DIPLOMA - COMMON ENTRANCE TEST-2019

CE	COURSE	DAY : SUNDAY DATE : 21-07-2019
	CIVIL	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	202889

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 am**.
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.

DONTs :

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.
   - 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 am**, 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
(A) ● (C) (D)	⊗ (B) (C) (D) (A) (B) (C) ✓ (A) ● ● (D)
	◉ (B) (C) (D) (A) ◉ (C) (D)

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 pm**, 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**.

CE-A

CONFIDENTIAL

PART – A

APPLIED SCIENCE

1. One of the basic unit in SI is

   (A) Newton (B) Joule

   (C) Kilometer (D) Ampere

2. The pitch of screw is $\frac{1}{2}$ mm. The number of divisions on head scale of screw gauge is 50. The least count of screw gauge is

   (A) 0.1 mm (B) 0.5 mm

   (C) 0.01 mm (D) 0.05 mm

3. Which one of the following is a vector quantity ?

   (A) Speed (B) Density

   (C) Velocity (D) Mass

4. The magnitude of resultant of two forces $\vec{P}$ & $\vec{Q}$ acting perpendicular to each other is

   (A) $\sqrt{P^2 + Q^2}$ (B) $\sqrt{P^2 - Q^2}$

   (C) $P^2 - Q^2$ (D) $P^2 + Q^2$

5. A force of 50 N acts at a point making an angle of 30° with the horizontal. The vertical component is

   (A) 50 N (B) 25 N

   (C) 150 N (D) 1.6 N

Space For Rough Work

6. A couple produces

(A) pure linear motion (B) pure rotational motion

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

7. The resultant of two like parallel forces acts in the direction of

(A) same as that of two forces (B) opposite to two forces

(C) perpendicular to two forces (D) direction cannot be specified

8. The reciprocal of bulk modulus of elasticity is called

(A) Compressibility (B) Rigidity

(C) Modulus of elasticity (D) Viscosity

9. A steel wire has a cross sectional area of 0.05 m^2. If the maximum stress of steel wire is 1000 N/m^2. The force is

(A) 20×10^3 N (B) 50 N

(C) 200 N (D) 20 N

10. The pressure at a point on surface of a liquid is

(A) minimum (B) maximum

(C) zero (D) infinity

11. The pressure exerted by sea water of density 1025 kg/m^3 on a fish at a depth of 10 m ($g = 10\ m/s^2$) is

(A) 1025 kPa (B) 10.25 kPa

(C) 1.025 kPa (D) 102.5 kPa

Space For Rough Work

12. A drop of rain assumes spherical shape due to

(A) Density (B) Viscosity

(C) Surface tension (D) Humidity

13. The phenomenon of rise or fall of liquid in a capillary tube is

(A) Viscosity (B) Capillarity

(C) Density (D) Elasticity

14. The S.I. unit of coefficient of viscosity is

(A) Ns/m^2 (B) Nm^2/s

(C) m^2s/N (D) Ns/m

15. The expression that represents Boyle's law is

(A) PV = constant (B) PT = constant

(C) VT = constant (D) PVT = constant

16. The volume of gas at 30 °C is 2 litres. To what temperature the gas must be heated for its volume to become 4 litres at constant pressure.

(A) 300 °C (B) 273 °C

(C) 333 °C (D) 606 °C

17. Working of pressure cooker is based on the principle of

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

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

Space For Rough Work

18. Land and sea breeze is an example of

(A) Conduction (B) Convection

(C) Condensation (D) Radiation

19. The measure of average kinetic energy of all the particles in a gas is

(A) Heat (B) Mechanical energy

(C) Chemical energy (D) Temperature

20. When a wave travels through the medium, the particles of the medium are

(A) displaced in the direction of wave

(B) displaced opposite to the direction of wave

(C) mean position remains same

(D) starts rotating

21. Two waves with very little difference in their frequencies overlap on one another to produce

(A) Stationary waves (B) Progressive waves

(C) Beats (D) Transverse waves

22. The acceleration of the particle executing simple harmonic motion is directly proportional to its

(A) displacement from its mean position

(B) period of motion

(C) frequency of vibration

(D) amplitude of wave

Space For Rough Work

23. In the expression for velocity of sound in air, $V = \sqrt{\frac{\gamma P}{\rho}}$, notation γ is equal to

(A) $C_P + C_V$ (B) $C_P - C_V$

(C) $C_P \times C_V$ (D) $\frac{C_P}{C_V}$

24. Velocity of sound in outer space is

(A) 3×10^8 m/s (B) 330 m/s

(C) zero (D) 360 m/s

25. A string of length 1 m and mass 0.04 kilogram vibrates with fundamental frequency of 100 Hz then the tension in the string is

