (B)   Blistering

    (C)   Dunting   (D)   Crazing

153. In hammer mill _____ principle of mechanical reduction is used.

    (A)   Blowing   (B)   Compression

    (C)   Shearing   (D)   Cutting

154. For preliminary breaking of hard rock we use a

    (A)   Gyratory crusher   (B)   Ball mill

    (C)   Tube mill   (D)   Squirrel cage disintegrator

Space For Rough Work

155. Trommel screens separate a mixture of particles depending on their

(A) Density (B) Wettability

(C) Electrical property (D) Size

156. Dry pressed ware has

(A) Little or no drying shrinkage (B) Dimension accuracy

(C) High di-electric strength (D) All of these

157. Slurries are usually blended in

(A) Pug mill (B) Ball mill

(C) Blunger (D) Pan mill

158. The granules are formed by

(A) Tunnel drier (B) Spray drier

(C) Mangle drier (D) Chamber drier

159. Autoclave apparatus is used to test

(A) Crazing resistance (B) Thermal shock resistance

(C) Abrasion resistance (D) Chemical resistance

160. 200 mesh means 200 openings per

(A) cm^2 (B) cm

(C) inch (D) $inch^2$

161. Which one of the following is a conductor ?

(A) Porcelain (B) Glass

(C) Rubber (D) Brass

Space For Rough Work

162. An insulator should have

    (A) High dielectric strength   (B) Temperature tolerance

    (C) Least electric absorbent   (D) All of these

163. In internal combustion engine _____ device is used.

    (A) Honey comb   (B) Spark plug

    (C) Sensor   (D) Capacitor

164. _____ cutting tool has low fracture toughness.

    (A) Alumina   (B) Sialon

    (C) Tungsten carbide   (D) Titanium carbide

165. High tension insulators are used

    (A) Below 440 volts   (B) Above 440 volts

    (C) Equal to 440 volts   (D) None of these

166. Which one of the following is a piezoelectric material ?

    (A) Quartz   (B) PZT

    (C) Barium titanate   (D) All of these

167. Hard anisotropic ferrites are shaped by

    (A) Extrusion   (B) Semi-automatic press

    (C) HPA – 100 dorst press   (D) Ordinary press

Space For Rough Work

168. Capacitance of a capacitor is found by

(A) $\sum \dfrac{A}{d}$

(B) $\sum \dfrac{d}{A}$

(C) $\sum_0 \dfrac{A}{d}$

(D) $\sum_r \dfrac{A}{d} \sigma$

169. Glazed tiles are normally decorated by

(A) Brushing

(B) Screen printing

(C) Stamping

(D) Painting

170. Tiles are usually fired in _____ kiln.

(A) Tunnel

(B) Shuttle

(C) Roller hearth

(D) Up draught kiln

171. Example for secondary clay is

(A) Kaolin

(B) Earthenware clay

(C) Ball clay

(D) Both Earthenware clay and Ball clay

172. Presence of carbonates in a body leads to

(A) More shrinkage

(B) Rapid crystallization

(C) Increases firing strength

(D) Acts as flux

173. The stable form of silica at room temperature is

(A) β – quartz

(B) α – quartz

(C) γ – quartz

(D) δ – quartz

174. Presence of alumina in a body increases
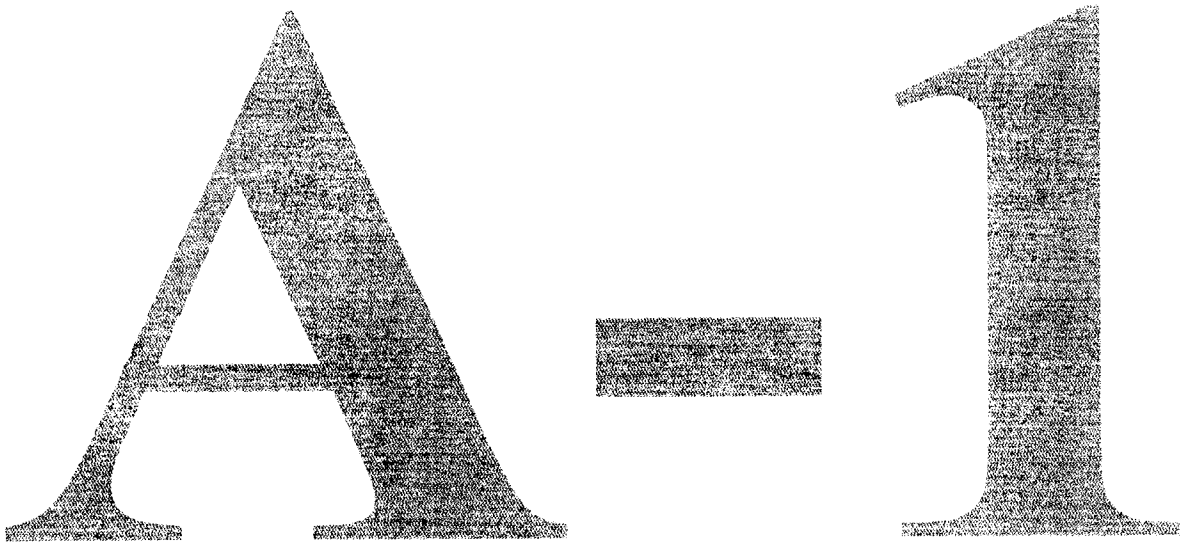
(A) Density

(B) Porosity

(C) Water absorption

(D) Viscosity

Space For Rough Work

175. Silicon carbide is used as

(A) Abrasive material

(B) Refractory material

(C) Heating element

(D) All of these

176. TiN shows

(A) Metallic gold colour

(B) Green colour

(C) Blue colour

(D) Black colour

177. Boride shows

(A) High conductivity at low temperature

(B) High conductivity at high temperature

(C) High conductivity at all temperature

(D) High conductivity at medium temperature

178. Platinum silicide is a _____ material.

(A) Conductor

(B) Semi-conductor

(C) Insulator

(D) Super conductor

179. Ceramets are composed of

(A) 80% ceramics + 20% metal

(B) 70% ceramics + 30% metal

(C) 50% ceramics + 50% metal

(D) 40% ceramics + 60% metal

180. Bentonite is derived from

(A) Volcanic ash

(B) Bone ash

(C) Soda ash

(D) Charcoal ash

Space For Rough Work

A-1