TEST - 2015

CE	COURSE	DAY : SUNDAY
	CIVIL ENGINEERING	TIME : 10.00 A.M. TO 1.00 P.M.

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

MENTION YOUR DIPLOMA CET NUMBER					QUESTION BOOKLET DETAILS	
					VERSION CODE	SERIAL NUMBER
					A – 1	120945

DOs :

1. Check whether the Diploma CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the 2nd **Bell i.e., after 09.50 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts:

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. **The 3rd Bell rings at 10.00 a.m., till then;**
   - Do not remove the paper seal 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 acomplete 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.
   - **Completed darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below:

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 Bells 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, 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.**

PART - A
APPLIED SCIENCE

1. An example of derived unit is

   1. Meter 2. Second 3. Netwon 4. Candela

2. The prefix used for 10^{-15} is

   1. Femto 2. Pico 3. Peta 4. Nano

3. An example of dimensionless constant is

   1. Strain 2. Efficiency 3. Force 4. Pi

4. A main scale is divided into half mm and having a Vernier containing 10 divisions has a least count of _____cm.

   1. 0.05 2. 0.005 3. 0.02 4. 0.025

5. According to Newton's second law of motion F = Kma. The value of K is

   1. 0.1 2. 0 3. 10 4. 1

6. The velocity of a freely falling body is maximum

   1. At the beginning 2. Just before it touches ground
   3. Exactly half way 4. After it touches ground

7. Wet clothes are dried in washing machine by the property of

   1. Inertia of rest 2. Inertia of direction
   3. Inertia of motion 4. Inertia of time

8. A force of 1.2×10^{-2} N acts for 3 seconds on a body of mass 0.04kg at rest. The velocity gained by the body is

   1. 0.9 m/s 2. 9 m/s 3. 0.09 m/s 4. 9.2 m/s

9. An example of vector quantity is

   1. Volume 2. Energy 3. Density 4. Force

Space For Rough Work

10. Handle of the door is fixed away from the end where it is fixed with hinges to

1. Increase the moment of force
2. Decrease the moment of force
3. Keep the door firm
4. Lock it easily

11. Resultant of two equal forces perpendicular to each other acts at an angle _____ to first force

1. 90°
2. 180°
3. 30°
4. 45°

12. The resultant of two forces acting on a body cannot be

1. Greater than first force
2. Zero
3. Lesser than first force
4. Lesser than the difference between two forces

13. Towing of a boat by two forces is an illustration of

1. Lami's theorem
2. Law of triangle of forces
3. Law of parallelogram of forces
4. Law of polygon of forces

14. Shock absorber is an example for

1. Compressive stress
2. Tensile stress
3. Shear stress
4. Shear strain

15. Factor of safety of a structure is

1. Within 2
2. Equal to zero
3. Vary between 5 and 10
4. More than 10

16. In case of liquids as the temperature increases, the viscosity of liquid decreases due to

1. Increase in the rate of diffusion of gases
2. Decrease in the rate of diffusion of gases
3. Increase in the potential energy of molecules
4. Increase in the kinetic energy of molecules

Space For Rough Work

17. One Pascal is equal to

1. 10 dynes/cm^2
2. 1 dyne / cm^2
3. 100 dynes / cm^2
4. 0.1 dyne / cm^2

18. To calm down turbulent sea, sailors use oil to

1. Decrease surface tension
2. Increase surface tension
3. Decrease viscosity
4. Increase cohesive force

19. The thrust on the bottom of the container having a base area of 20 m^2 filled with water to a height of 3 m is _____ (given g =10m/s^2)

1. 6×10^5 N
2. 6×10^4 N
3. 6×10^3 N
4. 6×10^2 N

20. Amount of heat required to raise the temperature of 1 kg of water through 1^oC is

1. One calorie
2. One joule
3. One kilo-calorie
4. One kilojoule

21. Absolute scale of temperature has its zero at

1. 0^oC
2. –100^oC
3. 273^oC
4. – 273^oC

22. In case of an ideal gas, the value of pressure or volume co-efficient is

1. $\frac{1}{273}$
2. $-\frac{1}{273}$
3. 273
4. –273

23. The distance travelled by the disturbance per unit time in a given direction is

1. Wave amplitude
2. Wave velocity
3. Wave frequency
4. Wavelength

24. The speed of the transverse wave along the stretched string is given by

1. $V=\sqrt{\frac{T}{m}}$
2. $V=\sqrt{\frac{m}{T}}$
3. $V=\sqrt{\frac{1}{T}}$
4. $V=\frac{\sqrt{m}}{T}$

Space For Rough Work

25. Absorption co-efficient of sound wave is given by _____. Where E_m is energy absorbed by the given medium E_{ow} is the energy absorbed by open window.

