Group Code	COURSE
CR	**CERAMICS**

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

MENTION YOUR DIPLOMA CET NUMBER					BOOKLET VERSION CODE	SERIAL NUMBER
					A1	210193

CR-A1

DOs:

1. This question booklet is issued to you by the invigilator after the 2nd bell i.e., after 9.50 am.
2. Check whether the DCET Number has been entered and shaded in the respective circles on the OMR answer sheet.
3. The version code and 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 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 am, till then;**
   - Do not remove the seal present on the right hand side of this question booklet.
   - Do not look inside this question booklet or start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. In case of usage of signs and symbols in the questions, the regular textbook connotation should be considered unless stated otherwise.
2. This question booklet contains 180 (items) questions and each question will have one statement and four different options / responses & out of which you have to choose one correct answer.
3. After the 3rd Bell is rung at 10.00 am, remove the paper seal on the right hand side 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.
4. 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 METHOD
(A) ● (C) (D)	(A) (B) (C) (D) (A) (B) (C) (D) (A) ● ● (D)
	(A) (B) (C) (D) (A) ● (C) (D)

5. Please note that even a minute unintended ink dot on the OMR answer sheet will also be recognized and recorded by the scanner. Therefore, avoid multiple markings of any kind on the OMR answer sheet.
6. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
7. **Last bell will ring at 1.00 pm,** stop marking on the OMR answer sheet.
8. Hand over the **OMR answer sheet** to the room invigilator as it is.
9. After separating the top sheet (Office copy), the invigilator will return the bottom sheet replica (candidate's copy) to you to carry home for self-evaluation.

PART - A

APPLIED SCIENCE

1. Which of the following is the supplementary unit of SI System?

   (A) Candela (B) Kelvin

   (C) Radian (D) Mole

2. The main scale of Slide Calipers is divided into millimeter, the length of Vernier is 19 mm and is divided into 20 equal parts. The least count is

   (A) 0.01 cm (B) 0.001 cm

   (C) 0.05 cm (D) 0.005 cm

3. Which one of the following is not a vector quantity?

   (A) Velocity (B) Acceleration

   (C) Speed (D) Force

4. The magnitude of resultant of two forces $\vec{P}$ and $\vec{Q}$ acting in the same line and in opposite direction is

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

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

5. Two forces 3N and 5N are acting at a point making an angle of 60°. The magnitude of the resultant is

   (A) 15 N (B) 2 N

   (C) 7 N (D) 8 N

6. Torque produces

   (A) rotational motion (B) linear motion

   (C) both rotational and linear motion (D) neither rotational nor linear motion

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Space For Rough Work

7. Which one of the following is not related to couple?

(A) Kicking of football
(B) Opening and closing of tap
(C) Rotation of steering wheel
(D) Pedalling of bicycle

8. Within elastic limit, stress is

(A) independent of strain
(B) zero
(C) directly proportional to strain
(D) inversely proportional to strain

9. The length of a wire increases by 1% on suspending a load of 2 N from it. The tensile strain in the wire is

(A) 0.01
(B) 0.5
(C) 2
(D) 1

10. Pressure at any point inside a liquid

(A) remains zero
(B) increases with depth
(C) decreases with depth
(D) independent of depth

11. The pressure at the bottom of a swimming pool 20m wide and the water 2m deep (given density of water 1000 Kg/m^3 and $g = 10\ m/s^2$) is

(A) 2×10^3 Pa
(B) 40×10^3 Pa
(C) 10×10^3 Pa
(D) 20×10^3 Pa

12. In the case of liquids, as the temperature increases, the surface tension generally

(A) remains constant
(B) decreases
(C) increases
(D) zero

Space For Rough Work

13. The property of a liquid to oppose the relative motion between different layers is called

(A) density (B) elasticity

(C) viscosity (D) capillarity

14. An expression for coefficient of viscosity is (if F = viscous force; A = Area, V = difference in Velocity, x = distance between two layers)

(A) $\eta = -\frac{FA}{xV}$ (B) $\eta = -\frac{FV}{Ax}$

(C) $\eta = -\frac{Fx}{AV}$ (D) $\eta = -\frac{FxA}{V}$

15. The expression that represents Charle's law is

(A) PV = constant (B) VT = constant

(C) $\frac{P}{V}$ = constant (D) $\frac{V}{T}$ = constant

16. The pressure of a gas at 27°C is one atmospheric pressure. Keeping the volume constant, if the temperature is raised to 60°C, then its pressure will be

