D-C E T – 2018

A

CE	COURSE	VERSION CODE	QUESTION BOOKLET SERIAL NUMBER
	CIVIL	A	113880

MAXIMUM MARKS	TOTAL DURATION	TIME
180	200 Minutes	10.00 a.m. to 1.00 p.m.

MAXIMUM TIME FOR ANSWERING	MENTION YOUR DIPLOMA CET NUMBER				
180 Minutes					

DOs :

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

DON'Ts :

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

SEAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

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

ಸರಿಯಾದ ಕ್ರಮ CORRECT METHOD	ತಪ್ಪು ಕ್ರಮಗಳು WRONG METHODS
① ● ③ ④	⊗ ② ③ ④ ① ② ③ ✓ ① ● ● ④
	⓪ ② ③ ④ ① ◉ ③ ④

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

[P.T.O.

DO NOT WRITE HERE

PART – A

It consists of **1 – 40** questions.

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

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

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

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

(1) 1 (2) –1

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

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

(1) ±1 (2) $\pm\sqrt{2}$

(3) ±3 (4) ±2

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

(1) 6 (2) 12

(3) –8 (4) –16

SPACE FOR ROUGH WORK

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

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

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

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

(1) 2 and –5 (2) –2 and 5

(3) –2 and –5 (4) 2 and 5

7. If $\vec{a} = 2\hat{i} - 3\hat{j} + 5\hat{k}$
$\vec{b} = 3\hat{i} - 2\hat{j} - 5\hat{k}$ and
$\vec{c} = \hat{i} + 4\hat{k}$

then the scalar product of $\vec{a} + \vec{b}$ and $\vec{b} - \vec{c}$ is

(1) –9 (2) 9

(3) 20 (4) –20

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

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

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

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

(1) 3 (2) 9

(3) 6 (4) 15

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

(1) 180° (2) 90°

(3) 45° (4) 360°

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

(1) tan 20° (2) cot 40°

(3) tan 10° (4) tan 40°

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

(1) –1 (2) 1

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

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

(1) 1 (2) 2

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

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

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

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

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

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

(1) $-\sec x$

(2) $\sec x$

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

(3) -6 (4) -9

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

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

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

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

(1) 25 (2) -25

(3) 50 (4) -50

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

(1) 3π (2) 6π

(3) 18π (4) 36π

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

PART – B

It consists of **41 – 80** questions.

