DIPLOMA – COMMON ENTRANCE TEST-2013

CE	COURSE	DAY : SUNDAY DATE : 30-JUNE-2013
	CIVIL	**TIME : 9.00 a.m. to 12.00 Noon**

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	102201

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 08.50 a.m.**
3. The serial number of this question booklet should be entered on the OMR answer sheet.
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 9.00 a.m., till then;**
   - Do not remove the seal / staple 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.

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 9.00 a.m.**, remove the paper seal / polythene bag of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 180 minutes:
   - Read each question (item) carefully.
   - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **only one response** for each item.
   - Completely **darken / shade** the relevant circle with a **blue or black ink ballpoint 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 bell is rung at 12.00 Noon**, 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.**

[P.T.O.

SEAL

PART – A

It consists of **1 – 40** questions.

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

   (1) 1 (2) 2

   (3) 3 (4) 0

2. In solving the equations by Cramer's rule for $5x - 3y = 1$ and $2x - 5y = -11$, the value of x and y is

   (1) (3, 2) (2) (−3, −2)

   (3) (2, 3) (4) (−2, −3)

3. If $A = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 2 & 0 \\ 1 & 1 & 2 \end{bmatrix}$ then A adj A is

   (1) Diagonal (2) Scalar

   (3) Identity (4) Zero matrix

4. The minor of the element 6 in a matrix $A = \begin{bmatrix} 2 & -3 & 0 \\ 4 & 1 & 6 \\ 3 & 2 & 0 \end{bmatrix}$ is

   (1) 10 (2) 11

   (3) 12 (4) 13

5. The characteristic equation of the matrix $A = \begin{bmatrix} 5 & -3 \\ 2 & 1 \end{bmatrix}$ is

   (1) $\lambda^2 - 6\lambda + 11 = 0$ (2) $\lambda^2 - 6\lambda - 11 = 0$

   (3) $\lambda^2 + 6\lambda + 11 = 0$ (4) $-\lambda^2 + 6\lambda = 0$

SPACE FOR ROUGH WORK

6. The fourth term in the expansion of $\left(\sqrt{3}+2\right)^7$ is

(1) 2520 (2) – 2520

(3) 1/2520 (4) – 1/2520

7. The constant term in the expansion $(x^2 + 1/x)^{12}$ is

(1) – 495 (2) 495

(3) 1/495 (4) 945

8. The projection of vector (3, 1, 3) on vector (1, – 2, 1) is

(1) $2\sqrt{6}/5$ (2) $-2\sqrt{6}/3$

(3) $2\sqrt{6}/3$ (4) $-2\sqrt{6}/5$

9. If vector a = (1, 1, 1) and vector b = (2, 2, 1) then magnitude of vector a × b is

(1) $\sqrt{26}$ (2) $\sqrt{28}$

(3) $\sqrt{24}$ (4) 1

10. The cosine of the angle between the vectors (3, – 1, 1) and vector (1, 1, – 1) is

(1) $1/\sqrt{11}$ (2) $-1/\sqrt{33}$

(3) $1/\sqrt{33}$ (4) $-1/\sqrt{11}$

11. The value of $(\sec^6 x - \tan^6 x)$ is

(1) $1 - 3\sec^2 \times \tan^2 x$

(2) $1 + \tan^2 \times \sec^2 x$

(3) $1 + 3\sec^2 \times \tan^2 x$

(4) $1 - \tan^2 \times \sec^2 x$

SPACE FOR ROUGH WORK

12. If x cot 45° cos 60° = sin 60° tan 30° then the value of x is

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

(3) 1/2 (4) 1

13. If tan x = 15/8 and x is in the III quadrant then the value of $(2 \sin x - 3 \cos x) / (2 \cos x + 3 \sin x)$ is

(1) 61/6 (2) – 61/6

(3) – 6/61 (4) 6/61

14. The value of $\{[\sin(2\pi - \theta) + \cos(-\theta)] / [\tan(-\theta) + \cot(2\pi + \theta)]\} - \{[\sin(\pi/2 + \theta) + \cos(3\pi/2 - \theta)] / [\cot(\pi + \theta) + \tan(2\pi - \theta)]\}$ is