(A) 1.11 atmospheric pressure (B) 1.5 atmospheric pressure

(C) 2.2 atmospheric pressure (D) 2 atmospheric pressure

17. Hot water at 80°C will exchange heat with surroundings maintained at 25°C till the temperature of water becomes

(A) 80°C (B) 50°C

(C) 55°C (D) 25°C

18. Radiator in automobiles works on the principle of

(A) Conduction (B) Convection

(C) Radiation (D) Evaporation

Space For Rough Work

19. In the expression $C_p - C_v = R$, notation R represents

(A) Resultant force (B) Planck's constant

(C) Universal gas constant (D) Resonance

20. Physical quantity that represents the energy of the mechanical wave is

(A) Wave length (B) Frequency

(C) Amplitude (D) Wave period

21. Which one of the following is not an example of simple harmonic motion?

(A) Swinging of cradle (B) Oscillations of simple pendulum

(C) Vibrations of tuning fork (D) Motion of hands of clock

22. In the equation for velocity of sound in air, which of the following options does not hold good according to Laplace?

(A) Poor conductivity of air (B) Rapid pressure changes

(C) Maintaining constant temperature (D) Rise and fall of temperature

23. Distance between two consecutive nodes in a stationary wave is equal to

(A) Wavelength of individual wave (B) Difference of wavelengths of two waves

(C) Sum of wavelengths of two waves (D) Half of wavelength of individual wave

24. When the tension on the sonometer wire is increased by 15 N, its frequency is doubled. The original tension is

(A) Zero (B) 5 N

(C) 10 N (D) 15 N

Space For Rough Work

25. Two identical waves superpose on one another, then the beat frequency is

(A) Zero (B) One

(C) Ten (D) Infinity

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

(A) Reverberation (B) Resonance

(C) Beats (D) Noise

27. A tuning fork produces waves in a medium. The parameter that changes with temperature of the medium is

(A) Wavelength (B) Frequency

(C) Amplitude (D) Period

28. The electromagnetic radiation used to detect the artificial gems from the original gems is

(A) Microwave (B) Radio wave

(C) Ultraviolet ray (UV ray) (D) X-ray

29. During excitation of an atom from ground state to excited state, the number of photons absorbed by the single atom is

(A) 2 (B) 1

(C) 3 (D) 0

30. In Nano-technology, the manipulation of atom is done in the range of

(A) 1 nano meter – 100 nano meter (B) 1 micro meter – 100 micro meter

(C) 1 pico meter – 100 pico meter (D) 1 millimeter – 100 millimeter

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Space For Rough Work

31. Live telecast of a programme can be viewed by

(A) Manual communication
(B) X-ray communication
(C) Landline communication
(D) Satellite communication

32. Optical Fibre is used in

(A) Endoscopy
(B) Biometric Machine
(C) Simple Microscope
(D) Simple Telescope

33. Acetic acid is an example for

(A) Strong Electrolyte
(B) Neutral Solution
(C) Weak Electrolyte
(D) Non-Electrolyte

