

### Test for Lateral Entry to B Tech Programmes

1. Select the correct form of **ACTIVE VOICE** for the following.

Peace of mind can be regained by meditation.

- (A) Meditation will regain peace of mind.
- (B) Meditation has regained peace of mind.
- (C) Meditation regains peace of mind.
- (D) Meditation can regain peace of mind.

2. Select the correct form of **ACTIVE VOICE** for the following.

Children are easily threatened by grown up people.

- (A) Grown up people easily threaten children.
- (B) Grown up people are easily threatening children.
- (C) Grown up people can easily threaten children.
- (D) Grown up people have easily threatened children.

3. Choose the correct form of **PASSIVE VOICE** for the following.

They are cooking their breakfast.

- (A) Their breakfast is cooked by them.
- (B) Their breakfast is being cooked by them.
- (C) Their breakfast has been cooked by them.
- (D) Their breakfast will be cooked by them.

4. Choose the correct form of **PASSIVE VOICE** for the following.

He kidnapped the baby two days back.

- (A) The baby is kidnapped two days back.
- (B) The baby had been kidnapped by him two days back.
- (C) The baby was kidnapped by him two days back.
- (D) The baby can be kidnapped by him two days back.

5. Choose the correct **SYNONYM** for the following.

FEEBLE

- (A) Frightened
- (B) Sick
- (C) Weak
- (D) Silent

6. Choose the correct **SYNONYM** for the following.

HARDSHIP

- (A) Trouble
- (B) Mistake
- (C) Cruelty
- (D) Cheating

7. Select the appropriate **ANTONYM** for the following.

PITY

- (A) Harshness
- (B) Indecency
- (C) Brutality
- (D) Stupidity

8. Select the appropriate **ANTONYM** for the following.

VIOLENT

- (A) Open
- (B) Frank
- (C) Kind
- (D) Gentle

9. Choose the correct **SPELLING** from the following.

- (A) Leftenant
- (B) Lieutanant
- (C) Lieutenant
- (D) Leftanant

10. Choose the correct **SPELLING** from the following.

- (A) Divorse
- (B) Divorce
- (C) Divose
- (D) Divoce

11. Choose the correct **SPELLING** from the following.

- (A) Absense
- (B) Absens
- (C) Absuns
- (D) Absence

12. Select the correct **ONE WORD** substitute for the following.

Explain by examples, pictures, etc.

- (A) Describe
- (B) Illustrate
- (C) Exemplify
- (D) Illuminate

13. Select the correct **ONE WORD** substitute for the following.

Easily influenced by feelings

- (A) Feeble
- (B) Weak
- (C) Flexible
- (D) Emotional

14. Select the correct **ONE WORD** substitute for the following.

Natural place of growth of plants or animals

- (A) Habitat
- (B) Homeland
- (C) Dwelling place
- (D) Location

15. **Fill in the blanks** with suitable answers from the choice given below.

He is very fond ..... good food.

- (A) for
- (B) about
- (C) of
- (D) with

16. **Fill in the blanks** with suitable answers from the choice given below.

She is jealous ..... her friend's popularity.

- (A) of
- (B) in
- (C) about
- (D) at

17. **Fill in the blanks** with suitable answers from the choice given below.

Please remind him ..... attend the meeting.

- (A) of
- (B) to
- (C) with
- (D) about

18. **Fill in the blanks** with suitable answers from the choice given below.

This is one of the busiest streets ..... Delhi.

- (A) on
- (B) about
- (C) at
- (D) in

19. Choose the sentence with the **CORRECT WORD ORDER** from the following.

- (A) She everyday ten miles walks.
- (B) She walks ten miles every day.
- (C) Ten miles she walks every day.
- (D) Every day ten miles she walks.

20. Choose the sentence with the **CORRECT WORD ORDER** from the following.

- (A) Before I never saw this man.
- (B) I never before saw this man.
- (C) I never saw this man before.
- (D) I never saw before this man.