41. The value of 20 peta Hertz is

(1) 20×10^9 Hz (2) 20×10^{12} Hz

(3) 20×10^{15} Hz (4) 20×10^{18} Hz

42. The total reading for Screw Gauge is found by

(1) TR = PSR + (HSR × LC) ± ZE

(2) TR = PSR + (HSR × LC) ± ZC

(3) TR = (PSR + HSR) × LC ± ZE

(4) TR = (PSR + HSR) × LC ± ZC

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

(1) 3.35 cm (2) 3.35 mm

(3) 3.25 cm (4) 3.25 mm

44. The rectangular component of a vector R are

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

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

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

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

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

(1) $\frac{1}{\sqrt{3}}$ kg wt (2) 5 kg wt

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

SPACE FOR ROUGH WORK

46. Among these which is the vector quantity ?

(1) Work (2) Energy

(3) Surface tension (4) Power

47. The resultant of two like parallel forces P and Q acting at a point is

(1) P + Q away from P

(2) P + Q away from Q

(3) P ~ Q in between P and Q

(4) P + Q in between P and Q

48. Shock absorbers in automobiles is an example for

(1) Tensile stress (2) Compressive stress

(3) Shear stress (4) Breaking stress

49. The elasticity of steel compared to rubber is

(1) More (2) Less

(3) Equal (4) Less than or equal

50. The stress-strain graph for an elastic body within elastic limit is

(1) Linear (2) Curved

(3) Parabola (4) Hyperbola

51. The maximum stress of steel wire is 500 N/mm^2, if the area of cross section of wire is 0.05 m^2 then the force is

(1) 25 N (2) 25 KN

(3) 25 MN (4) 250 N

52. In case of concave meniscus, the angle of contact is

(1) Acute (2) Right angle

(3) Linear (4) Obtuse

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

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

(1) Interference (2) Diffraction

(3) Reflection (4) Polarization

61. The velocity of sound in gas is independent of

(1) Temperature (2) Pressure

(3) Humidity (4) Density

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

(1) Progressive wave (2) Transverse waves

(3) Sound wave (4) Stationary wave

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

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

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

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

(1) 0° (2) 45°

(3) 90° (4) 180°

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

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

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

66. At resonance, the body vibrates with

(1) Small amplitude (2) Large amplitude

(3) Zero amplitude (4) Same amplitude

SPACE FOR ROUGH WORK

67. Beats occurs in mining due to the presence of

(1) Ore (2) Water

(3) Contaminated air (4) Fossils

68. The statement which is correct in these is

(1) X-rays have longer wavelength than microwaves

(2) Gamma rays have shorter wavelength than microwaves

(3) UV-rays have shorter wavelength than violet rays

(4) Red rays have longer wavelength than infrared rays

69. LASER is used in

(1) LIDAR (2) RADAR

(3) SONAR (4) GPS

70. Nano means

(1) One hundredth of meter

(2) One thousandth of meter

(3) One millionth of meter

(4) One billionth of meter

71. Microphone is a

(1) Transducer (2) Receiver

(3) Channel (4) Transmitter

72. The principle behind optical fibre is

(1) Total internal refraction (2) Total internal reflection

(3) Reflection (4) Refraction

73. Faraday's I law of electrolysis is represented mathematically as

(1) $M = ZQ$ (2) $Z = MQ$

(3) $Q = MZ$ (4) $M = \frac{Z}{Q}$

SPACE FOR ROUGH WORK

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

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

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

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

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

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

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

SPACE FOR ROUGH WORK

PART – C

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

81. How many standard modular bricks make one cubic meter of masonry ?

(1) 600 (2) 550 (3) 500 (4) 650

82. Which of the following units are used to measure the wood work in frames of windows and doors ?

(1) Sq. m. (2) Cubic meter

(3) Meter (4) Lump sum

83. What is the volume of cement in one bag ?

(1) 0.05 m^3 (2) 0.065 m^3

(3) 0.045 m^3 (4) 0.035 m^3

84. The distance between two consecutive bolt of adjacent rows it measured perpendicular to direction of load

(1) Gauge (2) Pitch

(3) Lap (4) Edge distance

85. Maximum deflection in steel beam is limited to

(1) $\frac{L}{360}$ (2) $\frac{L}{325}$

(3) $\frac{L}{300}$ (4) $\frac{L}{350}$

86. The effective length of compression member effectively held in position at both end and restrained rotation at one end

(1) 1.5 L (2) 2.0 L (3) 0.65 L (4) 0.8 L

87. The effective throat thickness of fillet weld is

(1) 1.4 times size of weld (2) 0.7 times size of weld

(3) 1.2 times size of weld (4) 1.5 times size of weld

SPACE FOR ROUGH WORK

88. The length of Gunter chain is

(1) 66 ft (2) 33 ft (3) 100 ft (4) 40 ft

89. Error due to temperature variation during chaining is

(1) Compensating (2) Cumulative

(3) Blunder (4) Mistake

90. A 30 m meteric chain is found to be 0.1 m too short through out the measurement if distance measured is 300 m. Then the true distance will be

(1) 310 m (2) 301 m (3) 300 m (4) 299 m

91. If the magnetic meridian is to the right of true meridian the declination is said to be

(1) West (2) East

(3) North (4) None

92. The magnetic bearing of a line is S 28° 30′ E. Find true bearing if the magnetic declination is 7° 30′ west.

(1) S 36° 00′ E (2) S 36° 00′ W

(3) S 21° 00′ E (4) S 21° 00′ W

93. The average height of sea for all stage of the tides at any particular place is called

(1) Benchmark (2) Mean sea level

(3) Datum (4) Level

94. In a closed traverse ABCDEA the sum of the interior angle is equal to

(1) 4 × 90 (2) 5 × 90 (3) 6 × 90 (4) 6 × 180

95. The radius of the 30 m arc length of one degree curve is

(1) 1719 (2) 573 (3) 1146 (4) 570

96. Ceylon ghat tracer is a instrument for setting out

(1) Vertical angle (2) Gradient

(3) Horizontal angle (4) Contour

SPACE FOR ROUGH WORK

97. The back sight on a B.M. R.L. 100.00 is 2.560 m. If the foresight is taken on a point 1.430 m. The R.L. of the point is