34. The process of coating tin over iron and steel is known as

(A) Alloying
(B) Galvanizing
(C) Tinning
(D) Refining

35. The batteries which are recharged and reused are called

(A) Primary Battery
(B) Secondary Battery
(C) Fuel Cell
(D) Alkaline Battery

Space For Rough Work

36. PAFC is a type of

(A) Primary Cell (B) Secondary Cell

(C) Solar Cell (D) Fuel Cell

37. The easily fusible material which is formed when Flux reacts with gangue is

(A) Slag (B) Alloy

(C) Polymer (D) Mineral

38. Which of the below given polymers is obtained by condensation polymerization?

(A) Poly ethene (B) Nylon

(C) PVC (D) Poly propane

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

(A) Fibreglass (B) Concrete

(C) Ceramic (D) Bronze

40. The pH value of Lemon juice is about

(A) 2.4 (B) 8.2

(C) 10.2 (D) 14

Space For Rough Work

PART – B

ENGINEERING MATHEMATICS

41. The value of $\begin{vmatrix} \cos 50^\circ & \sin 10^\circ \\ \sin 50^\circ & \cos 10^\circ \end{vmatrix}$ is

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

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

42. The values of x & y from the simultaneous equations $3x + 4y = 7$ and $7x - y = 6$ are.

(A) $x = 1, y = 1$ (B) $x = -1, y = -1$

(C) $x = 1, y = -1$ (D) $x = -1, y = 1$

43. If $\begin{vmatrix} x & 3 \\ 3 & x \end{vmatrix} = 0$ then the value of x is

(A) ± 1 (B) ± 3

(C) ± 9 (D) $\pm \sqrt{6}$

44. If $A = \begin{bmatrix} -1 & 3 \\ 4 & -5 \end{bmatrix}$, then $2A^T$ is

(A) $\begin{bmatrix} -2 & 6 \\ 8 & -10 \end{bmatrix}$ (B) $\begin{bmatrix} -1 & 4 \\ 3 & -5 \end{bmatrix}$

(C) $\begin{bmatrix} -2 & 8 \\ 6 & 8 \end{bmatrix}$ (D) $\begin{bmatrix} -2 & 8 \\ 6 & -10 \end{bmatrix}$

Space For Rough Work

45. If A is a given square Matrix then

(A) $\text{adj } A = \frac{A^{-1}}{|A|}$ (B) $\text{adj } A = \frac{|A|}{|A^{-1}|}$

(C) $\text{adj } A = |A| . A^{-1}$ (D) $AA^{-1} = \text{adj } A . |A|$

46. The characteristic Equation of the Matrix $A = \begin{bmatrix} -5 & 6 \\ -2 & 1 \end{bmatrix}$ is

(A) $\lambda^2 - 6\lambda + 12 = 0$ (B) $\lambda^2 - 4\lambda + 17 = 0$

(C) $\lambda^2 + 4\lambda + 7 = 0$ (D) $\lambda^2 - 4\lambda + 7 = 0$

47. The unit vector in the direction of $\vec{a} = 3i + 4j - 2k$ is

(A) $\hat{a} = \frac{3i + 4j - 2k}{\sqrt{26}}$ (B) $\hat{a} = \frac{3i + 4j - 2k}{\sqrt{29}}$

(C) $\hat{a} = i + j - 2k$ (D) $\hat{a} = \frac{3i + 4j - 2K}{\sqrt{21}}$

48. If $\vec{a} = i + \lambda j$ and $\vec{b} = 2j + 3k$ and $\vec{a} . \vec{b} = 0$ then 'λ' is Equal to

(A) $\frac{-2}{3}$ (B) $\frac{2}{3}$

(C) $\frac{3}{2}$ (D) 0

49. Area of the triangle whose adjacent sides are $\vec{a} = 2i - j + 2k$ and $\vec{b} = 3i - j$ is

(A) $\sqrt{41}$ sq.units (B) $\frac{\sqrt{41}}{2}$ sq.units

(C) $\frac{3}{2}$ sq. units (D) $\frac{\sqrt{65}}{2}$ sq.units

Space For Rough Work

50. The number of possible outcomes in the sample space when two dice of different colours are rolled is

(A) 36 (B) 6

(C) 9 (D) 12

51. Sin θ is positive and tan θ is negative when θ is in

(A) I quadrant (B) II quadrant

(C) III quadrant (D) IV quadrant

52. The value of

$$\frac{\tan(\pi - \alpha)}{\tan(-\alpha)} + \frac{\cos(\pi/2 - \alpha)}{\sin(2\pi - \alpha)} + \frac{\operatorname{cosec}\left(\frac{3\pi}{2} + \alpha\right)}{\sec(\pi + \alpha)}$$ is