21. If the line  $y = mx + c$  touches the parabola  $y^2 = 4a(x + a)$ , then

- (A)  $c = a + \frac{a}{m}$
- (B)  $c = am + \frac{a}{m}$
- (C)  $c = am + a$
- (D)  $c = m$

22.  $\lim_{x \rightarrow 0} \frac{4^x - 1}{3^x - 1} =$

- (A)  $\log_3 4$
- (B)  $\log_4 3$
- (C)  $\log_e 4$
- (D) 1

23. Let  $f(x) = \frac{\sin x}{x}$ ,  $x \neq 0$ . Then  $f(x)$  can be continuous at  $x = 0$ , if

- (A)  $f(0) = 0$
- (B)  $f(0) = 1$
- (C)  $f(0) = 2$
- (D)  $f(0) = -2$

24. Let  $A$  and  $B$  be two sets consisting of  $m$  and  $n$  elements respectively ( $n \geq m$ ). The number of one to one functions from  $A$  to  $B$  is

- (A)  $n^m$
- (B)  $nC_m$
- (C)  $nC_m \times m!$
- (D)  $m^n$

FOR REFERENCE ONLY - CUSAT

25. The equation of the hyperbola whose asymptotes are  $3x \pm 5y = 0$  and vertices are  $(5, 0)$  and  $(-5, 0)$  is
- (A)  $3x^2 - 5y^2 = 25$
  - (B)  $5x^2 - 3y^2 = 25$
  - (C)  $9x^2 - 25y^2 = 225$
  - (D)  $25x^2 - 9y^2 = 225$
26. If  $z_1, z_2, z_3$  are complex numbers such that  $|z_1| = |z_2| = |z_3| = \left| \frac{1}{z_1} + \frac{1}{z_2} + \frac{1}{z_3} \right| = 1$ , then  $|z_1 + z_2 + z_3|$  is
- (A) equal to 1
  - (B) less than 1
  - (C) greater than 3
  - (D) equal to 3
27. The equation of the chord of  $\frac{x^2}{36} + \frac{y^2}{9} = 1$  which is bisected at  $(2, 1)$  is
- (A)  $x - 2y = 0$
  - (B)  $2x + y - 5 = 0$
  - (C)  $x + 2y - 4 = 0$
  - (D)  $3x + 2y - 8 = 0$
28. If  $g(y) = |\log_{10} y|$  then, at  $y = 1$ ,
- (A)  $g$  is not continuous
  - (B)  $g$  is continuous but not differentiable
  - (C)  $g$  is differentiable
  - (D)  $g$  has derivative 1

29. The integration of  $f(x) = \sqrt{1+x^2}$  with respect to  $x^2$  is

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

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

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

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

30. The normals at the ends of the latus rectum of the parabola  $y^2 = 4ax$  intersect at angle of

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

(B)  $\frac{\pi}{4}$

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

(D)  $\frac{\pi}{2}$

31. If  $A$  is a square matrix of order  $4 \times 4$  such that  $|A| = 2$ , then the value of  $|\text{adj } A|$  is

(A) 9

(B) 8

(C)  $\frac{1}{8}$

(D)  $\frac{1}{9}$

32. The number of all possible matrices of order  $3 \times 3$  with each entry 0 or 1 is
- (A) 27
  - (B) 256
  - (C) 81
  - (D) 512
33. The equation of a plane that cuts the co-ordinate axes at  $(a, 0, 0)$ ,  $(0, b, 0)$ , and  $(0, 0, c)$  is
- (A)  $ax + by + cz = 0$
  - (B)  $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$
  - (C)  $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 0$
  - (D)  $ax + by + cz = 1$
34. The set  $R - \{0\}$  with usual multiplication is
- (A) a non abelian group
  - (B) not a group
  - (C) a finite abelian group
  - (D) an infinite abelian group
35. The distance  $x$  metres described by a van in time  $t$  seconds is given by  $4t^3 - 2t^2 + 3t - 2$ . The velocity  $v$  and acceleration  $a$  when  $t = 2$  are respectively
- (A)  $v = 43 \text{ m/s}$ ,  $a = 44 \text{ m/s}^2$
  - (B)  $v = 44 \text{ m/s}$ ,  $a = 43 \text{ m/s}^2$
  - (C)  $v = 43 \text{ m/s}^2$ ,  $a = 44 \text{ m/s}$
  - (D)  $v = 44 \text{ m/s}^2$ ,  $a = 43 \text{ m/s}$