(1) 0 (2) – 1

(3) + 1 (4) – 2

15. If sin A = 5/13 and sin B = 4/5 then the value of cos (A – B) is

(1) 65/56 (2) 56/65

(3) 16/65 (4) – 16/65

16. On simplification the value of $(\cos^3 A - \cos 3A) / \cos A + (\sin^3 A + \sin 3A) / \sin A$ is

(1) 3 (2) 1

(3) 2 (4) 0

17. The value of $(\sin 100° + \sin 20°) / (\cos 100° + \cos 20°)$ is

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

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

18. The value of $(\tan^{-1} 5/6 + \tan^{-1} 1/11)$ is

(1) 30° (2) 60°

(3) 90° (4) 45°

SPACE FOR ROUGH WORK

19. If the points (– 3, K), (5, 7) and (– 11, 1) are collinear, then the value of K is

(1) 4 (2) 3

(3) 2 (4) 1

20. The ratio of the line join of the points (2, 3) and (– 5, 6) divided by y – axis is

(1) 5 : 2 (2) 2 : 5

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

21. Three vertices of a triangle are (– 2, 3, 1), (– 1, 4, 2) and (– 6, 5, 2), then the centroid of the triangle is

(1) (– 3, 4, 1) (2) (0, 5/3, 1/3)

(3) (4, 3, 1) (4) (– 3, – 4, – 2)

22. The equation to the straight line passing through (3, 2) and perpendicular to the line $5x + 2y - 3 = 0$ is

(1) $2x - 5y - 4 = 0$

(2) $2x - 5y + 4 = 0$

(3) $2x + 5y + 4 = 0$

(4) $5x - 2y + 4 = 0$

23. The slope of a line passing through the points (– 4, – 5) and (2, 3) is

(1) 3/4 (2) – 3/4

(3) 4/3 (4) – 4/3

24. The acute angle between the lines $2x - y + 3 = 0$ and $x - 3y + 2 = 0$ is

(1) 30° (2) 60°

(3) 90° (4) 45°

SPACE FOR ROUGH WORK

25. The value of $\lim_{n\to\infty} [(3-n)(4-n)(2n-5)] / (4n^3-3)$

(1) $-1/2$ (2) $1/2$

(3) $3/2$ (4) $-3/2$

26. The value of $\lim_{x\to -3} (x^4-81) / (x^3+27)$ is

(1) 3 (2) -3

(3) 4 (4) -4

27. $d/dx\left(\sqrt{\sin^2 x}\right.$ is

(1) $\cos x$ (2) $\sin 2x$

(3) $\cos^2 x$ (4) $\sqrt{\cos x / \sin x}$

28. $d/dx \tan^{-1} \sqrt{(1-\cos 2x)/(1+\cos 2x)}$ is

(1) 1 (2) 0

(3) $\tan x$ (4) $\cos x$

29. If $y = \sin x^x$ then dy/dx is

(1) $x \log \sin x$

(2) $\cos x^x$

(3) $\sin x^x (x \cot x + \log \sin x)$

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

30. $d/dx\left(\sin h^{-1} x\right)$ is

(1) $1/\sqrt{1+x^2}$ (2) $1/\sqrt{1-x^2}$

(3) $1/\sqrt{x^2-1}$ (4) $1/\sqrt{x^2+1}$

SPACE FOR ROUGH WORK

31. The equation to the normal to the curve $y = 5x^2 + 4x - 11$ at the point $(-1, 2)$ is

(1) $x - 6y + 11 = 0$

(2) $x + 6y - 11 = 0$

(3) $6x - y + 11 = 0$

(4) $6x + y - 11 = 0$

32. The volume of a sphere is increasing at the rate of 4π c.c/sec, then the rate of increase of the radius is when the volume is $288\ \pi$ cc

