D-C E T – 2018

A

CR	COURSE: CERAMICS	VERSION CODE: A	QUESTION BOOKLET SERIAL NUMBER: 201809
MAXIMUM MARKS: 180	TOTAL DURATION: 200 Minutes	TIME: 10.00 a.m. to 1.00 p.m.	
MAXIMUM TIME FOR ANSWERING: 180 Minutes	MENTION YOUR DIPLOMA CET NUMBER		

DOs :

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

DON'Ts :

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

SEAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

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

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

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

[P.T.O.

DO NOT WRITE HERE

S0180

PART – A

It consists of **1 – 40** questions.

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

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

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

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

(1) 1 (2) –1

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

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

(1) ±1 (2) $\pm\sqrt{2}$

(3) ±3 (4) ±2

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

(1) 6 (2) 12

(3) –8 (4) –16

SPACE FOR ROUGH WORK

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

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

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

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

(1) 2 and –5 (2) –2 and 5

(3) –2 and –5 (4) 2 and 5

7. If $\vec{a} = 2\hat{i} - 3\hat{j} + 5\hat{k}$
$\vec{b} = 3\hat{i} - 2\hat{j} - 5\hat{k}$ and
$\vec{c} = \hat{i} + 4\hat{k}$
then the scalar product of $\vec{a} + \vec{b}$ and $\vec{b} - \vec{c}$ is

(1) –9 (2) 9

(3) 20 (4) –20

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

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

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

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

(1) 3 (2) 9

(3) 6 (4) 15

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

(1) 180° (2) 90°

(3) 45° (4) 360°

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

(1) tan 20° (2) cot 40°

(3) tan 10° (4) tan 40°

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

(1) –1 (2) 1

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

SPACE FOR ROUGH WORK

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

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

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

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

(1) $\cot 33^\circ$ (2) $-\tan 33^\circ$

(3) $-\tan 57^\circ$ (4) $\tan 57^\circ$

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

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

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

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

(1) 1 (2) 2

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

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

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

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

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

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

(1) $-\sec x$

(2) $\sec x$

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

(3) -6 (4) -9

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

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

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

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

(1) 25 (2) -25

(3) 50 (4) -50

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

(1) 3π (2) 6π

(3) 18π (4) 36π

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

PART – B

It consists of **41 – 80** questions.