36. The value  $\frac{2}{3!} + \frac{4}{5!} + \frac{6}{7!} + \dots$  is

(A)  $e^{\frac{2}{3}}$

(B)  $e^{-1}$

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

(D)  $e$

37. The equation of a straight line with slope  $m$  passing through  $(x_1, y_1)$  is

(A)  $f'(x) = \frac{x - x_1}{y - y_1}$

(B)  $(y_1 - y) = \frac{x - x_1}{m}$

(C)  $(y - y_1) = m(x - x_1)$

(D)  $\frac{1}{m} = \frac{f'(x_1) - f'(y_1)}{x_1 - y_1}$

38. A point which does not lie in the half plane  $2x + 3y - 12 \leq 0$  is

(A) (1, 2)

(B) (2, 1)

(C) (2, 3)

(D) (-3, 2)

39. The equation of the normal to the curve  $y = x^2 - 1$  at the point (1, 0) is

(A)  $4y = \frac{x+1}{2}$

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

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

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

40. A basket contains 6 balls of which two are white and four are black. Two balls are drawn at random. The probability that they are of different colours is
- (A)  $\frac{1}{15}$   
(B)  $\frac{4}{15}$   
(C)  $\frac{2}{5}$   
(D)  $\frac{8}{15}$
41. The distance between the two planes  $2x + 3y + 4z = 4$  and  $4x + 6y + 8z = 12$  is
- (A) 2 units  
(B) 4 units  
(C) 8 units  
(D)  $\frac{2}{\sqrt{29}}$  units
42. The equation of the tangent to the curve  $y = x^4$  at the point (1, 1) is
- (A)  $4x - y - 3 = 0$   
(B)  $x - 4y + 3 = 0$   
(C)  $x - y - 3 = 0$   
(D)  $y - 1 = x - 1$
43. The function  $f : \mathbb{R} \rightarrow \mathbb{R}$  given by  $f(x) = 7x$  is
- (A) one to one and onto  
(B) one to one but not onto  
(C) not one to one but onto  
(D) neither one to one nor onto
44. The rate of change of the area of a circle per second with respect to its radius  $r$  is
- (A)  $\pi r^2$   
(B)  $r$   
(C)  $2\pi r$   
(D)  $\frac{\pi r^2}{2}$

45. The general solution of the differential equation  $\frac{dy}{dx} = e^{x+y}$  is
- (A)  $e^{x+y} = C$
  - (B)  $e^x - e^y = C$
  - (C)  $\frac{e^{x+y}}{x+y} = C$
  - (D)  $-e^{-y} = e^x + C$
46. If  $f : \mathbb{R} \rightarrow \mathbb{R}$  and  $g : \mathbb{R} \rightarrow \mathbb{R}$  are given by  $f(x) = \cos x$  and  $g(x) = 3x^2$ , then
- (A)  $g \circ f = f \circ g$
  - (B)  $g \circ f \neq f \circ g$
  - (C)  $g \circ f = f$
  - (D)  $g \circ f = g$
47. If tangent to the curve  $y^2 + 3x - 7 = 0$  at the point  $(a_1, b_1)$  is parallel to the line  $x - y = 4$ , then the value of  $b_1$  is
- (A)  $-\frac{3}{2}$
  - (B)  $-\frac{2}{3}$
  - (C)  $\frac{2}{3}$
  - (D)  $\frac{3}{2}$
48. The magnitude of projection of  $(\vec{i} + 2\vec{j} - \vec{k})$  on  $(2\vec{i} + \vec{j} + \vec{k})$  is
- (A)  $\frac{3}{\sqrt{2}}$
  - (B)  $\sqrt{\frac{3}{2}}$
  - (C)  $\frac{3}{1}$

(D)  $\frac{2}{\sqrt{6}}$

FOR REFERENCE ONLY - CUSAT

49.  $\frac{d}{dx} \left( \frac{a^x}{\log a} \right)$  is equal to

(A)  $\log x$

(B)  $\log \left( \frac{1}{a} \right)$

(C)  $a^x$

(D)  $\frac{a^x}{\log a}$

50. Probability that 'A' speaks truth is  $\frac{4}{5}$ . A coin is tossed and 'A' reports that head appeared. The probability that actually there was head is