1. $a = \frac{E_m}{E_{ow}}$ 2. $a = \frac{E_{ow}}{E_m}$ 3. $a = E_m \times E_{ow}$ 4. $a = E_m + E_{ow}$

26. The rich quality of a musical note depends on
1. Fundamental frequency 2. Loudness
3. Larger number of over tones 4. Pitch

27. Waxing and waning are the characteristics of
1. Periodic motion 2. Oscillations 3. Beats 4. Frequency

28. Velocity of sound in air varies
1. Inversely as the square root of the density of the medium
2. Directly as the square root of the density of the medium
3. Directly as the density of medium
4. Inversely as the density of medium

29. The vibrations of a body of decreasing amplitude are called
1. Undamped free vibrations 2. Damped free vibrations
3. Resonant vibrations 4. Forced vibrations

30. Another name for field emission is
1. Cold cathode emission 2. Thermionic emission
3. Photoelectric emission 4. Secondary emission

31. In case of photoelectric emission, the rate of emission of electron is
1. Independent of frequency of radiation
2. Dependent on frequency of radiation
3. Dependent on wavelength of incident radiation
4. Independent of intensity of radiation

32. Emission of radiation from radioactive element is
1. Slow 2. Fast 3. Spontaneous 4. Very slow

Space For Rough Work

33. In the spectrum of scattered light the lines corresponding to wavelength greater than that of incident light are called

1. Stokes lines
2. Antistokes lines
3. Fluorescent lines
4. Incident lines

34. Resolving power of telescope is given by

1. $\frac{d}{1.22\lambda}$
2. $\frac{1.22\lambda}{d}$
3. $\frac{1.22d}{\lambda}$
4. $\frac{\lambda}{1.22d}$

35. To observe diffraction pattern the obstacle should be

1. Very big
2. Dark
3. Absent
4. Comparable with the wavelength of light

36. When double refraction occurs, extraordinary ray and ordinary rays will have vibrations in the planes _____ to one another

1. Parallel
2. Independent
3. Perpendicular
4. At 45^{o}

37. Maxwell's electromagnetic theory could explain

1. Photo electric effect
2. Interference of light
3. Compton effect
4. Black body radiation

38. The contrast between bright and dark bands of an interference pattern is

1. Low
2. High
3. No change
4. Gradually decreases

39. A non-electrolyte solution is

1. Sugar solution
2. Salt solution
3. Water
4. Copper sulphate solution

40. In alkalies the concentration of OH^- ions is

1. More than 10^{-7}g ions / litre
2. Less than 10^{-7}g ions / litre
3. Equal to 10^{-7}g ions / litre
4. More than 10^{7}g ions / litre

Space For Rough Work

PART - B
APPLIED MATHEMATICS

41. If $\begin{vmatrix} 2x+1 & -5x \\ 1 & 3 \end{vmatrix} = 0$, then x is

1. $\frac{3}{11}$ 2. $\frac{-3}{11}$ 3. $\frac{11}{3}$ 4. $\frac{11}{3}$

42. For the simultaneous linear equations $2x+y+z=1$, $x+y+2z=0$ and $3x+2y-z=2$, the value of Δx is

1. 3 2. -11 3. -7 4. -3

43. If $A=\begin{bmatrix} 2 & 3 \\ 5 & 4 \end{bmatrix}$, $B=\begin{bmatrix} -1 & 7 \\ -4 & 1 \end{bmatrix}$ then $(A+B)^T$ is

1. $\begin{bmatrix} 1 & 1 \\ 10 & 5 \end{bmatrix}$ 2. $\begin{bmatrix} 1 & 10 \\ 1 & 5 \end{bmatrix}$ 3. $\begin{bmatrix} -1 & 10 \\ -1 & 5 \end{bmatrix}$ 4. $\begin{bmatrix} -1 & -1 \\ 10 & 5 \end{bmatrix}$