(1) 6 cm/sec

(2) 1/6 cm/sec

(3) 1/36 cm/sec

(4) 36 cm/sec

33. $\int \sin^2 x\, dx$ is

(1) $\cos x + c$

(2) $x/2 - (\sin 2x)/4 + c$

(3) $x/2 + (\cos 2x)/4 + c$

(4) $x/2 + (\sin 2x)/4 + c$

34. $\int (3x^2 + x - 1)^6 (6x + 1)\, dx$ is

(1) $6(3x^2 + x - 1)^5 + c$

(2) $(3x^2 + x - 1)^6 + c$

(3) $(3x^2 + x - 1)^7 / 7 + c$

(4) $(3x^2 + x - 1)^7 / 21 + c$

35. $\int \tan^{-1} x\, dx$ is

(1) $x \tan^{-1} x - 1/2 \log (1 + x^2) + c$

(2) $x \tan^{-1} x + 1/2 \log (1 + x^2) + c$

(3) $\tan^{-1} x - 1/2 \log (1 + x^2) + c$

(4) $\tan^{-1} x + 1/2 \log (1 + x^2) + c$

SPACE FOR ROUGH WORK

36. $\int_0^{\pi/2} \sin 3x \cos 2x \, dx$ is

(1) 3/5 (2) – 3/5 (3) 5/3 (4) – 5/3

37. $\int_0^{2} (x-1)(x-2)\, dx$ is

(1) 2/3 (2) – 2/3 (3) 3/2 (4) – 3/2

38. The area bounded by the curve $y = 2x^2$, the x – axis and the ordinates at $x = -1$ and $x = 2$ is

(1) – 6 sq units

(2) 3 sq units

(3) – 3 sq units

(4) 6 sq units

39. The differential equation formed by eliminating a and b from $x + y = ae^x + be^{-x}$ is

(1) $d^2y/dx^2 + y = 0$

(2) $d^2y/dx^2 - y = 0$

(3) $d^2y/dx^2 - x - y = 0$

(4) $d^2y/dx^2 + x - y = 0$

40. The solution of the differential equation $dy/dx = (1 + y^2) / (1 + x^2)$ is

(1) $\tan^{-1} y + \tan^{-1} x + c = 0$

(2) $\log (1 + y^2) + \log (1 + x^2) + c = 0$

(3) $\tan^{-1} y - \tan^{-1} x + c = 0$

(4) $\log (1 + y^2) - \log (1 + x^2) + c = 0$

SPACE FOR ROUGH WORK

PART – B

It consists of **41 – 80** questions.

41. The prefix "mega" stands for
    (1) 10^3 (2) 10^{-3} (3) 10^{-6} (4) 10^6

42. Which of the following is dimensional physical quantity ?
    (1) pressure (2) strain
    (3) mechanical advantage (4) sp.gravity

43. The principle of vernier is
    (1) n VSD = (n + 1) MSD (2) (n – 1) VSD = n MSD
    (3) n MSD = (n – 1) V SD (4) (n – 1) MSD = n VSD

44. A screw gauge has a pitch of $\frac{1}{2}$ mm and 50 division on sleeve. The reading when the jaws touch is +5 division. While gripping a wire the reading is PSR = 3 PSD and HSR = 17, then the diameter of wire is
    (1) 1.62 cm (2) 0.162 cm
    (3) 0.162 mm (4) 16.2 mm

45. The extension of the material by itself without increase of load takes place
    (1) within elastic limit
    (2) beyond elastic limit
    (3) beyond yield point
    (4) at breaking point

46. If the strain in a wire is 0.1%, then the change in the length of the wire of length 5 m is
    (1) 5×10^{-2} m (2) 5×10^{-3} m
    (3) 5×10^{-4} m (4) 5×10^{-3} cm

SPACE FOR ROUGH WORK

47. Poisson's ratio is the ratio of

(1) $\frac{\textit{Lateral strain}}{\textit{Linear strain}}$ (2) $\frac{\textit{Linear strain}}{\textit{Lateral strain}}$

(3) $\frac{\textit{Lateral strain}}{\textit{Volume strain}}$ (4) $\frac{\textit{Volume strain}}{\textit{Lateral strain}}$

48. The pressure at a depth of 100 m below the surface of water density 1000 kgm^{-3} is

(1) $98 \times 10^5\ Nm^{-2}$ (2) $9.8 \times 10^4\ Nm^{-2}$

(3) $980 \times 10^4\ Nm^{-2}$ (4) $98 \times 10^4\ Nm^{-2}$

49. When two capillary tube of different diameters are dropped vertically in a liquid, the height of the liquid is

(1) More in the tube of larger diameter

(2) More in the tube of smaller diameter

(3) Lesser in the tube of smaller diameter

(4) Same in both the tubes

50. The property by virtue of which a liquid opposes relative motion between its different layers is

(1) Viscosity (2) Elasticity

(3) Surface tension (4) Inertia

51. The maximum amount of force acting for a short duration is known as

(1) Momentum (2) Inertia

(3) Power (4) Impulse

52. A bullet of mass 0.01 kg is fired from a rifle of mass 20 kg with a speed of 10 m/s , then the recoil velocity of rifle is _____ m/s.