(A) – 1 (B) 2

(C) – 2 (D) 1

53. The value of sin (105°) is

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

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

54. The value of $\frac{1 - \cos A + \sin A}{1 + \cos A + \sin A}$ is

(A) tan A (B) tan $(A/2)$

(C) cot $(A/2)$ (D) cot A

55. If $\sin A = \frac{1}{3}$, then the value of sin 3A is

(A) $-3/27$ (B) 1

(C) $\frac{-4}{27}$ (D) $\frac{23}{27}$

Space For Rough Work

56. The value of 2 cos 3A. sin 2A is

(A) sin 5A + sin A

(B) cos 5A + cos A

(C) sin 5A – sin A

(D) cos 5A – cos A

57. The polar form of 1 + i is

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

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

(C) $\sqrt{2}\left[\sin\pi/4 + i\cos\frac{\pi}{4}\right]$

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

58. $\lim_{x \to -3} \frac{x^2 - 5x + 6}{x^2 - 3x} =$

(A) $\frac{-5}{3}$

(B) $\frac{1}{3}$

(C) $\frac{-1}{3}$

(D) $\frac{5}{3}$

59. $\lim_{x \to a} \frac{\sqrt{x^3} - \sqrt{a^3}}{x - a} =$

(A) $\frac{3}{2}\sqrt{a}$

(B) $\frac{3}{2\sqrt{a}}$

(C) $\sqrt{a}$

(D) $\frac{1}{\sqrt{a}}$

60. $\lim_{\theta \to 0} \frac{\cos 3\theta - \cos\theta}{\theta \sin 2\theta} =$

(A) tan 2θ

(B) 2

(C) –2

(D) 1

Space For Rough Work

61. Equation of the straight line passing through the point (1, 3) and having slope – 2 is

(A) $2x - y + 5 = 0$ (B) $x + 2y + 5 = 0$

(C) $x - 2y - 5 = 0$ (D) $2x + y - 5 = 0$

62. Equation of the straight line passing through the origin and perpendicular to the line $5x - 4y - 1 = 0$ is

(A) $5x - 4y = 0$ (B) $4x + 5y = 0$

(C) $5x - 4y + 1 = 0$ (D) $4x + 5y + 1 = 0$

63. If $y = \frac{x^2 - 5}{x^2 + 3}$, then $\frac{dy}{dx} =$

(A) $\frac{4x^3 - 4x}{(x^2 + 3)^2}$ (B) $\frac{16x}{(x^2 + 3)^2}$

(C) $\frac{4x}{(x^2 + 3)^2}$ (D) $\frac{-16x}{(x^2 + 3)^2}$

64. If $y = \sin^{-1}(\cos x)$, then $\frac{dy}{dx} =$

(A) $\frac{1}{\sqrt{1 - x^2}}$ (B) $\frac{-\sin x}{\sqrt{1 - x^2}}$

(C) 1 (D) – 1

65. If $y = \sqrt{y \log x}$, then $\frac{dy}{dx} =$

(A) $\frac{1}{x(2y - 1)}$ (B) $\frac{1}{x}$

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

Space For Rough Work

66. If $x = a\cos^2\theta$ and $y = b\sin^3\theta$, then $\frac{dy}{dx}$ =

(A) $-\frac{3b}{2a}\sin\theta$ (B) $-\frac{3b}{2a}$

(C) $\frac{2a}{b}\cos\theta$ (D) $\frac{-2a}{3b\sin\theta}$

67. If $y = x^y$, then $\frac{dy}{dx}$

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

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

68. If $y = \sin^2 x$, then $\frac{d^2y}{dx^2}$ =

(A) 2 cos 2x (B) 2 sin 2x

(C) 2 sin x cos x (D) 2x sin x

69. The Equation of tangent to the curve $y = \sin x$ at the point $(\pi, 0)$ is

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

(C) $x + y - \pi = 0$. (D) $x - y + \pi = 0$.

70. The rate of change of radius of the sphere is 9cm/s. Then the rate of change of volume of the sphere when the radius is 2 cm is equal to

(A) $144\pi\ cm^3/s$ (B) $9\pi\ cm^3/s$

(C) $56\pi\ cm^3/s$ (D) $64\pi\ cm^3/s$

Space For Rough Work

71. $\int \frac{1}{1+\cos x}\,dx =$

(A) $\tan x + \sec x + c$ (B) $\tan x - \sec x + c$

(C) $-\cot x + \operatorname{cosec} x + c$ (D) $\cot x - \operatorname{cosec} x + c$

72. $\int \left(\sqrt{x} + \cot x\right) dx =$

(A) $\frac{2}{3} x^{3/2} + \log \sin x + c$ (B) $\frac{3}{2} x^{2/3} + \log \sec c\, x + c$