44. If $A=\begin{bmatrix} 1 & -3 \\ -5 & 7 \end{bmatrix}$, then adj A is

1. $\begin{bmatrix} 1 & -5 \\ -3 & 7 \end{bmatrix}$ 2. $\begin{bmatrix} 7 & -5 \\ -3 & 1 \end{bmatrix}$ 3. $\begin{bmatrix} -1 & -5 \\ -3 & -7 \end{bmatrix}$ 4. $\begin{bmatrix} 7 & 3 \\ 5 & 1 \end{bmatrix}$

45. The cofactor of O in $A=\begin{bmatrix} 3 & -2 & 5 \\ 1 & 6 & 0 \\ 2 & 7 & -4 \end{bmatrix}$ is

1. -25 2. 25 3. -17 4. 0

Space For Rough Work

46. If $\left(\sqrt{3}+1\right)^3 = 10+6\sqrt{3}$, then the value of $\left(\sqrt{3}+1\right)^3 - \left(\sqrt{3}-1\right)^3$ is

1. $12\sqrt{3}$ 2. 0 3. 20 4. $20+\sqrt{3}$

47. The middle term in the expansion of $\left(x^3+\frac{1}{x^2}\right)^6$

1. $10\,x^3$ 2. $20\,x^3$ 3. $\frac{20}{x^3}$ 4. 20

48. If $\vec{a} = i+3j-2k$ and $\vec{b} = 2i-j+3k$, then $\vec{a}\,.\,\vec{b}$ is

1. -5 2. 11 3. 7 4. -7

49. The work done by the force $2i-j+6k$ when it displaces the particle from (5, 3, -2) to (7, -4, 8) is

1. 72 2. 48 3. -71 4. 71

50. The sine of the angle between the vectors $\vec{a} = i+j+k$ and $\vec{b} = 2i-3j-4k$ is

1. $\sqrt{\frac{62}{87}}$ 2. $\sqrt{\frac{87}{62}}$ 3. $\frac{-5}{\sqrt{87}}$ 4. $\sqrt{\frac{10}{63}}$

51. If $\cos\theta = \frac{5}{13}$ and θ is acute angle, then the value of $3\cos\theta - 2\sin\theta$ is

1. $\frac{9}{13}$ 2. 3 3. $\frac{-9}{13}$ 4. -3

Space For Rough Work

52. If $x \sin 30^\circ - \text{Sec } 30^\circ \tan 30^\circ = \tan^2 60^\circ$, then the value of x is

1. $\frac{22}{3}$ 2. $\frac{-22}{3}$ 3. $\frac{11}{6}$ 4. $\frac{3}{22}$

53. The value of $\sin 225^\circ + \cos(-135^\circ)$ is

1. $\sqrt{2}$ 2. $-\sqrt{2}$ 3. $\frac{1}{\sqrt{2}}$ 4. $\frac{-1}{\sqrt{2}}$

54. The simplified value of $\frac{\sin(180^\circ - A)\cot(90^\circ - A)\cos(360^\circ - A)}{\tan(180^\circ + A)\tan(90^\circ + A)\sin(-A)}$ is