(1) –1 (2) –0.05 (3) –200.01 (4) –0.005

SPACE FOR ROUGH WORK

53. Final velocity of a body thrown downwards is _____

(1) Maximum (2) Minimum

(3) No change (4) Zero

54. A person throws a sand bag from a boat at rest in a pond then boat moves

(1) In the same direction

(2) In the opposite direction

(3) In a perpendicular direction

(4) In circular direction

55. Two equal forces at a point, the square of their resultant is equal to three times the product of the forces. Then the angle between the forces is equal to

(1) 30° (2) 45°

(3) 60° (4) 90°

56. Equilibrant is a force

(1) Which brings a body in equilibrium

(2) Which moves the body along the resultant force

(3) in zig-zag movement of the body

(4) Which moves the body in opposite direction to equilibrant force

57. A force of 10 N acting on a body fixed at a point the distance from the fixed point to the line of force is 2 m. Then the moment of the force is _____ N-m.

(1) 0.002 (2) 0.02 (3) 2 (4) 20

58. By Lami's theorem, P Q R are three forces acting in equilibrium and angle between PR, PQ, QR, are α, β, γ respectively then which of the following is correct ?

(1) $\frac{P}{\sin\beta} = \frac{Q}{\sin\gamma} = \frac{R}{\sin\alpha}$ (2) $\frac{P}{\sin\gamma} = \frac{Q}{\sin\alpha} = \frac{R}{\sin\beta}$

(3) $\frac{P}{\sin\alpha} = \frac{Q}{\sin\beta} = \frac{R}{\sin\gamma}$ (4) $\frac{P}{\sin\alpha} = \frac{Q}{\sin\gamma} = \frac{R}{\sin\beta}$

SPACE FOR ROUGH WORK

59. If the line of action of the force passes through the point of rotation, then the moment of force is

(1) Maximum
(2) Less than one
(3) Greater than one
(4) Zero

60. 1 Kilo calorie of heat is equal to _____ joule.

(1) 4.186
(2) 41.86
(3) 418.6
(4) 4186

61. The correct relation between °F and K scale is

(1) $5K = 9\,(F - 32)$
(2) $9K = -5(F - 32)$
(3) $K = \frac{9}{5}\,(F - 32) - 273$
(4) $K = \frac{5}{9}\,(F - 32) + 273$

62. Absolute zero is the temperature of a gas at which, the _____ of gas is theoretically zero.

(1) Mass
(2) Weight
(3) Volume
(4) Density

63. When the particle is in SHM having amplitude ' r ' ,then its velocity is

(1) $v = \omega\,(r^2 - y^2)$
(2) $v = \omega\sqrt{r^2 - y^2}$
(3) $v = r\omega^2$
(4) $v = r\omega^3$

64. Ripples in water are the example for

(1) Transverse wave
(2) Longitudinal wave
(3) Sound wave
(4) Ultrasonic wave

SPACE FOR ROUGH WORK

65. The length of one ventral segment in stationary wave is equal to

(1) Full wavelength of the wave

(2) Twice the wavelength of the wave

(3) Half a wavelength of the wave

(4) Quarter a wavelength of the wave

66. A stretched string under a tension T vibrates with a frequency f. When the tension is increased by 4 times, then the frequency becomes _____

(1) same (2) doubled

(3) tripled (4) zero

67. The best value of reverberation time for speech listener _____

(1) 0.5 to 1.5 s (2) 0.15 to 0.5 s

(3) 0.05 to 0.15 s (4) 0.5 to 5 s

68. 3 strings of equal lengths but stretched with different tensions are made to vibrate, if their masses per unit length are in the ratio 3:2:1 and frequencies are same then the ratio of the tensions _____

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

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

69. Newton's formula for velocity of sound was corrected by

(1) Boyle (2) Charles

(3) Laplace (4) Hertz

70. Light waves are composed of both electric and magnetic field is proposed by

(1) Newton's corpuscular theory

(2) Huygen's wave theory

(3) Maxwell's theory of light

(4) Plank's theory

SPACE FOR ROUGH WORK

71. If 'a' and 'b' are the amplitudes of two interfering waves then for destructive interference the amplitude ' R' is

(1) $R = ab$ (2) $R = a/b$

(3) $R = a - b$ (4) $R = a + b$

72. Two coherent sources 2×10^{-4} m apart are illuminated by the light of wave length 5000×10^{-10}m. The distance between the source and screen is 0.2m, then fringe width is

(1) 0.05×10^{-3} m

(2) 5×10^{-3}m

(3) 0.5×10^{-3}m

(4) 50×10^{-3}m

73. Resolving power of microscope is

(1) Equal to the resolution of the microscope

(2) Reciprocal to the resolution of the microscope

(3) Reciprocal to the focal length of the microscope

(4) Product of wave length and semi vertical angle

74. Which of the following phenomenon confirm that light is transverse wave ?

(1) Diffraction (2) Interference

(3) Refraction (4) Polarization

75. In Field emission

(1) High positive voltage is used

(2) Secondary electrons are used

(3) High energy is used

(4) High radiations are used

SPACE FOR ROUGH WORK

76. Which of the following is not true ?
    (1) Photoelectric emission is an instantaneous process
    (2) Photoelectric emission do not takes place below threshold frequency
    (3) The K.E. of the photoelectron depends on the wavelength of incident radiation
    (4) Number of photoelectrons emitted is directly proportional to the intensity