(1) 101.130 m (2) 102.560 m

(3) 101.345 m (4) 103.990 m

98. The effective length of column 'L' with one end fixed and other end free where 'l' is the actual length

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

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

99. Power transmitted by a shaft given by expression _____ kilowatts.

(1) $\frac{2\pi NT}{60}$ (2) $\frac{60}{2\pi NT}$

(3) $\frac{3\pi NT}{60}$ (4) $\frac{60}{3\pi NT}$

100. The polar M.I of a circular section

(1) $\frac{\pi d^4}{32}$ (2) $\frac{\pi d^4}{64}$

(3) $\frac{\pi d^3}{32}$ (4) $\frac{\pi d^2}{64}$

101. The total strain energy which is stored in an elastic body is given by

(1) $U = \frac{fV}{2E}$ (2) $U = \frac{f^2V}{E}$

(3) $U = \frac{f^2}{2E}$ (4) $U = \frac{f^2V}{2E}$

102. The rate of change of B.M. along an uniformly loaded beam is equal to

(1) Shear stress (2) Shear force

(3) Bending stress (4) Bending force

SPACE FOR ROUGH WORK

103. The section modulus of a rectangular beam is

(1) $\frac{bd^3}{12}$ (2) $\frac{bd^3}{3}$

(3) $\frac{bd^2}{6}$ (4) $\frac{bd^2}{4}$

104. The distribution of the bending stress across cross-section of beam is

(1) Parabolic (2) Linear

(3) Rectangular (4) Hyperbolic

105. Moment of resistance 'M' of a beam section depends on

(1) Bending moment (2) Span of beam

(3) Weight of beam (4) Section modulus

106. A strut is a member it subjected to

(1) Axial compression (2) Axial tension

(3) Bending (4) Shear

107. Euler's column theory is applicable to

(1) Medium column (2) Long column

(3) Short column (4) Stanchion

108. Maximum slope of simply supported beam subjected to point load 'W' at its center

(1) $\frac{WL^3}{24EI}$ (2) $\frac{WL^2}{2EI}$

(3) $\frac{WL^2}{6EI}$ (4) $\frac{WL^2}{16EI}$

109. The C.G. of a semicircle is at a distance of _____ from its base along vertical radius.

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

SPACE FOR ROUGH WORK

110. A short column fails due to

(1) Tension (2) Buckling

(3) Crushing (4) None of the above

111. In simply supported beam the tension zone lies

(1) Above neutral axis (2) At neutral axis

(3) Below neutral axis (4) None of the above

112. Basalt is the example of

(1) Plutonic rocks

(2) Hypabyssal rocks

(3) Volcanic rocks

(4) Metamorphic rocks

113. In singly reinforced beams main steel is provided in

(1) Tensile zone (2) Neutral zone

(3) Compression zone (4) Shear zone

114. The minimum number of bars to be provided in case of rectangle and circular column are respectively

(1) 6 and 6 (2) 4 and 4

(3) 4 and 6 (4) 6 and 4

115. Characteristic strength of Grade – I steel is _____ N/mm^2.

(1) 500 (2) 450 (3) 415 (4) 250

116. Torsional steels are provided in two way slab

(1) When corners are held down

(2) When corners are not held down

(3) When slab is continuous

(4) None of the above

SPACE FOR ROUGH WORK

117. Effective length of column is length between the point of

(1) Maximum moment (2) Zero shear

(3) Zero moments (4) None of the above

118. R.C. section in which tension steel and concrete reaches yield strain simultaneously are called

(1) Balanced (2) Over reinforced

(3) Under reinforced (4) None of the above

119. The maximum spacing of vertical stirrups along the axis of beam shall not exceed 0.75 d or _____ whichever is less.

(1) 500 mm (2) 400 mm

(3) 300 mm (4) 200 mm

120. Effective depth of a beam is the distance between the center of tension steel and extreme

(1) Tension fiber

(2) Neutral fiber

(3) Compression reinforcement

(4) Compression fiber

121. The ratio of span to depth for continuous beam is not greater than

(1) 26 (2) 20 (3) 7 (4) 30

122. The ratio of Young's modulus of steel to Young's modulus of concrete is called

(1) Poisson's ratio (2) Bulk modulus