41. The value of 20 peta Hertz is

(1) 20×10^9 Hz

(2) 20×10^{12} Hz

(3) 20×10^{15} Hz

(4) 20×10^{18} Hz

42. The total reading for Screw Gauge is found by

(1) TR = PSR + (HSR × LC) ± ZE

(2) TR = PSR + (HSR × LC) ± ZC

(3) TR = (PSR + HSR) × LC ± ZE

(4) TR = (PSR + HSR) × LC ± ZC

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

(1) 3.35 cm

(2) 3.35 mm

(3) 3.25 cm

(4) 3.25 mm

44. The rectangular component of a vector R are

(1) $R_X = R\cos\theta$, $R_Y = R\sin\theta$

(2) $R_X = R\sin\theta$, $R_Y = R\cos\theta$

(3) $R_X = \cos\theta$; $R_Y = \sin\theta$

(4) $R_X = -\cos\theta$; $R_Y = -\sin\theta$

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

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

(2) 5 kg wt

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

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

(1) Interference (2) Diffraction

(3) Reflection (4) Polarization

61. The velocity of sound in gas is independent of

(1) Temperature (2) Pressure

(3) Humidity (4) Density

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

(1) Progressive wave (2) Transverse waves

(3) Sound wave (4) Stationary wave

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

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

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

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

(1) 0° (2) 45°

(3) 90° (4) 180°

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

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

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

66. At resonance, the body vibrates with

(1) Small amplitude (2) Large amplitude

(3) Zero amplitude (4) Same amplitude

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

PART – C

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

81. Palaentology is the science of

(1) Fossils (2) Rocks

(3) Crystals (4) Minerals

82. Nearest planet to the sun is

(1) Earth (2) Venus

(3) Mars (4) Mercury

83. The age of the earth is about

(1) 4600 million years (2) 3600 million years

(3) 2500 million years (4) 1500 million years

84. Following is not belong to mineral groups.

(1) Quartz (2) Dolomite

(3) Granite (4) Gypsum

85. Hardness of corundum on Moh's scale is

(1) 7 (2) 5

(3) 4 (4) 9

86. In isometric system or galena type related length of crystallographic axes is

(1) $a = b \neq c$ (2) $a \neq b = c$

(3) $a = b = c$ (4) $a \neq b \neq c$

SPACE FOR ROUGH WORK

87. Petrology is branch of geology, which deals study of

(1) Minerals (2) Rocks

(3) Crystals (4) Petroleum

88. The earth crust is composed of igneous rocks about

(1) 90% (2) 75%

(3) 50% (4) 25%

89. Sandstone is belongs to

(1) Igneous rock (2) Metamorphic rock

(3) Sedimentary rock (4) None of these

90. The magma produces acidic rocks such as

(1) Basalt and Gabbro (2) Granite and Rhyolites

(3) Granite and Basalt (4) None of these

91. Clays are formed by reaction with feldspathatic rock is

(1) Hydrolysis (2) Disilification

(3) Hydration (4) All of the above

92. Building bricks belongs to _____ wares.

(1) Earthen (2) Stone

(3) Sanitary (4) Table

93. Name of the soda feldspar

(1) Albite (2) Orthoclase

(3) Anorthite (4) None of the above

SPACE FOR ROUGH WORK

94. Which alumino-silicate are possessing same chemical composition ?

(1) Sillimanite (2) Kyanite

(3) Andalusite (4) All of the above

95. Silicon carbide can be crystallises into

(1) Cubic (2) Hexagonal

(3) Rhombohedral (4) All of the above

96. Zirconia is _____ melting temperature

(1) 1880°C (2) 1550°C

(3) 2880°C (4) None of the above

97. General form of spinel is

(1) $MgAlO_4$ (2) $MgAl_2O_4$

(3) $MgAl_2O_3$ (4) $Mg_2Al_2O_3$

98. Natural form of Zirconium dioxide is

(1) Baddelyite (2) Zircon

(3) Forsterite (4) Bentonite

99. Binder material imparts

(1) Cohesion of green part (2) Dispersion of green part

(3) Cohesion of solid part (4) None of the above

100. Foaming agent

(1) Increases surface tension (2) Reduces surface tension

(3) Equals surface tension (4) None of the above

SPACE FOR ROUGH WORK

101. Mechanism of comminution include

(1) Impact (2) Attrition

(3) Shear (4) All of the above

102. Particle size of material in Roller crusher

(1) 5 mm (2) Less than 1 mm

(3) Greater than 1 mm (4) 0.5 mm

103. Factors affecting crushing and grinding efficiency

(1) Moisture content of solid (2) Hardness of material

(3) Size of the feed (4) All of the above

104. In a cone crusher, crushing surface made of

(1) Cast iron (2) Wrought iron

(3) Manganese steel (4) None of the above

105. Gyratory crushers were invented by

(1) Charles Brown (2) Charles Babbage

(3) Joseph Aspidin (4) Gram Bell

106. Critical speed of Ball mill is

(1) C = 50.12/R (2) C= 54.10/R

(3) C= 54.12/R (4) C = 55.10/R

107. Which of the following is not a hearth furnace ?

(1) Glass tank furnace (2) Open hearth furnace

(3) Cupola furnace (4) Reheating furnace

SPACE FOR ROUGH WORK

108. Which furnace employs natural draft ?

(1) Coke oven (2) Boiler

(3) Rotary Kiln (4) L.D. Converter

109. Fuel used in blast furnace is

(1) Pulverised coal (2) Furnace oil

(3) Blast furnace gas/Mixed gas (4) Coke oven gas

110. Which instrument is used for measuring temperature of red hot moving object ?

(1) Thermocouple (2) Radiation pyrometer

(3) Thermistor (4) None of the above

111. Majolica glazes maturing in range approximately

(1) 600 – 900°C (2) 900 – 1050°C

(3) 1000 – 1150°C (4) 1180 – 1250°C

112. Classification of glaze made on

(1) Presence of specific element (2) Presence or absence of frit

(3) Firing temperature (4) All (1), (2) and (3)