(C) $\frac{2}{3} x^{3/2} - \log \sin x + c$ (D) $\frac{3}{2} x^{2/3} - \log \sec x + c$

73. $\int \frac{e^{\log x}}{x}\,dx =$

(A) $e^x + c$ (B) $\log (e^x) + c$

(C) $x \log e^x + c$ (D) $e^{\log x} + c$

74. $\int \log x . dx =$

(A) $x \log x + x + c$ (B) $x \log x - x + c$

(C) $x + \log x + c$ (D) $x - \log x + c$

75. $\int \frac{x}{\sqrt{1+x^2}}\,dx =$

(A) $\sqrt{1+x^2} + c$ (B) $\sqrt{1-x^2} + c$

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

Space For Rough Work

76. $\int_{-2}^{1} (x + 1)(x - 1)\, dx =$

(A) 0 (B) 1

(C) – 1 (D) – 2

77. The area bounded by the curve $y = \sin^2 x$, the x–axis and the ordinates $x = 0$ and $x = \pi/2$ is

(A) $\frac{\pi}{4}$ sq. units (B) $\frac{\pi}{2}$ sq. units

(C) $\frac{\pi}{3}$ sq. units (D) $\frac{\pi}{6}$ sq. units

78. The order and degree of a differential equation $4\left(\frac{dy}{dx}\right)^3 + 8xy + \left(\frac{d^2y}{dx^2}\right)^2 - 7 = 0$ respectively are