(A)  $\frac{4}{5}$

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

(C)  $\frac{1}{5}$

(D)  $\frac{2}{5}$

51. The distance of the point  $(-3, -4)$  from the X-axis (in units) is

(A) 3

(B) -3

(C) 4

(D) -4

52. One card is drawn from a well shuffled deck of 52 cards.  
The probability that it is a black queen is
- (A)  $\frac{1}{26}$   
(B)  $\frac{1}{13}$   
(C)  $\frac{1}{52}$   
(D)  $\frac{2}{13}$
53. If  $A$  is a square matrix of order 3 and  $|2A| = k|A|$ , then the value of  $k$  is
- (A) 4  
(B) 8  
(C) 2  
(D) 6
54. Out of 6 unbiased coins, 5 are tossed independently and they all results in heads. If the sixth is now independently tossed, then the probability of getting head is
- (A) 1  
(B) 0  
(C)  $\frac{1}{2}$   
(D)  $\frac{1}{6}$
55. If  $\tan^{-1} x + \tan^{-1} y = \frac{\pi}{4}$ , where  $xy < 1$ , then the value of  $x + y + xy$  is
- (A) -1  
(B) 1  
(C) 2  
(D) 3

56. If  $a=2^3$ ,  $b=2 \times 3 \times 5$ ,  $c=3^n \times 5$  and  $lcm(a,b,c)=2^3 \times 3^2 \times 5$ , then  $n = ?$

- (A) 1
- (B) 2
- (C) 3
- (D) 4

57. If the first three terms of an A.P are  $b$ ,  $c$  and  $2b$ . Then the ratio of  $b$  and  $c$  is

- (A) 1 : 3
- (B) 2 : 3
- (C) 2 : 1
- (D) 2 : 2

58. The value of  $\vec{i}[(\vec{j} \times \vec{k})] + \vec{j}[(\vec{i} \times \vec{k})] + \vec{k}[(\vec{i} \times \vec{j})]$  is

- (A) 0
- (B) -1
- (C) 1
- (D) 3

59. If the line has direction ratios 2, -1, -2, then its direction cosines are

- (A)  $\frac{3}{2}, \frac{-1}{3}, \frac{2}{3}$
- (B)  $\frac{2}{3}, \frac{-1}{3}, \frac{-2}{3}$
- (C) 2, -1, 2
- (D)  $\frac{2}{6}, \frac{-1}{6}, \frac{-2}{6}$

60. If  $\theta$  is an acute angle such that  $\tan^2 \theta = \frac{8}{7}$ , then the value of  $\frac{(1 + \sin \theta)(1 - \sin \theta)}{(1 + \cos \theta)(1 - \cos \theta)}$  is

(A)  $\frac{7}{8}$

(B)  $\frac{8}{7}$

(C)  $\frac{7}{4}$

(D)  $\frac{64}{49}$

61. A unit vector parallel to the sum of the vectors  $\vec{i} + \vec{j} + \vec{k}$  and  $2\vec{i} - 3\vec{j} + 5\vec{k}$  is

(A)  $\frac{3}{7}\vec{i} - \frac{2}{7}\vec{j} + \frac{6}{7}\vec{k}$

(B)  $\frac{3}{7}\vec{i} + \frac{2}{7}\vec{j} + \frac{6}{7}\vec{k}$

(C)  $\frac{3}{7}\vec{i} - \frac{2}{7}\vec{j} - \frac{6}{7}\vec{k}$

(D)  $-\frac{3}{7}\vec{i} + \frac{2}{7}\vec{j} + \frac{6}{7}\vec{k}$

62. The value of  $|\vec{a} - \vec{b}|$ , where the two vectors  $\vec{a}$  and  $\vec{b}$  are such that  $|\vec{a}| = 2$ ,  $|\vec{b}| = 3$  and  $\vec{a} \cdot \vec{b} = 4$ , is