(A) 4000 N (B) 1600 N

(C) 400 N (D) 1000 N

26. Nodes and antinodes are characteristics of

(A) Stationary waves (B) Longitudinal waves

(C) Transverse waves (D) Beats

27. Natural frequency of a string does not vary with

(A) thickness (B) applied force

(C) tension (D) length

28. The electromagnetic radiation used in Forensic Department to study the finger print is

(A) Ultraviolet Ray (UV Ray) (B) Radio wave

(C) Micro wave (D) X-ray

Space For Rough Work

29. The type of light used to study Holography is

(A) Visible light (B) Laser light

(C) Sodium light (D) Mercury light

30. Which technology is used to develop Sun Screen lotion and cosmetics ?

(A) Geo-technology (B) Nano-technology

(C) Electro-technology (D) Micro-technology

31. The process of separating the information signal from the carrier wave at the receiver is known as

(A) Amplification (B) Modulation

(C) Attenuation (D) Demodulation

32. Optical fibre is used in

(A) Pressure sensors (B) Drilling

(C) Holography (D) Welding

33. The mass of copper deposited on the cathode of a copper voltmeter by a current of 2 amperes in 30 minutes is

(Given ece of copper (Z) = 0.0003 gm / coulomb)

(A) 3.2 gm (B) 4.3 gm

(C) 1.08 gm (D) 2.5 gm

34. The process of coating zinc over iron or steel is known as

(A) Galvanizing (B) Tinning

(C) Alloying (D) Non-Metallic coating

Space For Rough Work

35. SOFC is a type of

(A) Primary cell (B) Secondary cell

(C) Fuel cell (D) Solar cell

36. Magnalium is an alloy made by the combination of aluminium and

(A) Phosphorous (B) Zinc

(C) Tin (D) Magnesium

37. Zinc-carbon battery is an example for

(A) Secondary Battery (B) Fuel cell

(C) Primary Battery (D) Solar cell

38. Which of the following is not a polymer ?

(A) Teflon (B) Nylon

(C) Bakelite (D) Glass

39. Ceramic is which type of material ?

(A) Composite material (B) Alloy

(C) Polymer (D) Bio-material

40. The pH value of distilled water is

(A) 13 (B) 7

(C) 2 (D) 11

Space For Rough Work

PART – B

ENGINEERING MATHEMATICS

41. If $A = \begin{bmatrix} -3 & 4 \\ 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 2 \\ -2 & 1 \end{bmatrix}$, then $B^T \cdot A^T$ is