(A) 1 and 3 (B) 2 and 2

(C) 2 and 3 (D) 2 and 1

79. The differential equation formed from the equation $y^2 = 4ax$ by eliminating arbitrary constant is

(A) $2x\frac{dy}{dx} - y = 0$ (B) $2x\frac{dy}{dx} + y = 0$

(C) $y\frac{dy}{dx} - 2x = 0$ (D) $y\frac{dy}{dx} + 2x = 0$

80. For the differential equation $\frac{dy}{dx} + (\tan x).\, y = \cos x$, the integrating factor is

(A) log x (B) cot x

(C) cosec x (D) sec x

Space For Rough Work

PART – C

CERAMICS TECHNOLOGY

81. The earliest theory about the origin of the earth is known as

(A) Nebular hypothesis (B) Martin hypothesis

(C) Einstein hypothesis (D) Newton hypothesis

82. The age of the earth is studied and estimated by

(A) Darwin (B) Kelvin

(C) Joly and Clarke (D) All of these

83. The average density of the earth is of the order

(A) 5.52 (B) 6.52

(C) 7.52 (D) 8.52

84. Which mineral possesses cubic cleavage?

(A) Fluorite (B) Galena

(C) Mica (D) Calcite

85. Magmas are

(A) Molten silicates (B) Molten carbides

(C) Molten polymers (D) Molten metals

86. The symmetry developed in a crystal may be studied and defined with reference to

(A) A plane (B) An axis

(C) A point (D) All of these

87. The branch of Petrology involving the studies of stones alone may be called as

(A) Lithology (B) Methodology

(C) Stonology (D) Physiology

Space For Rough Work

88. Igneous rocks are broadly classified into

(A) Acid rocks (B) Basic rocks

(C) Ultra basic rocks (D) All of these

89. The factors which are responsible for the formation of metamorphic rocks are

(A) Temperature (B) Pressure

(C) Chemically reactive substance (D) All of these

90. Which of the following is widely used to specify directions and planes in a crystal?

(A) Miller indices (B) Killer indices

(C) Siller indices (D) Eiller indices

91. The term clay is applied to those natural earthy deposits which possess the singular property of

(A) Elasticity (B) Plasticity

(C) Ductility (D) Malleability

92. The term 'allophane' is used to cover non-crystalline mutual solutions of

(A) Silica, alumina and water (B) Clay, boron and salt

(C) Feldspar, quartz and soda (D) Alumina, dolomite and water

93. White burning clays are

(A) Kaolins (B) Ball clays

(C) Both A and B (D) None of these

94. The stable form of Silica at room temperature is

(A) α-quartz (B) β-quartz

(C) γ-quartz (D) δ-quartz

Space For Rough Work

95. A mineral used in place of feldspar is

(A) Nepheline syenite (B) Methyl syenite

(C) Poly syenite (D) Alkaline syenite

96. Carbides are extremely

(A) Hard (B) Soft

(C) Brittle (D) None of these

97. Which of the following is used in nuclear reactors?

(A) Boron nitride (B) Silicon carbide

(C) Calcium carbide (D) Aluminium silicide

98. Ceramets are the combination of

(A) Metal and Ceramic (B) Ceramic and Polymer

(C) Metal and alloys (D) None of these

99. Example for inorganic deflocculants is

(A) NaOH (B) Na_2CO_3

(C) Li_2CO_3 (D) All of these

100. Example for organic binder is

(A) Cellulose (B) Corn flour

(C) Gum arabic (D) All of these

101. Which one of the following is a primary fuel?

(A) Fuel oil (B) Kerosene

(C) Coal (D) Coke oven gas

Space For Rough Work

102. Washing of coal

(A) reduces its ash content
(B) Increases its heating value
(C) increases its efficiency
(D) All of the above

103. Gobar gas contains _____ in higher percentage.

(A) Methane
(B) Carbon-di-oxide
(C) Hydrogen
(D) Oxygen

104. Which one is used as jet engine fuel?

(A) Petrol
(B) Diesel
(C) Kerosene
(D) LPG

105. The important furnace auxiliaries are

(A) Damper
(B) Burner
(C) Control valve
(D) All of these

106. Which of the following temperature measuring devices is widely used to measure the temperature in furnaces?

(A) Resistance thermometer
(B) Radiation pyrometer
(C) Iron constantan thermocouple
(D) Bio-metallic thermometer

107. Soft and non-abrasive materials can be made into fines by

(A) Attrition
(B) Compression
(C) Cutting
(D) Impact

108. Which of the following screens has maximum capacity?

(A) Grizzlies
(B) Trommels
(C) Shaking screens
(D) Vibrating screens

Space For Rough Work

109. Which of the following clay mixing devices is vacuum operated for de-airation?

(A) Banbery Mixer
(B) Pug-Mill
(C) Muller Mixer
(D) Kneader

110. The method of shaping ceramic articles by pouring a liquid slip into a porous mould

(A) Tape casting
(B) Casting
(C) Gel casting
(D) Robo casting

111. Glaze is a thin vitreous coating applied to

(A) Metallic body
(B) Ceramic body
(C) Plastic body
(D) Wood body

112. Glaze possesses one of the following properties:

(A) Fusibility
(B) Refractoriness
(C) Conductivity
(D) None of the above

113. Silica belongs to

(A) Network former
(B) Network modifier
(C) Intermediator
(D) Opacifier

114. Opacity in glaze is due to addition of

(A) Silica
(B) Tin oxide
(C) Alumina
(D) Ferrous oxide

Space For Rough Work

115. Frit is a

(A) synthetic glassy material
(B) Natural material
(C) Toxic material
(D) None of these

116. Which coat is applied before glazing?

(A) Ground coat
(B) Cover coat
(C) Engobe
(D) Slush coat

117. The process of sudden cooling is

(A) Quenching
(B) Toughening
(C) Melting
(D) Annealing

118. Which one of the enamel application methods is more suitable?

(A) Dipping
(B) Pouring
(C) Electro-static spraying
(D) Brushing

119. A clay sample having a plastic weight of 50 gms and dry weight of 30 gms. Find its % of moisture content.

(A) 20%
(B) 30%
(C) 40%
(D) 60%

120. What is the density of a clay sample having a weight of 100 gms and volume of 40 cc?

(A) 2.0 gm/cc
(B) 2.5 gm/cc
(C) 3.0 gm/cc
(D) 3.5 gm/cc

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121. Find the MOR of a brick having span length of 10 cms, breadth of 3.5 cms, thickness of 4 cms, withstanding load of 100 Kgs.

(A) 100 Kg/cm^2 (B) 105.21 Kg/cm^2

(C) 107.14 Kg/cm^2 (D) 200 Kg/cm^2

122. A glazed tile having dry weight 22 gms, saturated weight - 25 gms and suspended weight 15 gms. What is its porosity?