(A) 5

(B)  $\sqrt{5}$

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

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

63. The area of the triangle with vertices at  $(0, 8)$ ,  $(-4, 0)$  and  $(1, 1)$  is
- (A)  $\frac{63}{2}$
  - (B) 4
  - (C) 16
  - (D) 18
64.  $\lim_{x \rightarrow \infty} \frac{x^2}{e^x}$  is equal to
- (A) 0
  - (B)  $\infty$
  - (C) 2
  - (D)  $\frac{1}{2}$
65. If  $\vec{a}, \vec{b}, \vec{c}$  are the position vectors of the vertices of an equilateral triangle whose orthocentre is at the origin, then
- (A)  $\vec{a} + \vec{b} + \vec{c} = \vec{0}$
  - (B)  $\vec{a}^2 = \vec{b}^2 + \vec{c}^2 = \vec{0}$
  - (C)  $\vec{a} + \vec{b} = \vec{c}$
  - (D)  $\vec{a} = \vec{b} + \vec{c}$
66. The tangent drawn from the origin to the circle  $x^2 + y^2 - 2px - 2py + q^2 = 0$  are perpendicular if
- (A)  $p^2 + q^2 = 1$
  - (B)  $p^2 - q^2 = 0$
  - (C)  $p^2 - q^2 = 1$
  - (D)  $p^2 + q^2 = 10$

67. If the system of equations  $x + ay = 0$ ,  $az + y = 0$  and  $ax + z = 0$  has infinite number of solutions, then the value of  $a$  is
- (A) 0
  - (B) -1
  - (C) 1
  - (D) 2
68. The values of  $x$  ( $0 < x < 360^\circ$ ) satisfying  $\operatorname{cosec} x - 2 = 0$  are
- (A)  $x = 240^\circ, 150^\circ$
  - (B)  $x = 270^\circ, 150^\circ$
  - (C)  $x = 60^\circ, 150^\circ$
  - (D)  $x = 30^\circ, 150^\circ$
69. If  $\sin x_1 + \sin x_2 + \sin x_3 = 3$ , then  $\cos x_1 + \cos x_2 + \cos x_3$  is equal to
- (A) 0
  - (B) 1
  - (C) 2
  - (D) 3
70. If  $\tan x = \frac{b}{a}$ , then the value of  $a \cos 2x + b \sin 2x$  is
- (A)  $a$
  - (B)  $a + b$
  - (C)  $a - b$
  - (D)  $b$
71. According to equilibrium law, two forces can be in equilibrium only if they are
- (A) equal in magnitude
  - (B) opposite in direction
  - (C) collinear in action
  - (D) All of the above conditions
72. The resultant of two forces  $(P + Q)$  and  $(P - Q)$  equals  $\sqrt{3P^2 + Q^2}$ . The forces are then inclined to each other at an angle of
- (A)  $30^\circ$
  - (B)  $60^\circ$
  - (C)  $90^\circ$
  - (D)  $120^\circ$

73. A uniform ladder weighing 80 N rests against a smooth vertical wall at a height of 12 m above the ground; the foot of the ladder being 10 m from the wall. Then force on the wall is
- (A) 22.7 N
  - (B) 33.3 N
  - (C) 40 N
  - (D) 86.7 N
74. A particle starts from rest and moving with a constant acceleration covers a distance  $x_1$  in the third second and  $x_2$  in the fifth second. The ratio  $\frac{x_1}{x_2}$  is
- (A)  $\frac{3}{5}$
  - (B)  $\frac{5}{9}$
  - (C)  $\frac{9}{25}$
  - (D)  $\frac{25}{81}$
75. A car moving with a speed  $u$  can be stopped in minimum distance  $x$  when brakes are applied. If the speed becomes  $n$  times, the minimum distance over which the car can be stopped would take the value
- (A)  $\frac{x}{n}$
  - (B)  $n.x$
  - (C)  $\frac{x}{n^2}$
  - (D)  $n^2x$
76. The driver of a train moving at 20 m/s sights another train moving at 4 m/s on the same track and in the same direction. He immediately applies brakes and the train begins to retard at  $1 \text{ m/s}^2$ . For no collision, the minimum distance between the two trains at the instant of first sight should be
- (A) 80 m
  - (B) 128 m
  - (C) 40 m
  - (D) 400 m

77. Two bodies of masses  $m_1$  and  $m_2$  are dropped from different heights  $h_1$  and  $h_2$  respectively. Neglecting the effect of friction, the ratio of times taken to drop through the given heights would be

(A)  $\frac{m_1}{m_2}$

(B)  $\frac{m_2 h_2}{m_1 h_1}$

(C)  $\left(\frac{h_1}{h_2}\right)^{\frac{1}{2}}$

(D)  $\left(\frac{h_1}{h_2}\right)^2$

78. A body is thrown vertically upwards with an initial velocity of 15 m/s. How much time the body would take to get back to the point from where it was thrown? (Take  $g = 10 \text{ m/s}^2$ .)