113. Majority of ceramic coatings use of SiO_2 is

(1) 30 – 35% (2) 45 – 80%

(3) 80 – 95% (4) None of the above

114. The content of sodium increases in glaze

(1) Tensile strength decreases (2) Elasticity decreases

(3) Tensile strength increases (4) Both (1) and (2)

SPACE FOR ROUGH WORK

115. In a glaze raw material lead is a

(1) Network former (2) Network modifier

(3) Intermediator (4) None of the above

116. Cobalt imparts _____ colour in glaze.

(1) Red (2) Green

(3) Blue (4) Yellow

117. Most of the frits mature at below _____ temperature.

(1) 1250°C (2) 1150°C

(3) 1050°C (4) 950°C

118. Thermal expansion of glaze is measured by

(1) Dilato-meter (2) Thermo meter

(3) Pyro-meter (4) None of the above

119. Which of the following glaze material not a opacifier ?

(1) Tin oxide (SnO_2) (2) Zirconium oxide (ZrO_2)

(3) Antimony oxide (Sb_2O_3) (4) Strontium oxide (SrO)

120. Which material increases chemical resistance in glaze ?

(1) Na_2O (2) ZnO

(3) MgO (4) All of the above

121. Water absorption of earthenware is

(1) 01 – 05% (2) 04 – 20%

(3) 0.0 – 0.5% (4) 0.0 – 0.05%

SPACE FOR ROUGH WORK

122. Ceramics is a _____ substance.

(1) Organic (2) In-organic

(3) Non-metallic (4) Both (2) and (3)

123. Application of thread guides is/are

(1) Tension sleeves (2) Winder guides

(3) Guide eyelets (4) All of the above

124. Thermistors are

(1) Current dependent resistors (2) Temperature dependent resistors

(3) Volume dependent resistors (4) Voltage dependent resistors

125. In production of ball-bearing most preferred material is

(1) SiC (2) B_4C

(3) MoS_2 (4) Si_3N_4

126. Wear resistant materials fall under group of

(1) Mechano-ceramics (2) Automobile-ceramics

(3) Electrical-ceramics (4) Electronic-ceramics

127. Structure of hard ferrites is

(1) Cubic (2) Monoclinic

(3) Hexagonal (4) None of the above

128. Example of Bio-inert ceramic material is

(1) Al_2O_3 (2) $BaTiO_3$

(3) $CaCO_3$ (4) None of the above

SPACE FOR ROUGH WORK

129. Glass-ceramics are formed by

(1) Solid-state reaction
(2) Liquid-state reaction
(3) Crystallization of glass
(4) None of the above

130. Which of the following is not a composite material ?

(1) Oxide – oxide ceramics
(2) Carbon – carbon ceramics
(3) SiC – Si_3N_4 ceramics
(4) CaO – Al_2O_3 ceramics

131. Cryptocrystalline form of silica is

(1) Quartz
(2) Tridymite
(3) Flint
(4) Cristobalite

132. Potash in glass act as a

(1) Network former
(2) Network modifier
(3) Flux
(4) Intermediator

133. High calcium oxide in a glass tends to devitrify as

(1) Wollastonite
(2) Forsterite
(3) Sillimanite
(4) Andalusite

134. Lead oxide containing glasses possess the properties of

(1) Increases density and refractive index
(2) Decreases density and refractive index
(3) Increases the viscosity
(4) None of the above