(A) 20% (B) 25%

(C) 30% (D) 35%

123. Fritting is a process of converting

(A) Toxic into non-toxic (B) Insoluble into soluble

(C) Melting into non-melting (D) Fine into dusty

124. Electrical porcelain firing temperature ranges

(A) 1225°C – 1310°C (B) 2000°C – 2100°C

(C) 1000°C – 1050°C (D) 900°C – 1000°C

125. Alumina is a basic compound for 'technical ceramics'. It shows versatility in one of the following:

(A) Abrasion (B) Wear

(C) Refractory (D) All of the above

126. Capacitance of the capacitor due to ageing

(A) Decreases (B) Increases

(C) Same (D) None of these

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127. Resistivity of the thermistor due to heating

(A) Increases (B) Decreases

(C) Same (D) All of the above

128. Thread guides are used in

(A) Chemical (B) Textile

(C) Mechanical (D) Rubber

129. Glass Ceramics are formed by

(A) Nucleation and crystal growth (B) Sintering

(C) Soaking (D) Annealing

130. Wear resistant wares belong to

(A) Oxide (B) Non-oxide

(C) Both (A) and (B) (D) Neither (A) nor (B)

131. Glass is an inorganic product of fusion which is cooled to rigid conditions by

(A) without crystallizing (B) with crystallizing

(C) graphitizing (D) neutralizing

132. What is the rank of SiO_2 in the formation of glass among other raw materials?

(A) 1 (B) 2

(C) 3 (D) 4

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133. Typically glass has _____ fracture.

(A) Even (B) Conchoidal

(C) Uneven (D) Hackly

134. In general cullet is crushed to the size of _____ before mixing it with the batch.

(A) Ten-inch size (B) Five-inch size

(C) One-inch size (D) Fifteen-inch size

135. Which is the most nearly ideal fuel for glass manufacture?

(A) Natural gas (B) Coke oven gas

(C) Coal gas (D) Biogas

136. The crown of glass tank furnace is constructed by

(A) Magnesite refractory bricks (B) Dolomite refractory bricks

(C) Super duty silica bricks (D) Super duty alumina bricks

137. The machine used to drop the lump of glass at a regular interval into a forming mould is called

(A) Dog feeder (B) Gob feeder

(C) Lump feeder (D) Horse feeder

138. The word anneal means

(A) Cooling (B) Freezing

(C) Continued heating (D) Non-continued heating

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139. Glass is readily attacked by

(A) Sulphuric acid (B) Nitric acid

(C) Hydrofluoric acid commercial 60% (D) Phosphoric acid

140. Glass breaks only in

(A) Tension (B) Compression

(C) Extension (D) None of these

141. Which of the following is defect of glass?

(A) Stones (B) Knots

(C) Seeds (D) All of these

142. The instrument used for the measurement of refractive index is

(A) Ammeter (B) Refractometer

(C) Voltmeter (D) Energymeter

143. Glass is a

(A) Poor conductor of heat (B) High conductor of heat

(C) Non-conductor of heat (D) Good conductor of heat

144. Which one of the following is an optical material?

(A) Fused alumina (B) Fused fire clay

(C) Fused silica (D) Fused magnesite

145. Mould used for shaping of molten glass is

(A) Cast iron mould (B) Paste mould

(C) Both (A) and (B) (D) None of these

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146. C_3S is nothing but

(A) $CaO . 3SiO_2$ (B) $3 CaO . SiO_2$

(C) $CaO . SiO_2$ (D) $CaO_3 . SiO_2$

147. More number of cement industries are located in Gulbarga District of Karnataka because of

(A) Manpower (B) Large deposition of limestone

(C) Climate (D) Highly populated

148. Quick setting cement is nothing but the one that

(A) takes less time to set (B) hardens rapidly

(C) develops strength rapidly (D) None of the above

149. The formation of tricalcium silicate commences at

(A) 1200°C (B) 1300°C to 1400°C

(C) 1700°C (D) 2000°C

150. Evaporation of combined water from clay is _____ reaction.

(A) Exothermic (B) Endothermic

(C) Reduction (D) Oxidation

151. The temperature at which the clinker emerges from the kiln is about

(A) 600 - 800°C (B) 1000 - 1100°C

(C) 1200 - 1400°C (D) 1800 - 2000°C

152. The limit of CaO percentage in the cement is

(A) 60 - 67% (B) 50 - 55%

(C) 75 - 80% (D) 85 - 90%

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153. The final setting time of cement is determined by