77. The appearance of additional frequencies in scattered beam of light is known as
    (1) Raman effect
    (2) Coherent scattering
    (3) Incoherent scattering
    (4) Bipolar scattering

78. Two properties of LASER are
    (1) Highly monochromatic and extremely intense
    (2) Highly chromatic and extremely fast
    (3) Very high frequency and extremely high wave length
    (4) Very high power and extremely low amplitude

79. To form a galvanic cell
    (1) difference in concentration of electrolyte is required
    (2) difference in concentration of frequency is required
    (3) difference in concentration of amplitude is required
    (4) both (2) and (3)

80. pH value is not having its application in
    (1) determination of quality of soil
    (2) determination of quality of textile dyes
    (3) determination of quality of chemicals
    (4) determination of quality of electron

SPACE FOR ROUGH WORK

PART – C

It consists of **81-180** Questions :

81. Basalt is the example of

(1) plutanic rocks (2) hypabyssal rocks

(3) volcanic rocks (4) metamorphic rocks

82. The presence of excess lime in brick earth causes

(1) splitting of bricks (2) decay of bricks

(3) shrinkage of bricks (4) expansion of bricks

83. Portland cement manufacture from pure white chalk and clay but free from iron oxide is known as

(1) quick setting cement

(2) rapid hardening cement

(3) white cement

(4) low heat Portland cement

84. Due to attack of dry rot the timber

(1) cracks (2) twists

(3) shriks (4) hardens

85. The property of metal enabling it to drawn into thin wires is called

(1) toughness (2) hardness

(3) ductility (4) malleability

86. The increase in volume of dry sand when water is added is called

(1) honey combing (2) bulking

(3) segregation (4) bleeding

SPACE FOR ROUGH WORK

87. The compacting factor test of cement concrete determines its

(1) strength (2) porosity

(3) degree of compacting (4) workability

88. Mastic asphalt is normally used to form

(1) sound insulation (2) water proofing

(3) fire proofing (4) none

89. Black cotton soil is unsuitable for foundation because its

(1) bearing capacity is low

(2) permeability is uncertain

(3) particles are cohesive

(4) property to undergo a volumetric change due to variation of moisture content

90. The piece of a brick cut along the centre of width in such a way that its length is equal to that of full brick is called