SPACE FOR ROUGH WORK

135. Role of fining agent in glass

(1) Removing the seeds

(2) Removing of oxygen

(3) Incorporation of some batch forming oxides

(4) None of the above

136. Cuprous oxide in glass imparts

(1) Black (2) Red

(3) Green (4) Yellow

137. Which of the following not a chemical decolouriser ?

(1) Arsenic (2) Manganese dioxide

(3) Potassium nitrate (4) Calcium oxide

138. Thermal endurance of a glass is measures

(1) Compression strength (2) Tensile strength

(3) Temperature shock (4) None of the above

139. Refractive index of glass, is the ratio of

(1) $\mu = \frac{\cos i}{\cos r}$ (2) $\mu = \frac{\sin i}{\sin r}$

(3) $\mu = \frac{\tan i}{\tan r}$ (4) $\mu = \frac{\sec i}{\sec r}$

140. Softening temperature of commercial glass lies in

(1) 200 – 400°C (2) 400 – 800°C

(3) 800 – 1000°C (4) 1000 – 1200°C

SPACE FOR ROUGH WORK

141. Carbon moulds are made by pressing a mixture of

(1) Powdered gas carbon (2) Coal

(3) Graphite (4) All of the above

142. Devitrification is a uncontrolled formation of _____ in melting.

(1) Fibers (2) Crystals

(3) Whiskers (4) None of the above

143. Viscosity of glass determines its

(1) Melting (2) Forming

(3) Annealing (4) All of the above

144. Decoration of glass by etching needs

(1) H_2SO_4 acid (2) HF acid

(3) HCl acid (4) None of the above

145. Glass is a _____ solid.

(1) Crystalline (2) Amorphous

(3) Semi (4) None of the above

146. Major constituent of cement is

(1) Al_2O_3 (2) CaO

(3) Fe_2O_3 (4) SiO_2

147. In white cement percentage of iron oxide is

(1) 10 % (2) 0.01 %

(3) 5 % (4) 15 %

SPACE FOR ROUGH WORK

148. Cement is comprising _____ phases.

(1) 3 (2) 6

(3) 5 (4) 4

149. Silica modulus in cement limits

(1) 1.41 (2) 2.41

(3) 5.41 (4) None of the above

150. Setting time of cement is measured by

(1) Le-chatlier (2) Autoclave

(3) Vicat (4) Blain air permeability

151. E.S.P. stands for

(1) Electro Static Precipitator (2) Elastic Standard Precipitator

(3) Electric Standard Precipitator (4) Electro Standard Precipitator

152. For compressive strength testing, cement/sand ratio should be

(1) 1 : 2 (2) 2 : 4

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

153. Cements are manufactured by burning in

(1) Tunnel Kiln (2) Rotary Kiln

(3) D.D. Kiln (4) Blast furnace

154. Soundness of cement is caused by

(1) The presence of uncombined lime (2) The presence combined lime

(3) The presence of combined silica (4) The presence of uncombined silica

SPACE FOR ROUGH WORK

155. Loss on ignition of cement carried at a temperature

(1) 900 – 1000°C
(2) 500 – 600°C
(3) 600 – 700°C
(4) 400 – 500°C

156. Permeability of refractory is a measure of the

(1) Refractoriness
(2) Melting point
(3) Rate at which fluid will pass through pores
(4) Expansion during heating

157. Pyrometric Cone Equivalent (PCE) of a refractory is the measure of its

(1) Spalling resistance
(2) Fusion point
(3) Resistance to slag penetration
(4) Resistance to carbon monoxide attack

158. Segar cones are used for determination of

(1) Softening temperature
(2) Spalling resistance
(3) Electrical conductivity
(4) Resistance to slag attack

159. Which is an acidic refractory ?

(1) Magnesite
(2) Dolomite
(3) Fire clay
(4) Chrome-magnesite

160. RUL of refractories depends on the

(1) Chemical composition
(2) Physical structure
(3) Presence of impurities like iron and alkali
(4) All (1), (2) and (3)