1. $\sin A$ 2. $-\sin A$ 3. 1 4. $\text{cosec } A$

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

1. $2\tan A$ 2. $\sin A$ 3. $\cot A$ 4. $\tan A$

56. If $\tan A = \frac{3}{4}$ and $\tan B = \frac{1}{7}$, then the value of (A+B) is

1. $\frac{\pi}{6}$ 2. $\frac{25}{23}$ 3. $\frac{\pi}{4}$ 4. $\frac{23}{25}$

57. The value of $\cos 20^\circ + \cos 100^\circ + \cos 140^\circ$ is

1. 0 2. $\cos 50^\circ$ 3. $\frac{1}{2}$ 4. $\sin 50^\circ$

Space For Rough Work

58. The value of $cos^{-1}\left[\tan 135^\circ\right]$ is

1. 0° 2. 180° 3. 45° 4. 90°

59. The centroid of the triangle formed by the vertices $(-10, 6)$, $(2, -2)$ and $(2, 5)$ is

1. $(-2, 3)$ 2. $(2, 3)$ 3. $\left(-3, \frac{9}{2}\right)$ 4. $(-6, 9)$

60. A point $(-4, 3)$ divides the line AB externally in the ratio of 1 : 2. Given A$(-1, -3)$ then the point B is

1. $(6, -3)$ 2. $(-10, 15)$ 3. $(2, 9)$ 4. $(2, -9)$

61. The area of triangle formed by the point, $(3, -1)$, $(2, 0)$ and (K, 4) is 10 Sq. Units, then the value of K is

1. 12 2. 7 3. -22 4. 22

62. The slope of the line joining the points $(-2, 3)$ and $(4, -6)$ is

1. $\frac{3}{2}$ 2. $\frac{-3}{2}$ 3. $\frac{2}{3}$ 4. $\frac{-2}{3}$

63. The equation of straight line passing through $(4, -1)$ and having equal intercepts is

1. $x+y-1=0$ 2. $x+y-5=0$ 3. $x+y-3=0$ 4. $x+y+3=0$

64. The equation of the line passing through $(5, -2)$ and parallel to the line $3x+2y+7=0$ is

1. $3x+2y-11=0$ 2. $3x-2y+11=0$
3. $3x-2y-19=0$ 4. $2x-3y-16=0$

Space For Rough Work

65. The value of $\lim_{x \to -2} \frac{x+2}{x^5+32}$ is

1. $\frac{1}{80}$ 2. 80 3. $\frac{-1}{80}$ 4. -80

66. The value of $\lim_{x \to 0} \frac{2x - \tan 3x}{\sin 2x + 3x^2}$ is

1. $\frac{-1}{5}$ 2. 0 3. $\frac{1}{2}$ 4. $-\frac{1}{2}$

67. If $y = e^x \log x$, then $\frac{dy}{dx}$ at $x = 1$ is

1. e^x 2. e 3. 1 4. 0

68. If $y = \tan^{-1} \sqrt{\frac{1+\cos x}{1-\cos x}}$, then $\frac{dy}{dx}$ is

1. 2 2. -2 3. $\frac{-1}{2}$ 4. $\frac{1}{2}$

69. If $\sqrt{x^3} + \sqrt{y^3} = \sqrt{a^3}$, then $\frac{dy}{dx}$ is

1. $\sqrt{\frac{x}{y}}$ 2. $-\sqrt{\frac{x}{y}}$ 3. $\sqrt{\frac{y}{x}}$ 4. $-\sqrt{\frac{y}{x}}$

70. The second derivative of $y = \log(\sec x - \tan x)$ is

1. $-\sec x \tan x$ 2. $\sec x \tan x$ 3. $-\sec x$ 4. $\sec x$

Space For Rough Work

71. Water flows into the cylindrical tank of radius 7mt at the rate of 294 cubic mt/sec, then the rate of height of water rising in the tank is

1. $\frac{\pi}{6} mt/sec$
2. $\frac{6}{\pi} mt/sec$
3. $14406\ mt/sec$
4. $\frac{21}{\pi} mt/sec$

72. The maximum value of the function $y = x + \frac{1}{x}$ is

1. 0
2. 2
3. 1
4. –2

73. The value of $\int tan^2 x\ dx$ is

1. $tan\ x - x + c$
2. $x - tan\ x + c$
3. $\left(sec^2 x\right)^2 + c$
4. $-cot\ x - x + c$

74. The value of $\int \frac{cos\ x}{1 + sin\ x}\ dx$ is

1. $log\left(sec^2 x + sec\ x\ tan\ x\right) + c$
2. $log\left(sin\ x\right) + c$
3. $log\left(1 + sin\ x\right) + c$
4. $\frac{\left(1 + sin\ x\right)^2}{2} + c$

75. $\int sin^2 x\ sin\ 2x\ dx$ is

1. $\frac{sin^2 x}{2} + c$
2. $\frac{sin^4 x}{2} + c$
3. $sin^2 x + c$
4. $\frac{-sin^4 x}{2} + c$

Space For Rough Work

76. $\int_{-1}^{1}(2x+1)(5-x)\,dx$ is

1. 10
2. $\frac{26}{3}$
3. $\frac{-26}{3}$
4. $\frac{11}{3}$

77. $\int_{0}^{\pi/4} tan^2 x\ sec^2 x\ dx$ is

1. $\frac{1}{3}$
2. $\frac{4}{3}$
3. $\frac{1}{2}$
4. $\frac{-1}{3}$

78. The RMS value of $y^2 = x^2 - 2x$ over the interval [1, 3] is

1. $\sqrt{\frac{5}{3}}$
2. $\sqrt{\frac{2}{3}}$
3. $\frac{1}{3}$
4. $\frac{1}{\sqrt{3}}$