(A) $\begin{bmatrix} 3 & 8 \\ -4 & 0 \end{bmatrix}$

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

(C) $\begin{bmatrix} 5 & 2 \\ -2 & -4 \end{bmatrix}$

(D) $\begin{bmatrix} 5 & 2 \\ 2 & 4 \end{bmatrix}$

42. The value of the $\begin{vmatrix} \tan\theta & 0 & -1 \\ 1 & 0 & \tan\theta \\ 2 & -1 & 3 \end{vmatrix}$ is

(A) $-\sec^2\theta$

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

(C) 1

(D) $\sec^2\theta$

43. The values of x and y in the simultaneous equations $2x - 3y = 13$ and $3x + 4y = -6$ are

(A) $x = -3, y = 2$

(B) $x = -2, y = -3$

(C) $x = 2, y = -3$

(D) $x = 2, y = 3$

44. If $\begin{vmatrix} 3 & -2 & 4 \\ 4 & 0 & x \\ 2 & -5 & 4 \end{vmatrix} = -4$, then the value of x is

(A) 4

(B) –4

(C) $\frac{44}{19}$

(D) $-\frac{44}{19}$

Space For Rough Work

45. The characteristics roots of the matrix $\begin{bmatrix} 2 & 0 \\ 0 & -3 \end{bmatrix}$ are

(A) $\lambda = 2$ and $\lambda = 3$ (B) $\lambda = -2$ and $\lambda = -3$

(C) $\lambda = 2$ and $\lambda = -3$ (D) $\lambda = -2$ and $\lambda = 3$

46. The adjoint of the matrix $\begin{bmatrix} 4 & 2 \\ -3 & 1 \end{bmatrix}$ is

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

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

47. If A = (1, 2, –3) and B = (2, 0, –1) then $\overrightarrow{AB}$ is

(A) $i - 2j + 2k$ (B) $-i + 2j - 2k$

(C) $3i + 2j - 4k$ (D) $i + 2j - 2k$

48. The work done by the force $\vec{F} = 2i + 6j - 8k$, whose displacement is $\vec{S} = -2i + 3j - k$ is

(A) 26 units (B) –22 units

(C) 22 units (D) 30 units

49. The vector product of $\vec{a} = 4i - j + k$ and $\vec{b} = 3i - 2k$ is

(A) $2i - 11j + 3k$ (B) $2i + 11j + 3k$

(C) $2i + 5j + 3k$ (D) $2i + 11j - 3k$

50. When a fair coin is tossed two times, the event A "getting exactly one tail" is given by

(A) {HT, TH} (B) {TT}

(C) {TH} (D) {TT, HT}

Space For Rough Work

51. If $\tan\theta = \frac{5}{12}$ and $\pi < \theta < \frac{3\pi}{2}$, then the value of $\sin\theta - \cos\theta$ is

(A) $\frac{17}{13}$ (B) $\frac{7}{13}$

(C) $-\frac{17}{13}$ (D) $-\frac{7}{13}$

52. The value of $\tan 225° \times \cot 405°$ is

(A) 1 (B) –1

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

53. The value of $\sin 50° \cos 20° - \cos 50° \cdot \sin 20°$ is

(A) $\sin 70°$ (B) $\frac{\sqrt{3}}{2}$

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

54. If $\cos A = \frac{15}{17}$ and $\sin B = \frac{3}{5}$, then the value of $\cos(A + B)$ is

(A) $\frac{84}{85}$ (B) $-\frac{36}{85}$

(C) $-\frac{84}{85}$ (D) $\frac{36}{85}$

55. The value of $\sqrt{\frac{1+\sin 2A}{1-\sin 2A}}$ is

(A) $\cot\left(\frac{\pi}{4}+A\right)$ (B) $\cot\left(\frac{\pi}{4}-A\right)$

(C) $\tan\left(\frac{\pi}{4}-A\right)$ (D) $\cot\left(\frac{\pi}{2}-A\right)$

Space For Rough Work

56. The value of $\cos 40° + \sin 10°$ is

(A) $\sin 20°$ (B) $-\cos 20°$

(C) $\cos 20°$ (D) $-\sin 20°$

57. The value of $i + i^2 + i^3 + i^4$ is

(A) i (B) –i

(C) 1 (D) 0

58. $\lim_{x \to 0} \frac{x}{\sqrt{1+x}-1}$ is equal to

(A) 0 (B) 1

(C) 2 (D) ∞

59. $\lim_{x \to \infty} \frac{3x^3 + 4x + 7}{(6 + x^2)(x - 1)} =$

(A) 3 (B) –3

(C) $\frac{1}{2}$ (D) $\frac{1}{6}$

60. $\lim_{x \to 0} \frac{3x + \sin 4x}{2 \sin 3x - 5x} =$