SPACE FOR ROUGH WORK

161. Maximum alumina content in high alumina can be as high as _____ percent.

(1) 30 (2) 50

(3) 70 (4) 90

162. Dolomite bricks have good resistance to attack by

(1) Molten steel (2) Iron oxide

(3) Lime slag (4) Cupric oxide

163. Slide gates in teeming laddle used for steel pouring in ingot moulds is lined with _____ bricks.

(1) Bakelite impregnated or fused periclase

(2) Silica

(3) Semi-silica

(4) Fire clay

164. Carbon refractories are exclusively used in the

(1) Hearth of blast furnace (2) Walls of coke oven

(3) Regenerators of coke oven (4) Side wall of soaking pit

165. Refractory castables are used for

(1) Producing monolithic linings (2) Patch work

(3) Joints minimised in structure (4) All (1), (2) and (3)

166. Tundish is a

(1) Permanent lining (2) Disposable lining

(3) Monolithics (4) All of these

167. Sillimanite is a _____ refractory.

(1) Basic (2) Neutral

(3) Alumino-silicate (4) Insulating

SPACE FOR ROUGH WORK

168. With increase in the porosity, thermal spalling resistance of fire clay brick

(1) Increases (2) Decreases

(3) Remains same (4) May increase or decrease

169. Bottom of basic open-hearth furnace are constructed of

(1) Magnesite ramming mass (2) Porous fire clay brick

(3) Semi-silica brick (4) Silicon carbide bricks

170. _____ nozzles are used in continuous casting steel.

(1) Beryllia (2) Thoria

(3) Carborundum (4) Zircon

171. Administration is a

(1) Middle level authority (2) Low level authority

(3) Top level authority (4) None of the above

172. Henry-Fayols principles of management was given in the year

(1) 1950 (2) 1961

(3) 1970 (4) 1981

173. Joint stock companies means

(1) Capital divided into transferable shares

(2) Capital raised by selling shares

(3) Both (1) and (2)

(4) None of the above

174. Amalgation is a process

(1) Joining the two business (2) Closing the company

(3) Rising capital of company (4) None of the above

SPACE FOR ROUGH WORK

175. Co-operative societies are

(1) Democratic form of business
(2) Voluntary organisation
(3) Protect interest of consumers
(4) All of the above

176. Bincard comprises of

(1) Quantity received
(2) Quantity issued
(3) Balance
(4) All (1), (2) and (3)

177. ISO-9000 provides the guide line

(1) Production
(2) Installation and servicing
(3) Quality management
(4) Design and development

178. ISO 14000 provides

(1) Production management
(2) Environmental management
(3) Safety management
(4) None of the above

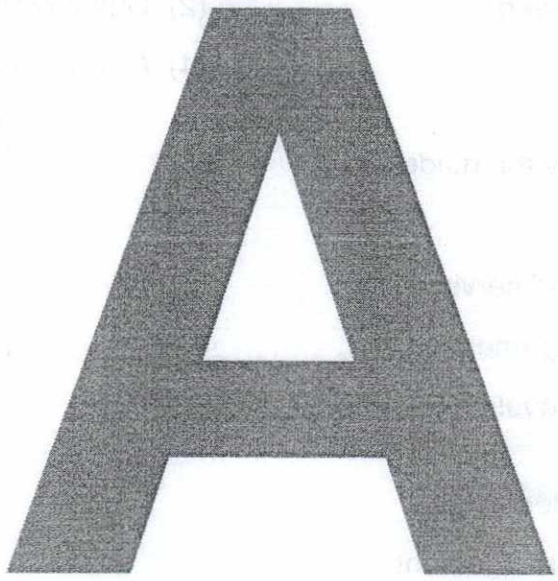
179. Industrial Safety Movement was started in

(1) 1912
(2) 1910
(3) 1920
(4) 1930

180. Tools of the Total Quality Management

(1) Pareto chart
(2) Flow chart
(3) Histogram
(4) All of the above

SPACE FOR ROUGH WORK



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