79. The differential equation of $y^3 = 5ax$ by eliminating arbitrary constant a is

1. $\frac{dy}{dx} - \frac{y}{3x} = 0$
2. $\frac{dy}{dx} + \frac{y}{3x} = 0$
3. $\frac{dy}{dx} - \frac{3y}{x} = 0$
4. $\frac{dy}{dx} - \frac{5y}{3x} = 0$

80. The integrating factor of the differential equation $x\frac{dy}{dx} - (1-x)y = x^3$ is

1. $\frac{e^x}{x}$
2. xe^x
3. $e^{\frac{x^2-2x}{2}}$
4. $e^{\frac{2x-x^2}{2}}$

Space For Rough Work

PART - C

CIVIL ENGINEERING

81. An example for metamorphic rock is

1. Granite 2. Marble 3. Sand stone 4. Lime stone

82. The function of Iron oxide in brick earth is to

1. Impart uniform shape
2. Prevent shrinkage of raw bricks
3. Impart colour
4. Impart plasticity to the earth

83. The vicat's apparatus is used to determine

1. Fineness 2. Consistency 3. Slump 4. Strength

84. The process of cutting and sawing timber into suitable sizes required by the users is called

1. Seasoning 2. Conversion 3. Slaking 4. Tempering

85. The ore of copper is

1. Magnetite 2. Limonite 3. Haematite 4. Cuprite

86. The ease with which one can work with concrete is known as

1. Workability 2. Compaction 3. Segregation 4. Blending

87. White lead in paint is used as

1. Base 2. Thinner 3. Carrier 4. Pigment

88. The ingredients added to plastic to improve strength and hardness are called

1. Fillers 2. Plasticizers 3. Pigments 4. Solvents

89. The lowest part of a structure which transmits the load to the soil is known as

1. Super structure 2. Plinth 3. Foundation 4. Basement

Space For Rough Work

90. When heavy structural loads from column is required to be transferred to a soil of low bearing capacity the type of footing used is

1. Isolated 2. Combined 3. Raft 4. Grillage

91. The most important purpose of frog in a brick is to

1. Emboss manufacturer's name
2. Reduce the weight of brick
3. From keyed joint between brick and mortar
4. Improve ventilation

92. A series of steps without any platform, break or landing in one direction is called

1. Riser 2. Tread 3. Flight 4. Nosing

93. The horizontal member of wood or steel used to support the roof material of a sloping roof are called

1. Purlins 2. Cleats 3. Rafters 4. Eaves

94. The pointing which is most commonly used in brick and stone masonry is

1. Flush pointing
2. Stuck pointing
3. V- groved pointing
4. Truck pointing

95. The horizontal member of the door or window shutter are called

1. Rails 2. Styles 3. Jambs 4. Reveals

96. In building construction, the damp proof course will be provided at

1. Sill level 2. Lintel level 3. Basement level 4. Roof level

97. The highest point on the extrados of an arch is called

1. Skewback 2. Crown 3. Voussoir 4. Key stone

Space For Rough Work

98. The vertical members of a scaffolding which ultimately bear all loads are called

1. Standards 2. Ledgers 3. Putlog 4. Bracers

99. The length of a line measured with a 20 m chain was found to be 200m. If the chain was 10cm too long, the true length of the line is

1. 199 m 2. 200 m 3. 201 m 4. 202 m

100. The Quadrantal bearing of a line varies from

1. 0^0 *to* 90^0 2. 0^0 *to* 180^0 3. 0^0 *to* 270^0 4. 0^0 *to* 360^0

101. The very first sight taken on a point of known elevation in levelling operation is known as

1. Fore sight 2. Fore bearing 3. Back sight 4. Back bearing

102. The instrument used to measure the area of an irregular figure is

1. Pantagraph 2. Planimeter 3. Ceylon ghat tracer 4. Clinometer

103. If L = Latitude, D = Departure, the closing erros (e) in case of a closed traverse is given by

1. $e = \sum L^2 + \sum D^2$ 2. $e = \sqrt{\sum L^2 + \sum D^2}$

3. $e = \sum L^2 - \sum D^2$ 4. $e = \sqrt{\sum L^2 - \sum D^2}$

104. The process of levelling in which the elevation of points are computed from measured vertical angles and horizontal distances is called

1. Reciprocal levelling 2. Profile levelling
3. Barometric levelling 4. Trignometric levelling

105. A theodolite is called transit theodolite if the line of sight can be reversed by revolving the telescope through

1. 180° in vertical plane 2. 180° in horizontal plane
3. 90° in vertical plane 4. 90° in horizontal plane