(A) $\frac{4}{3}$ (B) 7

(C) $\frac{3}{5}$ (D) $\frac{7}{11}$

Space For Rough Work

61. The slope and y-intercept of the line $6x - 4y + 3 = 0$ are respectively

(A) $\frac{3}{2}$ and $\frac{3}{4}$ (B) $\frac{2}{3}$ and $\frac{4}{3}$

(C) $\frac{-3}{2}$ and $\frac{4}{3}$ (D) $\frac{3}{2}$ and $\frac{2}{3}$

62. The equation of the line joining the points (1, 3) and (2, –4) is

(A) $7x - y - 10 = 0$ (B) $7x + y - 10 = 0$

(C) $x + 7y + 10 = 0$ (D) $x - 7y - 10 = 0$

63. If $y = e^{-2x} + 4a^x$, then $\frac{dy}{dx} =$

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

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

64. If $y = \log(\log 3x)$ then $\frac{dy}{dx} =$

(A) $\frac{1}{x \log 3x}$ (B) $\frac{3}{x \log 3x}$

(C) $2 \log 3x$ (D) $\frac{1}{\log x}$

65. If $xy = x + y^2$, then $\frac{dy}{dx} =$

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

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

Space For Rough Work

66. If $x = \tan^{-1} t$ and $y = 3t + t^3$ then $\frac{dy}{dx} =$

(A) 3

(B) $3(1 + t^2)^2$

(C) $\frac{3}{(1 + t^2)^2}$

(D) $\frac{1}{3(1 + t^2)^2}$

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

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

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

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

(D) $\frac{y[1 - \log x]}{x^2}$

68. Which of the following equations satisfy for the function $y = e^{\tan^{-1} x}$ with usual notations ?

(A) $(1 + x^2)y_2 + (2x - 1)y_1 = 0$

(B) $(1 + x^2)y_2 + 2xy_1 = 0$

(C) $(1 - x^2)y_2 - xy_1 - y = 0$

(D) $xy_2 - 2y_1 - xy = 0$

69. The equation of a normal to the curve $y = 4x^3 + 3x^2 + 4$ at the point $(-1, 3)$ is

(A) $6x + y - 19 = 0$

(B) $x + 6y - 17 = 0$

(C) $x - 6y + 17 = 0$

(D) $6x - y + 19 = 0$

70. The rate of change of surface area of a sphere is 12 cm^2/s. The rate at which the radius is changing when the radius of the sphere is 2 cm is equal to

(A) $\frac{\pi}{4}$ cm/s

(B) $\frac{3\pi}{4}$ cm/s

(C) 3π cm/s

(D) $\frac{3}{4\pi}$ cm/s

Space For Rough Work

71. $\int \left(1 + x - \frac{1}{x} + e^x\right) dx$

(A) $1 - \frac{1}{x^2} + e^x + c$

(B) $1 + \frac{x^2}{2} - \frac{1}{x^2} + e^x + c$

(C) $x + \frac{x^2}{2} - \log x + e^x + c$

(D) $x + 1 - \frac{1}{x^3} - e^x + c$

72. $\int e^{\tan x} \cdot \sec^2 x \, dx =$

(A) $e^{\tan x} + c$

(B) $e^{\sec^2 x} + c$

(C) $e^{\tan^2 x} + c$

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

73. $\int \cot^2 x \, dx =$

(A) $-\text{cosec}\, x + c$

(B) $-\cot x - x + c$

(C) $-\cot x + x + c$

(D) $\cot x + x + c$

74. $\int x \sin x \, dx =$

(A) $x \sin x - \cos x + c$

(B) $x \cos x - \sin x + c$

(C) $x \sin x + \cos x + c$

(D) $-x \cos x + \sin x + c$

75. $\int \sqrt[3]{x^2} \, dx =$

(A) $\frac{5}{2} x^{\frac{5}{2}} + c$

(B) $\frac{3}{5} x^{\frac{5}{3}} + c$

(C) $\frac{5x^{\frac{2}{5}}}{2} + c$

(D) $\frac{x^2}{2} + c$

Space For Rough Work

76. $\int_0^{\pi/2} \cos^2 x \, dx =$

(A) $\frac{\pi}{2}$ (B) $\frac{\pi}{6}$

(C) $\frac{\pi}{3}$ (D) $\frac{\pi}{4}$

77. The volume of a solid generated when the curve $y = \sqrt{x^2 + 4}$ is rotated about x-axis between the ordinates $x = -1$ and $x = 1$ is