(3) Modular ratio (4) Elasticity

123. Strength and quality of concrete depends on

(1) Aggregate shape (2) Aggregate grading

(3) Surface area of aggregate (4) All the above

SPACE FOR ROUGH WORK

124. Slump test is a measure of

(1) Consistency
(2) Tensile strength
(3) Compressive strength
(4) Impact value

125. As per I.S. specification size of cube for compressive strength of cement is

(1) 70 mm × 70 mm × 70 mm
(2) 100 mm × 100 mm × 100 mm
(3) 150 mm × 150 mm × 150 mm
(4) None of the above

126. Segregation means separation of

(1) Water from aggregate and cement
(2) Fine aggregate from coarse aggregate
(3) Cement past from coarse aggregate
(4) All the above

127. The purpose of reinforcement in prestressed concrete is to

(1) Provide adequate bond stress
(2) Resist tensile stresses
(3) Import initial compressive stress to concrete
(4) All the above

128. Horizontal curves on highway are provided to give

(1) High speed for vehicles
(2) Gradual change in direction
(3) Gradual change in gradient
(4) Restrict the speed of vehicles

129. The rise of outer edge of the road with respect to the inner edge at the horizontal curve is called

(1) Camber
(2) Super elevation
(3) Extra widening
(4) Shoulder

SPACE FOR ROUGH WORK

130. As per I.R.C. the value of camber is highest for which of the road surface ?

(1) Cement concrete (2) W.B.M.

(3) Bituminus (4) Earth

131. Culverts are the small bridge with clear span less than

(1) 10 m (2) 15 m

(3) 8 m (4) 20 m

132. The rail is designated by its

(1) Length

(2) Weight

(3) Cross-section

(4) Weight per unit length

133. The triangular portion on upstream side of the pier is called

(1) Ease water (2) Cut water

(3) Deck (4) Free board

134. Bottom most layer of a pavement is called

(1) Sub grade (2) Base course

(3) Sub base course (4) Wearing course

135. Stopping sight distance depends upon

(1) Total reaction time of driver

(2) Speed of vehicle

(3) Efficiency of brakes

(4) All the above

136. The width of carriage way in single lane road should be

(1) 5.5 m (2) 7.0 m

(3) 7.5 m (4) 3.75 m

SPACE FOR ROUGH WORK

137. The term _____ is used to indicate the exposed surface of natural rocks.
(1) Texture (2) Fracture
(3) Quarry (4) Weathering

138. The operation in the manufacture of bricks which imparts hardness and strength to the bricks and make them dense and durable is called
(1) Burning (2) Blending
(3) Moulding (4) Tempering

139. If the percentage of mineral pigments exceeds _____ percentage, the strength of the cement is affected.
(1) 5 (2) 10 (3) 15 (4) 20

140. Dead wood is the defect caused in the timber due to
(1) Fungi (2) Insects
(3) Natural forces (4) Seasoning

141. The specific gravity of mild steel is
(1) 4.80 (2) 6.80
(3) 7.80 (4) 8.80

142. _____ are the varnishes used for varnishing maps, picture, delicate internal works etc.
(1) Oil varnishes (2) Water varnishes
(3) Spirit varnishes (4) Turpentine varnishes

143. _____ is the top most course of stone masonry provided immediately above the cornice in a building.
(1) Coping course (2) String course
(3) Blocking course (4) Drip course

144. _____ is a vertical member of a frame which is employed to sub-divide a window vertically.
(1) Jamb (2) Transom (3) Mullion (4) Style

SPACE FOR ROUGH WORK

145. The type of hinge which is also known as T-shutter has a long arm which is used for ledged and battened doors, ledged and braced doors.

(1) Butt-hinge (2) Garnet hinge

(3) Parliamentary hinge (4) Strap hinge

146. The irregular triangular portion of the arcade which forms between the two arches is known as

(1) Springer (2) Haunch

(3) Spandril (4) Skew back

147. _____ is the type of scaffolding which can be easily shifted from one place to another which is suitable for minor repair or painting work.