Space For Rough Work

106. The tangent length of a simple circular curve of radius R and deflection angle Δ is given by

1. $\frac{\pi R\Delta}{180}$ 2. $R \tan\frac{\Delta}{2}$ 3. $R \operatorname{versin}\frac{\Delta}{2}$ 4. $2R\sin\frac{\Delta}{2}$

107. The angle between the reflecting surface of a prism square is

1. 30^0 2. 45^0 3. 60^0 4. 75^0

108. For indirect ranging, minimum number of ranging rods required is

1. 1 2. 2 3. 3 4. 4

109. If the long chord and tangent length of a circular curve of radius R are equal, then the deflection angle is

1. 30^0 2. 60^0 3. 90^0 4. 120^0

110. The back sight reading on a bench mark of reduced level 100.00m is 1.845m. If the fore sight reading on a point is 1.345m, then the reduced level of that point is

1. 100.500m 2. 103.190m 3. 100.050m 4. 103.910m

111. The ratio of direct stress to volumetric strain is called

1. Elastic modulus
2. Rigidity modulus
3. Bulk modulus
4. Shear modulus

112. The resultant of two forces P and Q (such that P > Q) acting along the same straight line but in opposite direction is given by

1. P + Q 2. P - Q 3. P/Q 4. Q/P

113. The point through which whole weight of body acts, irrespective of its position is known as

1. Moment of inertia
2. Centre of gravity
3. Centroid
4. Radius of gyration

Space For Rough Work

114. Moment of inertia of a rectangular section having width (b) and depth (d) about an axis passing through its Centre of gravity and parallel to the depth (d) is

1. $\frac{db^3}{12}$ 2. $\frac{bd^3}{12}$ 3. $\frac{db^3}{36}$ 4. $\frac{bd^3}{36}$

115. Moment of inertia of a circular section about an axis perpendicular to the section is

1. $\frac{\pi d^3}{16}$ 2. $\frac{\pi d^3}{12}$ 3. $\frac{\pi d^4}{32}$ 4. $\frac{\pi d^4}{64}$

116. The unit of strain is

1. N-mm 2. N/mm 3. mm 4. No unit

117. The relationship between Young's modulus (E) bulk modulus (K) and Poisson's ratio $\left(\frac{1}{m}\right)$ is given by

1. $K=\frac{3m-2}{mE}$ 2. $K=\frac{mE}{3m-2}$ 3. $K=\frac{3(m-2)}{mE}$ 4. $K=\frac{mE}{3(m-2)}$

118. A beam supported on more than two supports is called as

1. Simply supported beam
2. Fixed beam
3. Over hanging beam
4. Continuous beam

119. The section modulus of a rectangular section of breadth (b), depth (d) about an axis through its centre of gravity is

1. $b/2$ 2. $bd^2/6$ 3. $bd^2/2$ 4. $d/2$

Space For Rough Work

120. The maximum deflection of a cantilever beam of length (l) with a point load (W) at the free end is

1. $\frac{W\ell^3}{3EI}$ 2. $\frac{W\ell^3}{8EI}$ 3. $\frac{W\ell^3}{16EI}$ 4. $\frac{W\ell^3}{48EI}$

121. The shear stress at the centre of solid circular shaft under torsion is

1. Maximum 2. Minimum 3. Zero 4. Infinity

122. Euler's formula holds good for

1. Short columns
2. Long columns
3. Both short and long columns
4. Pedestals

123. The ratio of specific weight of liquid to the specific weight of pure water at standard temperature is called as

1. Density of liquid
2. Specific gravity of liquid
3. Compressibility of liquid
4. Surface tension of liquid

124. When a vertical wall is subjected to pressure due to liquid on both sides, the resultant pressure is _____ of the two pressures

1. Sum
2. Difference
3. Arithmetic mean
4. Geometric mean

125. For a perfect incompressible liquid flowing in a continuous stream, the total energy of a liquid particle remains the same, while the particle moves from one point to another . This statement is called as

1. Continuity equation
2. Bernoulli's theorem
3. Pascal's law
4. Archimedi's principle

Space For Rough Work

126. The pressure of a liquid measured with the help of piezometer is

1. Vacuum pressure
2. Atmospheric pressure
3. Absolute pressure
4. Gauge pressure

127. According to Chezy's formula , the discharge through an open channel, if A is Area of flow , m is hydraulic mean depth and i is constant bed slope is