(A) $\frac{23\pi}{3}$ cubic units (B) $\frac{26\pi}{3}$ cubic units

(C) $\frac{16\pi}{3}$ cubic units (D) 0

78. The order and degree of the differential equation $\frac{dy}{dx} = \sqrt{1 + \frac{d^2y}{dx^2}}$ respectively are

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

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

79. The differential equation formed from the equation $y = ae^x + be^{-x}$ by eliminating arbitrary constants is

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

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

80. Solution of the differential equation $\frac{dy}{dx} = \frac{1 + y^2}{1 + x^2}$ is

(A) $\tan^{-1} y + \tan^{-1} x = k$ (B) $\tan^{-1} y - \tan^{-1} x = k$

(C) $\sin^{-1} y + \sin^{-1} x = k$ (D) $\sin^{-1} y - \sin^{-1} x = k$

Space For Rough Work

PART – C

CIVIL ENGINEERING

81. Marble is a/an _____ rock.

(A) Igneous (B) Sedimentary

(C) Metamorphic (D) None of these

82. The chief constituent of good brick earth is

(A) Lime (B) Silica

(C) Alumina (D) Oxide of iron

83. Gypsum is added at the time of grinding of cement clinkers for the purpose of

(A) Quick setting (B) Delay setting time

(C) Accurate setting (D) None of these

84. The age of tree can be known by examining

(A) Medullary rays (B) Cambium layer

(C) Annular rings (D) Heartwood

85. Brass is an alloy of

(A) Copper and tin (B) Copper and steel

(C) Copper and zinc (D) Copper and lead

86. Putty is made of

(A) Lead and linseed oil (B) Zinc oxide and linseed oil

(C) Powdered chalk and linseed oil (D) Lead and turpentine

87. The length of Gunter's chain is

(A) 66 feet (B) 67.5 feet

(C) 100 feet (D) 32 feet

Space For Rough Work

88. The whole circle bearing of a line is 190°. Its quandral bearing is

(A) N 10° W (B) S 10° W

(C) N 15° W (D) S 15° E

89. The first sight taken on Benchmark is known as

(A) Back sight (B) Fore sight

(C) Intermediate sight (D) Long sight

90. Pentagraph is used for

(A) Measuring distances (B) Measuring areas

(C) Enlarging or reducing plan (D) Setting out right angles

91. If the angular measurements of a traverse are more precise than its linear measurements, balancing of the traverse done by

(A) Bowditch's rule (B) Transit rule

(C) Empirical rule (D) Graphical rule

92. The curve composed of two arcs of different radii having their centres on the opposite side of the curve is known as

(A) a simple curve (B) a compound curve

(C) a reverse curve (D) a vertical curve

93. The projection of a traverse line perpendicular to the meridian is known as

(A) Latitude of a line (B) Departure of a line

(C) Bearing of a line (D) Co-ordinate of a line

94. The multiplying constant for the tacheometer is generally kept as _____ provided it is fitted with internal focusing type telescope.

(A) 20 (B) 40

(C) 60 (D) 100

Space For Rough Work

95. The capacity of the reservoir is calculated using trapezoidal rule is

(A) $V = d\left(\frac{A_1 + A_n}{2} + A_2 + A_3 + \ldots\ldots + A_{n-1}\right)$

(B) $V = \frac{d}{3}\left(\frac{A_1 + A_n}{2} + A_2 + A_3 + \ldots\ldots + A_{n-1}\right)$

(C) $V = \frac{d}{3}\left[(A_1 + A_n) + 4(A_2 + A_4 + \ldots\ldots + A_{n-1}) + 2(A_3 + A_5 + \ldots + A_{n-2})\right]$

(D) $V = d\left(\frac{A_1 + A_n}{3} + A_2 + A_3 + \ldots\ldots + A_{n-1}\right)$

96. Active remote sensing uses _____ as the source of electro-magnetic energy.

(A) Sun (B) own source

(C) Moon (D) None

97. The system of force in which line of action of all the forces meet at a point is called

(A) Concurrent (B) Coplanar

(C) Non-concurrent (D) Non-coplanar

98. Moment of Inertia of a triangular section of base 'b' and height 'h' about an axis passing through the center of gravity and parallel to base is given by

(A) $\frac{bh^3}{4}$ (B) $\frac{bh^3}{8}$

(C) $\frac{bh^3}{12}$ (D) $\frac{bh^3}{36}$

99. The stress in a body, if suddenly loaded, is _____ the stress induced, when the same load is applied gradually.

(A) one-half (B) equal to

(C) twice (D) four times

100. The maximum shear stress induced in body is _____ times average shear stress in rectangular section.

(A) 1.0 (B) 1.5

(C) 2.0 (D) 2.5

Space For Rough Work

101. In case of composite section having two or more bars of different length, then change in length in each bar is

(A) Equal

(B) Bars does not undergoes any change in length.

(C) Not equal

(D) None of these

102. Point of contraflexure is a point, where

(A) Maximum bending moment occur

(B) Zero shear force occur

(C) Maximum shear force occur

(D) Zero bending moment occur

103. Unbalanced vertical force to the right or left of the section is known as

(A) tensile force (B) compressive force

(C) shear force (D) None of these

104. When beam bends, which of its layer is neither elongated nor shortened ?

(A) axis of load (B) neutral axis

(C) section modulus (D) extreme layer

105. Flexural rigidity is the product of _____ with usual notation.

(A) E and I (B) C and I

(C) K and I (D) C and J

106. Bending moment at free end of cantilever beam carrying any type of load

(A) Zero (B) Minimum

(C) Maximum (D) Equal to load

107. The vertical distance between the axis of the beam measured before and after loading at any point is called

(A) Deformation (B) Deflection

(C) Slope (D) Elongation

Space For Rough Work

108. For cantilever beam of length 'l' and carrying uniformly distributed load of 'w' kn/mt, the deflection at free end is

(A) $\frac{wl^3}{8\,EI}$ (B) $\frac{wl^2}{24\,EI}$

(C) $\frac{wl^4}{8\,EI}$ (D) $\frac{wl^3}{12\,EI}$

109. Short column fails due to

(A) Cracking (B) Crushing

(C) Shearing (D) Buckling

110. A column with highest equivalent length is

(A) both ends hinged. (B) both the ends fixed.