(1) Patented scaffolding

(2) Trestle scaffolding

(3) Suspended scaffolding

(4) Needle scaffolding

148. _____ are the intermediate inclined wooden members laid over purlins from ridge to eaves.

(1) Hip rafters (2) Valley rafters

(3) Jack rafters (4) Common rafters

149. The rate of filtration of a rapid sand filter is about _____ per hour/m^2 of filter area.

(1) 1000 – 2000 litres (2) 2000 – 4000 litres

(3) 3000 – 6000 litres (4) 6000 – 9000 litres

150. The application of chlorine beyond the stage of break point is known as

(1) Break point chlorination

(2) Double chlorination

(3) Super chlorination

(4) Extra chlorination

SPACE FOR ROUGH WORK

151. Dead end method of distribution system of water is also known as

(1) Inter laced system (2) Tree system

(3) Reticulation system (4) Ring system

152. The velocity of flow of water in sedimentation tanks is generally not allowed to exceed _____ per minute.

(1) 50 mm to 100 mm (2) 100 mm to 200 mm

(3) 150 mm to 300 mm (4) 200 mm to 400 mm

153. The coagulation method of purification of water is to be adopted when turbidity of water exceeds about

(1) 10 p.p.m. (2) 20 p.p.m.

(3) 30 p.p.m. (4) 40 p.p.m.

154. The minimum velocity at which no silt deposition takes place is called

(1) Self cleaning velocity (2) Non-scouring velocity

(3) Permissible velocity (4) Limitting velocity

155. _____ are fittings placed in drainage pipes that prevent the passage of foul air or gases through drains, waste or soil pipes.

(1) Inlets (2) Catch basins

(3) Traps (4) Flushing tanks

156. In sewage treatment, _____ are used to remove sand and other organic matter from sewage.

(1) Screens (2) Skimming tanks

(3) Sedimentation tanks (4) Grit chamber

157. _____ leads the sewage either to a sewer or to an inspection chamber or to a man hole.

(1) Water closet (2) Gulley trap

(3) Flushing cistern (4) Nahni trap

SPACE FOR ROUGH WORK

158. The structures constructed to divert the part of sewage in case of combined sewers are known as

(1) Surface drains

(2) Trickling filter

(3) Storm water regulator

(4) Electrostatic precipitator

159. The compressibility of a fluid is the reciprocal of

(1) Bulk modulus of elasticity

(2) Dynamic viscosity

(3) Density

(4) Surface tension

160. The moment of inertia of a triangular plate about an axis passing through its centre of gravity is

(1) $\frac{BH^3}{12}$

(2) $\frac{BH^3}{36}$

(3) $\frac{BH^2}{36}$

(4) $\frac{BH^3}{24}$

161. In case of liquid flowing in a pipe, the velocity of flow is _____ at the centre of the pipe.

(1) Minimum

(2) Uniform

(3) Maximum

(4) Zero

162. The theoretical discharge Q_{theo} through an orifice is given by

(1) $Q_{theo} = \sqrt{2gH}$

(2) $Q_{theo} = \frac{V^2}{2g}$

(3) $Q_{theo} = A \times \sqrt{2gH}$

(4) $Q_{theo} = C_d \times Q_{act}$

Where H = head, A = c/s area, C_d = coefficient of discharge, V = mean velocity.

SPACE FOR ROUGH WORK

163. According to Francis, for a rectangular weir, the value of contraction at each end wall is equal to

(1) H
(2) $\frac{1}{10}H$
(3) $\frac{1}{100}H$
(4) 10 H

Where H is head over the weir.