(1) half brick (2) queen closer

(3) king closer (4) bewelled closer

91. The window which is provided on a sloping roof of a building is called

(1) lantern window (2) dormer window

(3) louvered window (4) rash window

92. The highest part of an arch or the highest point of its extrados is called

(1) soffit (2) crown

(3) springing stone (4) skew back

SPACE FOR ROUGH WORK

93. The lower edge of the sloping surface of a pitched roof is called

(1) Hip (2) Gable

(3) Verge (4) Eave

94. The platform at the end of a series of steps is known as

(1) Tread (2) Riser

(3) Landing (4) Going

95. In three coat of plastering the first coat is known as

(1) Rendering coat (2) Floating coat

(3) Setting coat (4) Base coat

96. Timber flooring is preferred in

(1) All residential buildings (2) Only bath rooms

(3) Auditorium and dancing hall (4) Public buildings

97. The local swelling of a finished plaster is termed as

(1) Cracking (2) Dubbing

(3) Blistering (4) Hacking

98. The process of heat from inside the building to escape out is known as

(1) Air conditioning (2) Air cooling

(3) Thermal insulation (4) None of these

99. Prolongation of chain line across an obstruction in chain surveying is done by

(1) Making angular measurements

(2) Erecting perpendiculars with a chain

(3) Solution of triangles

(4) All the above

SPACE FOR ROUGH WORK

100. A building is an obstacle to

(1) Chaining but not ranging

(2) Ranging but not chaining

(3) Both chaining and ranging

(4) None of the above

101. If the quadrantal bearing of a line is N25°W, then the whole circle bearing of the line is

(1) S25°E (2) 335° (3) 205° (4) 295°

102. The angle of dip at the pole is

(1) 0° (2) 30° (3) 45° (4) 90°

103. Leveling of instrument is done such that

(1) Line of sight is truly horizontal

(2) Optical axis is truly horizontal

(3) Vertical axis is truly vertical

(4) Line of collimation is truly horizontal

104. Which is an odd instrument with regards to leveling ?

(1) Altimeter (2) Clinometers

(3) Abney hand level (4) Planimeter

105. The telescope of a theodolite is said to be normal when the

(1) bubble of the telescope is down and the face of the vertical circle is right

(2) bubble of the telescope is up and the face of the vertical circle is left

(3) bubble of the telescope is up and the face of the vertical circle is right

(4) bubble of the telescope is down and the face of the vertical circle is left

SPACE FOR ROUGH WORK

106. If 'L' denotes latitude and 'D' denotes departure then the direction of closing error is given by

(1) $\sin^{-1}\frac{\Sigma D}{\Sigma L}$ (2) $\tan^{-1}\frac{\Sigma D}{\Sigma L}$

(3) $\sin^{-1}\frac{\Sigma L}{\Sigma D}$ (4) $\tan^{-1}\frac{\Sigma L}{\Sigma D}$

107. The intercept of a staff

(1) is maximum if the staff is held truly normal to the line of sight

(2) is minimum if the staff is held truly normal to the line of sight

(3) decreases if the staff is tilted away from normal

(4) increases if the staff is tilted away from normal

108. The process of leveling in which the elevation of a points are computed from the vertical angles and horizontal distances is called

(1) Reciprocal leveling (2) Barometric leveling

(3) Trigonometric leveling (4) Profile leveling

109. The tangent length of simple circular curve of radius R deflection angle θ is

(1) R tan θ (2) R tan $\frac{\theta}{2}$

(3) R sin θ (4) R sin $\frac{\theta}{2}$

110. The line joining point of curvature to point of tangent in simple curve is called

(1) Long chord (2) Sub chord

(3) Mid ordinate (4) Normal chord

111. The Poisson's ratio for steel varies from

(1) 0.23 to 0.27 (2) 0.25 to 0.33

(3) 0.31 to 0.34 (4) 0.32 to 0.42

SPACE FOR ROUGH WORK

112. The ratio of linear stress to linear strain is called

(1) Modulus of rigidity (2) Modulus of elasticity

(3) Bulk modulus (4) Poisson's ratio

113. A steel bar of 5 m is heated from 15° C to 40° C and it is free to expand. The bar is under

(1) No stress (2) Shear stress

(3) Tensile stress (4) Compressive stress

114. The center of gravity of an object is defined as the point at which its_____ acts.

(1) Weight (2) Volume

(3) Wt. and volume (4) Area

115. The shear force and bending moment are zero at the free end of a cantilever beam, if it carries

(1) a point load at the free end

(2) a point load at middle of the beam

(3) udl over the whole beam

(4) none of the above

116. The bending moment diagram for a beam loaded with uniformly distributed load of 'w' per unit length, will be

(1) Horizontal (2) Vertical

(3) Inclined (4) A parabolic curve

117. Bending stress at N.A is

(1) Maximum (2) Minimum

(3) One (4) Zero

SPACE FOR ROUGH WORK

118. The energy stored in a body when strained within elastic limit is known as

(1) Resilience
(2) Proof resilience
(3) Strain energy
(4) Impact energy

119. For long columns, the value of buckling load is _____ crushing load.

(1) Equal to
(2) Less than
(3) More than
(4) Not equal to

120. The relation between equivalent length 'L' and actual length 'l' of a column for one end fixed and the other end hinged is

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

121. The maximum deflection of a cantilever beam of length 'l' with an UDL of 'w' per unit length is (Where $W = wl$)

(1) $\frac{Wl^3}{3EI}$
(2) $\frac{Wl^3}{8EI}$
(3) $\frac{Wl^3}{16EI}$
(4) $\frac{Wl^2}{48EI}$

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

(1) P+Q
(2) P – Q
(3) P/Q
(4) Q/P

123. Weight of the liquid to its unit volume is known as

(1) specific mass
(2) specific gravity
(3) specific weight
(4) specific volume

SPACE FOR ROUGH WORK

124. The devise used to measure discharge of water flowing through pipe line is

(1) Current meter (2) Venturimeter

(3) Manometer (4) Piezometer

125. If 'h' is the head of water over the center of the orifice and 'd' is the diameter of the orifice, the orifice said to be large if