(C) one end is fixed other is free. (D) one end is fixed other is hinged.

111. A footing in which a beam is used to connect two footings is known as

(A) Combined footing (B) Strap footing

(C) Strip footing (D) Raft footing

112. In a brick masonry wall constructed in English Bond a Queen Closer is placed

(A) in any position

(B) in stretcher course next to first brick

(C) in header course next to first brick

(D) in stretcher course only

113. In an arch the vertical distance between the springing line and highest point of the inner curve of the arch is known as

(A) Intrados (B) Rise

(C) Haunch (D) Spandrel

114. The pointing in which upper side of mortar joint is kept about 12 mm inside the face of masonry and bottom is kept flush with face of masonry is termed as

(A) Struck pointing (B) Tuck pointing

(C) Recessed pointing (D) Grooved pointing

Space For Rough Work

115. The vertical faces of a door opening that supports the door frame are known as
(A) Posts (B) Reveals
(C) Style (D) Jambs

116. The lower edges of a pitched roof projecting beyond the wall are termed as
(A) Rafters (B) Eaves
(C) Purlins (D) Wall plates

117. The application of chlorine to water beyond the stage of break point is known as
(A) Super-chlorination (B) Dechlorination
(C) Over-chlorination (D) Plain chlorination

118. Water is considered 'hard', if its hardness is of the order of
(A) 50 ppm (B) 100 ppm
(C) 150 ppm (D) over 200 ppm

119. Most of the turbidity meters work on the scattering principle. The turbidity value so obtained is expressed in
(A) CFU (B) FTU
(C) JIU (D) NTU

120. Sedimentation with coagulation if the process of
(A) To remove very fine suspended particles & colloidal particles.
(B) To remove odour.
(C) To remove pathogenic bacteria.
(D) All of these

121. Removal of permanent hardness is done by
(A) Zeolite process (B) by boiling
(C) by adding lime (D) by filtration

122. The suitable system of sanitation for an area having uniformly distributed mild rains throughout the year is
(A) separate system (B) combined system
(C) partially separate system (D) partially combined system

Space For Rough Work

123. The internal diameter of the sewer should not be less than

(A) 15 cm (B) 25 cm

(C) 50 cm (D) 75 cm

124. The pH of fresh sewage is usually

(A) less than 7 (B) more than 7

(C) equal to 7 (D) equal to zero

125. Floating substances like oil, fat and grease are separated and removed by

(A) Bar screens (B) Primary sedimentation

(C) Skimming tank (D) Trickling filter

126. Electrostatic precipitators remove

(A) Sulphur dioxide (B) Particulate matter

(C) Methane (D) Carbon monoxide

127. The depth of center of pressure (h) for a vertically immersed surface from the liquid surface is given by

(A) $\frac{I_G}{A\bar{X}} - \bar{X}$ (B) $\frac{I_G}{A\bar{X}} - A\bar{X}$

(C) $\frac{I_G}{A\bar{X}} + \bar{X}$ (D) $\frac{A\bar{X}}{I_G} + \bar{x}$

128. The flow in which paths of individual particles do not cross each other and moving in well defined path is known as

(A) Laminar flow (B) Uniform flow

(C) Steady flow (D) Rotational flow

129. When an internal mouthpiece is running free, the discharge of the mouthpiece is

(A) $0.5\, a\sqrt{2gh}$ (B) $0.707\, a\sqrt{2gh}$

(C) $0.855\, a\sqrt{2gh}$ (D) $a\sqrt{2gh}$

Space For Rough Work

130. The sheet of water flowing over a weir is known as

(A) Nappe (B) Crest

(C) Height of flow (D) Sill

131. In most economical rectangular section of a channel depth is kept equal to

(A) $\frac{1}{4}^{th}$ of width (B) 3 times the hydraulic radius

(C) half the width (D) hydraulic mean depth

132. The loss of head due to friction in a pipe line as per Darcy's equation is

(A) $h_f = \frac{V^2}{2g}$ (B) $h_f = \frac{4flV^2}{2gd}$

(C) $h_f = \frac{2gdf}{V^2}$ (D) $h_f = \frac{4f}{V^2d}$

133. The height of water column equivalent to pressure of 0.15 mPa is

(A) 15.3 mt (B) 25.3 mt

(C) 35.3 mt (D) 45.3 mt

134. The Cippoletti weir is a _____ weir.

(A) Rectangular (B) Triangular

(C) Trapezoidal (D) Circular

135. If the water is flowing through a pipe of area of cross-section 0.1 m^2 and with a velocity of 10 mt/sec, then the discharge through the pipe is