164. A pipe running partially full behaves like

(1) Open channel
(2) Closed channel
(3) Notch
(4) Orifice

165. The hydraulic radius value of a rectangular channel of breadth 'b' and depth 'd' is given by

(1) b + 2d
(2) 2b + d
(3) $\frac{bd}{b+2d}$
(4) $\frac{b+2d}{bd}$

166. The Mannings formula for velocity of flow in a channel is given by

(1) $V = \frac{1}{N}R^{2/3}i^{1/2}$
(2) $\frac{1}{N}R^{3/2}i^{1/2}$
(3) $V = \frac{1}{N}R^{1/2}i^{2/3}$
(4) $\frac{1}{N}R^{5/2}i^{1/2}$

167. The hydraulic mean depth R, for the most economical rectangular channel is

(1) $R = \frac{d}{4}$
(2) $R = \frac{d}{2}$
(3) R = 1.5 d
(4) R = 2d

168. The precipitation caused by the air masses which strike the mountain barriers and rise up causing condensation and precipitation is known as

(1) Cyclonic precipitation
(2) Convective precipitation
(3) Interception precipitation
(4) Orographic precipitation

SPACE FOR ROUGH WORK

169. _____ is frequently used to irrigate orchards where a circular channel is made for each tree and connected to fluid channel which is connected to supply channel.

(1) Drip irrigation

(2) Basin method of irrigation

(3) Furrow method of irrigation

(4) Border strip method of irrigation

170. Nutrients can be applied directly to plant roots in _____ by adding liquid fertilizer to the water.

(1) Drip irrigation (2) Sprinkler irrigation

(3) Surface irrigation (4) Basin irrigation

171. _____ reduces the available capacity of the reservoir and the useful life of the reservoir.

(1) Sedimentation (2) Precipitation

(3) Infiltration (4) Evaporation

172. _____ are the canals which are aligned roughly at right angles to the contour canals along the slope between the ridges and valleys.

(1) Ridge canals (2) Side slope canals

(3) Diversion canals (4) Valley canals

173. The _____ is an arrangement provided to regulate the flow of water through the drainage and the canal when they cross each other approximately at the same bed level.

(1) Level crossing (2) Crest wall

(3) Canal regulator (4) Super passage

174. In case of _____ the canal bed is lowered and a ramp is provided at the exit so that the trouble of silting is minimised.

(1) Outlet (2) Siphon aqueduct

(3) Super passage (4) Canal siphon

SPACE FOR ROUGH WORK

175. In a fish ladder, the flow energy can be dissipated to provide smooth flow at low velocity not exceeding

(1) 3 to 3.5 m/s
(2) 4 to 4.5 m/s
(3) 5 to 5.5 m/s
(4) 6 to 6.5 m/s

176. At present nearly _____ of all the water used in the world is obtained from ground water resources.

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

177. Recharge through wells comes under _____ method of artificial recharge of ground water.

(1) Surface method
(2) Sub surface method
(3) Induced recharge method
(4) Incidental method

178. _____ is incharge of the section who enters the work in measurement book and prepares bill for payment to the contractor.

(1) Assistant Engineer
(2) Assistant Executive Engineer
(3) Executive Engineer
(4) Superintending Engineer

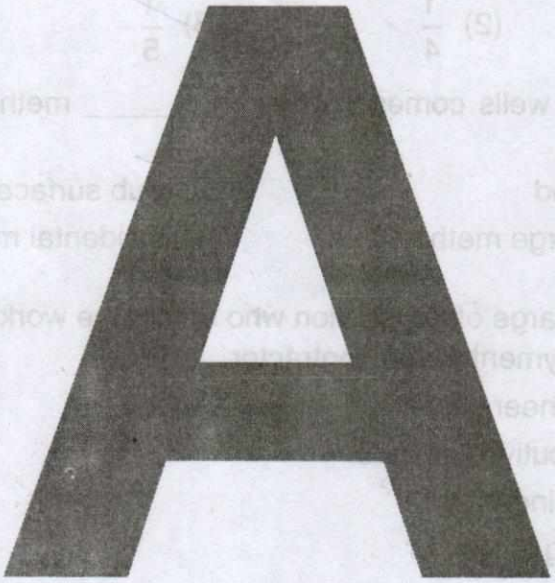
179. A type of contract in which the contractor undertakes the execution of work at approved SR rates plus a fixed percentage higher or lower as the case may be is called

(1) Item rate contract
(2) Percentage contract
(3) Lump sum contract
(4) Scheduled contract

180. The measurements of periodical services such as white washing, painting, distempering of a building is entered in _____ measurement books.

(1) Common
(2) Standard
(3) Check
(4) All

SPACE FOR ROUGH WORK



SEAL