1. $A\sqrt{mi}$
2. $C\sqrt{mi}$
3. $AC\sqrt{mi}$
4. $mi\sqrt{AC}$

128. According to Darcy's formula the loss of head due to friction in the pipe with usual notations is

1. $\frac{f\ell v^2}{2gd}$
2. $\frac{f\ell v^2}{gd}$
3. $\frac{3f\ell v^2}{2gd}$
4. $\frac{4f\ell v^2}{2gd}$

129. An orifice is known as large orifice when the head of liquid from the centre of orifice is

1. More than 10 times the depth of water
2. Less than 5 times the depth of water
3. Equal to 10 times the depth of water
4. More than 5 times the depth of orifice

130. The pump used to lift sewage and storm water is

1. Centrifugal pump
2. Reciprocating pump
3. Air lift pump
4. Deepwell pump

131. The amount of precipitation is measured by

1. Rain gauge
2. Osmoscope
3. Turbidometer
4. Barometer

Space For Rough Work

132. The graphical representation of discharge with time, at a particular point of a stream is known as

1. Mass flow curve
2. Hydrograph
3. Hyetograph
4. Infiltration curve

133. The moisture content of the soil below which plants cannot extract sufficient water for their requirements is called

1. Field capacity
2. Saturation capacity
3. Temporary wilting point
4. Permanent wilting point

134. The time interval between the first watering of a crop at the time of sowing to its last watering before harvesting is known as

1. Effective period
2. Total period
3. Base period
4. Crop period

135. The duct provided in the body of dam which runs longitudinally is called

1. Infiltration well
2. Infiltration gallery
3. Passage
4. Weir

136. The canal where in its alignment , cross drainage works are completely eliminated is

1. Contour canal
2. Ridge canal
3. Furrow canal
4. Side slope canal

137. When full supply level (F.S.L) of the canal is much below the bed level of the drainage trough, so that canal water flows freely under gravity the structure provided is

1. Aquadect
2. Syphon aquaduct
3. Super passage
4. Canal syphon

Space For Rough Work

138. Guide bank is also known as

1. Groyne 2. Spur 3. Marginal bund 4. Bell's bund

139. The characteristic strength of mild steel is

1. 250 mpa 2. 415 mpa
3. 500 mpa 4. 550 mpa

140. The creation of conditions for promotion of interrupted and progressive hydration is

1. Curing 2. Compaction
3. Water proofing 4. Batching

141. The strength of material below which not more than 5% of the test results are expected to fall is

1. Characteristic strength 2. Ultimate strength
3. Yield strength 4. Elastic limit

142. The maximum strain in tension reinforcement at the section should not be less than

1. $\frac{fy}{1.15E}+0.002$ 2. $\frac{fy}{E}+0.002$ 3. $\frac{1.15fy}{E}+0.002$ 4. $\frac{fy}{1.15E}$

143. The minimum diameter of longitudinal bars in columns as stipulated in IS 456-2000 shall not be less than

1. 6 mm 2. 8 mm 3. 10 mm 4. 12 mm

144. The maximum percentage of longitudinal reinforcement in column is limited to

1. 0.8 2. 1.0 3. 2.0 4. 6.0

Space For Rough Work

145. The area of concrete stress block in flexure for a rectangular beam as per IS 456-2000 is

1. 0.36 fck^{xu} 2. 0.45 fck^{xu} 3. 0.67 fck^{xu} 4. 0.446 fck^{xu}

146. In a column of size 200 × 400 mm, reinforced with 4nos of 20 mm diameter longitudinal bars the spacing of lateral ties shall be

1. 200 mm 2. 230 mm 3. 320 mm 4. 300 mm

147. In a masonry retaining wall of height 4m, if the horizontal soil pressure varies from zero at the top to 30 KN/ m^2 at the base, then the total pressure on the wall is

1. 30 KN/m 2. 40 KN/m 3. 50 KN/m 4. 60 KN/m

148. The effective length of a compression member of length 2 m between points of intersections, connected by a single bolt at each end is

1. 1.6 m 2. 2 m 3. 1.7 m 4. 4 m

149. In a double U butt welded connection of plates 100 × 10 mm, the strength of the welded joint in tension when f_y = 250 MPa is

1. 150 KN 2. 15 KN 3. 250 KN 4. 25 KN

150. Super plasticizer is used as an admixture in concrete mainly to

1. Increase the strength of concrete
2. Increase the workability of the mix
3. Reduce the heat of hydration
4. Decrease the workability of the mix