(1) $h > 5d$ (2) $h < 5d$ (3) $h = 3d$ (4) $h > 2d$

126. If 'H' is head of water over crest of the notch then the discharge over a triangular notch is proportional to

(1) H (2) $H^{\frac{1}{2}}$ (3) $H^{\frac{2}{5}}$ (4) $H^{\frac{5}{2}}$

127. The best trapezoidal section is

(1) half of the top width = one of the sloping side

(2) top width = sloping side

(3) top width = two times square of sloping side

(4) half of top width = two times sloping side

128. If 'V' is the Velocity of water in pipe, loss of head due to sudden contraction is

(1) $\frac{0.5V^2}{4g}$ (2) $\frac{V^2}{2g}$ (3) $\frac{0.25V^2}{2g}$ (4) $\frac{0.5V^2}{2g}$

129. The discharge through an open channel as per Chezy's is

(1) $AC\sqrt{mi}$ (2) $C\sqrt{mi}$ (3) $A\sqrt{Cmi}$ (4) $\sqrt{ACmi}$

130. The vertical distance between the center of the pump shaft and the outlet end of the delivery pipe is called

(1) suction head

(2) delivery head

(3) static head

(4) sum of static and delivery head

SPACE FOR ROUGH WORK

131. Ryve's formula for flood estimate in cumecs is

(1) $Q = CA^{\frac{3}{4}}$

(2) $Q = CA^{\frac{2}{3}}$

(3) $Q = CA^{\frac{1}{2}}$

(4) $Q = CA^{\frac{1}{4}}$

132. An Isohyet is a line joining points of

(1) Equal rain fall intensity

(2) Equal rain fall depth

(3) Equal evaporation

(4) Equal humidity

133. For an irrigation field lying in sandy undulating terrain the most desirable method of applying water is

(1) basin flooding

(2) furrow irrigation

(3) free flooding

(4) sprinkler irrigation

134. Dead storage in a reservoir is provided

(1) To meet the emergency needs

(2) To mitigate the floods

(3) To accommodate the silt trapped in the reservoir

(4) To increase the useful life period

135. The most desirable alignment of an irrigation canal is along

(1) the ridge line

(2) a contour line

(3) the valley line

(4) a straight line

136. When the drain is over canal the structure provided is known as

(1) aquaduct

(2) super passage

(3) canal syphon

(4) syphon aquaduct

SPACE FOR ROUGH WORK

137. A weir that is not submerged and in which the tail water stays below the crest is called

(1) free weir
(2) ground weir
(3) submerged weir
(4) positive head weir

138. Permeable formations having structures which permits appreciable quantity of water to move through them are known as

(1) aquifers
(2) aquicludes
(3) aquaducts
(4) aquifuge

139. Di-calcium silicates (C_2S)

(1) hydrates rapidly
(2) generates less heat of hydration
(3) hardens rapidly
(4) provides less ultimate strength to cement

140. Inert material of a cement concrete mix is

(1) Water
(2) Cement
(3) Aggregate
(4) Chemical Admixture

141. The process of hardening the concrete by keeping its surface moist is known as

(1) Placing
(2) Wetting
(3) Curing
(4) Compaction

142. Le- chatelier's apparatus is used for testing

(1) Soundness of cement
(2) Hardness of cement
(3) Strength of cement
(4) Durability of cement

143. The maximum diameter of bar that can be used for a slab of thickness 130 mm is

(1) 6 mm
(2) 8 mm
(3) 12 mm
(4) 16 mm

SPACE FOR ROUGH WORK

144. The maximum value of span to depth ratio for cantilever beam of span up to 10 m is
(1) 5 (2) 10 (3) 7 (4) 20

145. The maximum depth of NA for Fe250 steel is
(1) 0.53 d (2) 0.48 d
(3) 0.46 d (4) 0.62 d

146. Effective length of a column is length between the points of
(1) Maximum moments (2) Zero moments
(3) Zero shear (4) None of these

147. In limit state design the partial safety factor for the load of (DL+LL+WL)
(1) 1.6 (2) 1.2 (3) 1.5 (4) 1.15

148. The maximum permissible slenderness ratio of compression member which carry dead load and super imposed load is
(1) 350 (2) 250 (3) 180 (4) 80

149. The pressure variation diagram of water pressure on dam is
(1) Trapezoidal (2) Triangular
(3) Rectangular (4) None of these

150. The tension member in a truss is known as
(1) Strut (2) Tie
(3) Column (4) Bracing

151. The horizontal wells constructed along the banks of a river are called
(1) Infiltration wells (2) Infiltration galleries
(3) Tube wells (4) Shallow wells

152. A ferrule is used to
(1) take water from mains
(2) connect two pipes of same diameter
(3) connect two pipes of different diameter
(4) detect leakage of water in pipes