(A) 1 lt./sec (B) 10 lt./sec

(C) 100 lt./sec (D) 1000 lt./sec

Space For Rough Work

136. Isohyets are the imaginary lines joining points of equal

(A) hydrograph (B) humidity

(C) rainfall (D) pressure

137. Precipitation of liquid water in which the water drops of size between 0.1 mm and 0.5 mm is called as

(A) rain (B) drizzle

(C) snow (D) fog

138. Method of irrigation, in which land surrounded by natural or artificial banks is flooded, is called

(A) broad irrigation (B) natural irrigation

(C) basin irrigation (D) free flooding

139. Relation between duty 'D' in hectares/cumec, depth of water Δ in meters and base period. 'B' in days is given by

(A) $\Delta = 8.64\ B/D$ (B) $\Delta = 8.64\ D/B$

(C) $\Delta = 8.64\ B$ (D) None of these

140. The reservoir which can retain the water during the period of rainfall and can release as and when required is called

(A) Storage reservoir

(B) Flood control reservoir

(C) Distribution reservoir

(D) Multipurpose reservoir

141. Which of the following is a rigid dam ?

(A) Gravity dam (B) Rock fill dam

(C) Earth dam (D) Coffer dam

Space For Rough Work

142. The canal aligned along the watershed is known as

(A) ridge canal (B) contour canal

(C) side slope canal (D) None of these

143. What type of C.D. work is provided when the canal runs below the drain with FSL of canal below the bed of the drain ?

(A) Aqueduct (B) Super passage

(C) Level crossing (D) Siphon aqueduct

144. A structure which is constructed at the head of the canal to regulate flow of water is known as

(A) Approach channel (B) Divide wall

(C) Canal head regulator (D) Fish ladder

145. An imaginary surface within ground below which all the voids of soil or permeable rock are completely filled with water is known as

(A) Soil water (B) Capillary water

(C) Water table (D) None of these

146. The breaking up of cohesion in a mass of concrete is termed as

(A) Bleeding (B) Segregation

(C) Creep (D) Workability

147. In Vicat apparatus, the diameter of the plunger is

(A) 5 mm (B) 10 mm

(C) 15 mm (D) 20 mm

148. The maximum particle site of fine aggregate is

(A) 2.5 mm (B) 4.75 mm

(C) 5.85 mm (D) 6.5 mm

Space For Rough Work

149. The top diameter, bottom diameter and height of the mould used for slump test are respectively

(A) 100 mm, 200 mm, 300 mm (B) 200 mm, 100 mm, 300 mm

(C) 200 mm, 300 mm, 100 mm (D) 100 mm, 300 mm, 200 mm

150. Super plasticisers are used to improve the _____ of concrete.

(A) Durability (B) Workability

(C) Strength (D) Permeability

151. In ND test using ultra pulse velocity test apparatus the pulse velocity obtained for medium quality concrete will be in the range of

(A) above 4.5 (B) 3.5 to 4.5

(C) 3.0 to 3.5 (D) below 3.0

152. The value of partial safety factor for steel material used in limit state method is

(A) 1.0 (B) 1.15

(C) 1.5 (D) 1.75

153. If the value of $f_y = 250\ N/mm^2$, the grade of steel used is

(A) Grade 1 (B) Grade Fe415

(C) HYSD (D) Grade Fe500

154. Due to the architectural reasons when the depth of the beam is required to be restricted it is designed as

(A) a singly reinforced beam (B) a doubly reinforced beam

(C) a continuous beam (D) a cantilever beam

155. As per IS 456-2000 clear cover to the main reinforcement in column is

(A) 15 mm (B) 25 mm

(C) 40 mm (D) 60 mm

Space For Rough Work

156. The minimum diameter of a longitudinal bar used in column as per IS 456-2000 is

(A) 12 mm (B) 16 mm

(C) 20 mm (D) 25 mm

157. Maximum bending moment per unit width in a two-way slab parallel to longer span as per IS 456-2000 is given by

(A) $M_y = \alpha_y W l_x^2$ (B) $M_y = \alpha_y W l_y^2$

(C) $M_y = \alpha_x W l_y^2$ (D) $M_y = \alpha_x W l_x^2$

158. As per IS 456-2000 a short column is defined as one its ratio of effective length to its least lateral dimension is restricted to