151. The vertical wells provided along the banks of a river to draw ground water in dry season and percolated water in the remaining season are called

1. Infiltration wells 2. Infiltration gallaries
3. Tube well 4. Springs

Space For Rough Work

152. The process in which water is brought in intimate contact with air is known as

1. Oxidation
2. Carbonation
3. Aeration
4. Chlorination

153. Biochemical Oxygen Demand (BOD) of drinking water should be

1. Zero
2. 5 ppm
3. 7 ppm
4. 10 ppm

154. The pipe installed in a house drainage to pressure water seal of traps is called

1. Soil pipe
2. Rain water pipe
3. Waste pipe
4. Anti-siphonage pipe

155. The effluent of septic tank is generally discharged into

1. Sewer
2. Soak pit
3. Imhoff tank
4. Skimming tank

156. The trap which disconnects the house drain from street sewer is called

1. Grease trap
2. Gulley trap
3. Intercepting trap
4. Floor trap

157. The polluting gas which is primarily responsible for causing the green house effect and global warming is

1. Hydrogen sulphide
2. Carbon-dioxide
3. Sulphur – dioxide
4. Ammonia

158. The width of highway in cutting excluding side drains is called

1. Land width
2. Right of way
3. Formation width
4. Carriage way

159. The value of camber recommended by IRC for thin bituminous road in heavy rainfall zone is

1. 1 in 33
2. 1 in 40
3. 1 in 50
4. 1 in 60

Space For Rough Work

160. A cement concrete road is an example for _____ pavement

1. Flexible 2. Rigid 3. Semi rigid 4. Pervious

161. The device used for changing the direction of railway engine is called

1. Turnout 2. Turn table
3. Triangle 4. Crossing track

162. Disc signals are used on a track

1. When a train arrives at a station 2. When a train leaves the station
3. During shunting operation 4. During emergency

163. The type of rail section used presently in India railways is

1. Bull headed 2. Flat headed
3. Flat footed 4. Double headed

164. Structures built perpendicular to the shore line for berthing of vessels are known as

1. Docks 2. Jetties 3. Groynes 4. Wharves

165. The area in which air craft are parked is known as

1. Runway 2. Taxiway 3. Apron 4. Terminal

166. A bridge that is raised to permit passage of boats which fail to clear the closed span is termed as _____ bridge

1 Transverse 2. Transporter
3. Bascule 4. Suspension

167. _____ occurs when the velocity of a stream exceeds the limiting velocity which causes erosion

1. Afflux 2. Scour 3. Runoff 4. Flood

Space For Rough Work

168. The berthing facilities provided on one side only is

1. Jetties 2. Wharves 3. Docks 4. Fenders

169. Needle beam method is adopted for tunneling through

1. Hard rock 2. Soft rock
3. Soft soil 4. Water bearing soil

170. The estimated time required to complete an activity is known as

1. Duration 2. Float 3. Restraint 4. Critical time

171. Issues of materials from stock should be made only on receipt of

1. An indent 2. An invoice
3. Bin card 4. Measurement book

172. The type of contract in which contractor agrees to execute complete works in all respects for a specified amount within a specified time is

1. Item rate contract 2. Cost plus percent contract
3. Labour contract 4. Lumpsum contract

173. The first stage in construction planning is

1. Technical planning 2. Job planning
3. Pretender planning 4. Post tender planning

174. Weight of one bag of cement is

1. 35 kg 2. 50 kg 3. 100 kg 4. 150 kg

Space For Rough Work

175. For 10 m^3 of brick masonry, number of standard modular bricks required is

1. 400 2. 2000 3. 5000 4. 1000

176. The ornamental cornice is estimated in

1. Cubic meter
2. Square meter
3. Running meter
4. Lumpsum quantity

177. When the value of property becomes less by its becoming out of date in style , in design is termed as

1. Book value
2. Market value
3. Scrap value
4. Obsolescence

178. When representative fraction of the scale is 3:1. The scale of the drawing is

1. Full scale drawing
2. Reduced scale drawing
3. Enlarging scale drawing
4. Vernier scale drawing

179. The standard distance between finish floor level to lintel level in a residential buildings is

1. + 900 mm
2. + 1100 mm
3. + 2100 mm
4. + 3000 mm

180. Ease water of an intermediate pier in a DECK slab bridge shall be

1. Semi circular
2. Rectangular
3. Hexagonal
4. Pentagonal

Space For Rough Work