SPACE FOR ROUGH WORK

153. The permissible limits of Chlorides in Drinking water is about

(1) 150 ppm (2) 200 ppm

(3) 225 ppm (4) 250 ppm

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

(1) Grease trap (2) Gully trap

(3) Intercepting trap (4) Waste trap

155. Septic tank is best suited for

(1) Municipalities (2) Industries

(3) Scattered residences (4) Congested areas

156. The underground pipe through which sewage is conveyed is known as

(1) Sewer (2) Sewerage

(3) Sewage (4) Septic sewage

157. Which of the following is air pollutant ?

(1) CO (2) O_2 (3) N_2 (4) H_2

158. A way or road open at one end only is called

(1) Blind alley (2) By pass road

(3) Crete ways (4) Drive ways

159. The inward transverse inclination provided to the cross section of the carriage way at horizontal curved portion of a road is called

(1) Gradient (2) Super elevation

(3) Camber (4) Cross slope

160. The longitudinal depressions or cuts formed in flexible pavements are known as

(1) Pot holes (2) Cross ruts

(3) Ruts (4) Warps

SPACE FOR ROUGH WORK

161. The enoscope is used to determine

(1) Running speed
(2) Spot speed
(3) Travel time
(4) Average speed

162. The bridge having its centre line not at right to the axis of river is termed as

(1) Square bridge
(2) Submersible bridge
(3) Through bridge
(4) Skew bridge

163. The heading up of water above its normal level while passing under the bridge is called

(1) Scour
(2) Afflux
(3) Free board
(4) Water way

164. The runway orientation is made so that landing and takeoff are

(1) Against the wind direction
(2) Along the wind direction
(3) Perpendicular to the wind direction
(4) None of the above

165. Structure built roughly perpendicular to the shore for maintaining an entrance channel

(1) Jetties
(2) Break water
(3) Groynes
(4) Wharfs

166. The best shape of tunnel to be used for carrying a road or a railway track is

(1) Rectangular shape
(2) Segmental shape
(3) Egg-Shape
(4) Horse-Shoe shape

167. The clear horizontal distance between the running faces of two rails is known as

(1) Gauge
(2) Safe gap
(3) Sleeper
(4) Shoulder

SPACE FOR ROUGH WORK

168. Outer Signal is

(1) Departure signal (2) Points and crossing

(3) Reception signal (4) None of these

169. A system of tracks laid usually on a level ground with defined limits for receiving, storing and dispatch of trains is called

(1) Buffer stop (2) Marshalling Yards

(3) Platforms (4) Station yards

170. A formal approval of the proposal of project by competent authority of department is called

(1) Technical sanction (2) Spot sanction

(3) Administrative approval (4) Preliminary sanction

171. An entrepreneur

(1) Takes personal responsibility (2) Convert a situation into opportunity

(3) Exhibits sense of leadership (4) All of these

172. CPM is

(1) Activity oriented (2) Event oriented

(3) Time oriented (4) Resource oriented

173. An amount payable by the contractor along with tender documents is

(1) Security deposit (2) Security advance

(3) EMD (4) Penalty

174. The head of the circle of public works department is

(1) Assistant engineer (2) Circle engineer

(3) Executive engineer (4) Superintending engineer

SPACE FOR ROUGH WORK

175. A document containing detailed description of all the items of work (but their quantities are not mentioned) together with their current rates is called

(1) Tender
(2) Analysis of rate
(3) Schedule of rates
(4) Abstract estimate

176. The value of the property (without being dismantled) at the end of the useful life period is known as

(1) Scrap value
(2) Junk value
(3) Salvage value
(4) Book value

177. The quantity for expansion joint in buildings is worked out in

(1) m^3
(2) Lump-sum
(3) m
(4) m^2

178. The method of dimensioning in which a series of adjacent dimensions are arranged in one horizontal row

(1) Chain dimensioning
(2) Parallel dimensioning
(3) Combined dimensioning
(4) Progressive dimensioning

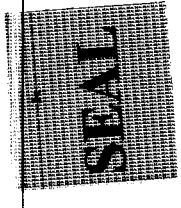
179. A representative fraction of the scale is 3:1, then the scale is

(1) Full scale
(2) Reducing scale
(3) Enlarging scale
(4) Vernier scale

180. The bridge having its floor supported at the top of the super structure is called

(1) Deck bridge
(2) Through bridge
(3) Suspension bridge
(4) Submersible bridge

SPACE FOR ROUGH WORK



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