(A) Vicat apparatus with plunger
(B) Vicat apparatus with square needle
(C) Vicat apparatus with annular collar
(D) Le-Chatlier apparatus

154. The initial setting time of quick setting cement is

(A) Less than 5 minutes
(B) 20 minutes
(C) 30 minutes
(D) 60 minutes

155. Blain's air permeability apparatus is to check _____ of cement.

(A) Hardness
(B) Fineness
(C) Soundness
(D) Strength

156. Refractories are mainly used for one of the following:

(A) Binding purpose
(B) Asthetic purpose
(C) Temperature withstanding purpose
(D) Building construction

157. Classification of refractories based on chemical nature can be made as

(A) Acidic, basic, neutral
(B) Acidic, basic, normal
(C) Low temperature, medium temperature, high temperature
(D) Medium duty, heavy duty, super duty

158. The fusion point of silicon carbide is

(A) 1715°C
(B) 2050°C
(C) 2700°C
(D) 3000°C

159. Insulating refractory materials have

(A) Low crushing strength
(B) High chemical resistance
(C) High thermal conductivity
(D) Low porosity

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160. Generally glass tank refractory blocks are made by

(A) Pressing
(B) Hand moulding
(C) Fusion caste
(D) Hot press

161. Select the proper statement.

(A) Slag resistance is high in dense refractories.
(B) Hand moulded refractories show high density
(C) Spalling resistance is low with dense refractories
(D) By addition of 'grog' we can avoid polymorphism of silica.

162. Non-coking coal can be directly used in

(A) Blast furnace
(B) Bessemer Converter
(C) Corex process
(D) Muffle furnace

163. Blast furnace is used

(A) To reduce iron ore to iron
(B) To convert steel from iron
(C) To produce slag
(D) None of these

164. Addition of 'alloying elements' is carried in

(A) Glass tank furnace
(B) Steel convertor
(C) Cupola furnace
(D) Pot furnace

165. The copper nozzle, through which hot air blast is injected inside blast furnace:

(A) Tuyer's
(B) Bosch
(C) Bustle pipe
(D) Tap hole

166. The device for molten steel temperature measurement and sampling:

(A) Thermometer
(B) Sublance
(C) Tundish
(D) Metal rod

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167. Higher level of sulphur in steel causes

(A) decreased ductility and toughness
(B) increased machinability
(C) decreased brittleness
(D) decreased malleability

168. Bessemer convertor is used to make

(A) Pig iron
(B) Steel
(C) Scrap iron
(D) Iron ore

169. The PCE value of high heat duty refractory

(A) 19 – 28
(B) > 33
(C) 30 – 33
(D) 28 – 30

170. Fracture of refractory due to its uneven expansion because of heat

(A) Spalling
(B) Fusion
(C) Cold crushing strength
(D) Permanent linear change

171. Management is an art of getting work done through people with satisfaction for

(A) Employees
(B) Employer
(C) Customer
(D) All of the above

172. Administration consists of

(A) Goals and policies
(B) Staffing
(C) Technical knowledge
(D) Skills

173. Job production is the manufacturing systems of

(A) Mass production
(B) No. of pieces produced when need arises
(C) Produced periodically
(D) Produced continuously

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174. Forms used in purchase department

(A) Requisition
(B) Procurement
(C) Tender
(D) All of the above

175. Decentralised store is used

(A) In small factories
(B) In medium factories
(C) In large factories
(D) None of these

176. Store ledger consists of

(A) similar to bincard with honey valves
(B) similar to bincard without honey valves
(C) similar to material using requisition
(D) similar to material return note

177. In concept of JIT, which is not related to

(A) Insurance buying
(B) Eliminating all wastes
(C) Continuous improvement
(D) Optimise process

178. Scatter plots consist of

(A) A line graph
(B) A curve graph
(C) A graph without having lines
(D) All of the above

179. ISO stands for

(A) International Specification of Organization
(B) International Susceptible of Organization
(C) International Organization for Standardization
(D) All of the above

180. Preventive maintenance is undertaken

(A) after machine fails
(B) before machine fails
(C) during machine fails
(D) All of the above

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