(A) 18 (B) 12

(C) 14 (D) 16

159. In the design of isolated column footing of effective thickness d, the critical section for one-way shear is

(A) at column face

(B) at distance d from face of the column

(C) at distance $\frac{d}{2}$ from face of the column

(D) at distance $\frac{d}{4}$ from face of the column

160. Distribution steel in stair when HYSD bars are used is

(A) 0.18% of gross c/s area (B) 0.16% of gross c/s area

(C) 0.15% of gross c/s area (D) 0.12% of gross c/s area

161. As per IS 456-2000 with usual notations effective width of T-beam b_f is

(A) $b_f = \frac{l_O}{6} + b_w + D_f$ (B) $b_f = \frac{l_O}{6} + b_w + 6D_f$

(C) $b_f = \frac{l_O}{4} + b_w + D_f$ (D) $b_f = \frac{l_O}{4} + b_w + 4D_f$

Space For Rough Work

162. One of the advantages of bolted connections is

(A) bolts can withstand vibrations and shocks without getting loosened.

(B) rigidity of joints is increased due to loose fit.

(C) immediate resistance of bolts after placement.

(D) tensile strength is increased considerably due to stress

163. A channel section consists of

(A) one web and one flange

(B) one web and two flanges

(C) two web and one flange

(D) two web and two flanges

164. Strut is a structural member subjected to

(A) compression in a direction parallel to its longitudinal axis.

(B) compression in a direction perpendicular to its longitudinal axis.

(C) compression in a direction inclined to its longitudinal axis.

(D) tension in all directions.

165. If the moment of inertia and area of cross-section of a steel section are 1250×10^3 mm^4 and 2000 mm^2 respectively, then the radius of gyration of that section is

(A) 625 mm (B) 25 mm

(C) 250 mm (D) 62.5 mm

166. The highest point on cross-section of a road surface is called

(A) crown (B) camber

(C) gradient (D) berm

167. The value of ruling gradient in plain as per IRC is

(A) 1 in 10 (B) 1 in 20

(C) 1 in 30 (D) 1 in 40

Space For Rough Work

168. The penetration test on bitumen is conducted to find out

(A) grade (B) viscosity

(C) ductility (D) None

169. The width of carriage way in single lane road as per IRC should be

(A) 3.75 M (B) 5.50 M

(C) 7.5 M (D) 7.0 M

170. The most common binder used in flexible pavement construction is

(A) Lime (B) Bitumen

(C) Cement (D) None

171. The width of ballast section of track in BG as per IS is

(A) 3.35 M (B) 2.25 M

(C) 1.83 M (D) 5.0 M

172. The minimum formation width for double line B.G. in embankment as per Indian standards

(A) 6.1 M (B) 5.5 M

(C) 10.7 M (D) 10.1 M

173. Rising of water level on upstream side of the river due to construction of bridge is known as

(A) Afflux (B) Waterway

(C) Cofferdam (D) Caission

174. The triangular portion or semi-circular portion provide on downstream side of the pier is called

(A) Ease water (B) Cut water

(C) Buffer (D) None

Space For Rough Work

175. It is always possible to break up the entire project into a number of distinct, well defined jobs or tasks called

(A) Activities (B) Events

(C) Nodes (D) Terminal Nodes

176. _____ is an undertaking by person or firm to do any work under certain terms and conditions.

(A) Tender (B) Contract

(C) Schedule (D) Administrative Approval

177. In organization of Karnataka state PWD :

(A) SE is superior to CE. (B) CE is superior to SE.

(C) EE is superior to SE. (D) EE is superior to CE.

Where SE stands for Superintending Engineer

CE stands for Chief Engineer

EE stands for Executive Engineer

178. The value of the property at the end of the utility period without being dismantled is called

(A) Sinking fund (B) EMD

(C) Scrap value (D) Salvage value

179. The execution of a specified work to complete it in all respects with in an specified time for a fixed amount is called

(A) Lumpsum contract (B) Item rate contract

(C) Labour contract (D) Piece work contract

180. Working out exact quantities of various items of work is known as

(A) Valuation (B) Estimating

(C) Schedule of Rates (D) None of these

Space For Rough Work

Space For Rough Work