(A) 1 s

(B) 2 s

(C) 3 s

(D) 4 s

79. A rocket fired vertically upwards moves with a net vertical acceleration of  $40 \text{ m/s}^2$  and the entire fuel gets consumed in 30 seconds after firing. The rocket will take another ..... seconds to reach the highest point after the fuel got exhausted. (Take  $g = 10 \text{ m/s}^2$ )

(A) 120

(B) 180

(C) 300

(D) 600

80. AB is the vertical diameter of a circle in a vertical plane. Another diameter CD makes an angle of  $60^\circ$  with AB. Then the ratio of time taken by a particle to slide along AB to the time taken by it to slide along CD is

(A) 1 : 1

(B)  $\sqrt{2} : 1$

(C)  $1 : \sqrt{2}$

(D)  $\sqrt{3} : \sqrt{2}$

81. The velocity-time graph of a body is a straight line passing through the origin. If the slope of the graph is  $m$ , the distance travelled by the body in time  $t$  would be
- (A)  $2mu^2$
  - (B)  $\frac{mu^2}{2t}$
  - (C)  $\frac{u^2}{2t}$
  - (D)  $\frac{u^2}{2m}$
82. A particle at rest at the origin is subjected to an acceleration which varies with time according to the relation  $a = 3t$ . After 5 seconds, the distance of the particle from origin will be
- (A) 32 m
  - (B) 46.5 m
  - (C) 62.5 m
  - (D) 80 m
83. While launching a rocket of mass 20,000 kg, a force of 500 kN is applied for 20 seconds. The velocity attained by the rocket at the end of 20 seconds would be
- (A) 350 m/s
  - (B) 500 m/s
  - (C) 750 m/s
  - (D) 900 m/s
84. A cricket ball is thrown vertically upwards. The total energy (sum of kinetic and potential energies) will be
- (A) least at the ground while going up
  - (B) maximum at the maximum height reached
  - (C) maximum at midway while ascending
  - (D) same throughout the flight

85. Two different bodies of masses  $m_1$  and  $m_2$  are dropped from the same height. The ratio of their momentum at the ground is

(A)  $\frac{m_2}{m_1}$

(B)  $\frac{m_1}{m_2}$

(C)  $\left(\frac{m_1}{m_2}\right)^{\frac{1}{2}}$

(D)  $\left(\frac{m_1}{m_2}\right)^2$

86. A 0.15 kg cricket ball moving at 20 m/s is caught by a player and the catching process is completed in 0.1 second. The force of blow exerted by the ball on the hands of the player is

(A) 3 N

(B) 8 N

(C) 24 N

(D) 30 N

87. A ball weighing 0.01 kg hits a hard surface vertically with a speed of 5 m/s and rebounds with the same speed. The ball remains in contact with the surface for 0.01 second. The average force exerted by the surface on the ball is

(A) 0.1 N

(B) 1 N

(C) 5 N

(D) 10 N

88. A ball of mass  $m$  and velocity  $v$  strikes a wall at right angles and rebounds with undiminished speed. During the time  $t$  of collision, average force exerted on the wall is

(A)  $\frac{mv^2}{2}$

(B)  $\frac{mv^2}{t}$

(C)  $\frac{mv^2}{2t}$

(D)  $\frac{2mv}{t}$

89. A body of mass  $m$  moving with a constant velocity  $v$  hits another body of the same mass moving with the same velocity but in the opposite direction and sticks to it. After this collision, the composite system will move with a velocity

(A) zero

(B)  $\frac{v}{2}$

(C)  $v$

(D)  $2v$

90. The mass of a pile driver is 250 kg and it drops freely 10 m on the top of a pile having mass of 1000 kg. Take  $g = 9.8 \text{ m/s}^2$ . If the pile is driven by 10 cm, the common velocity of the pile driver and the pile after the impact is

(A) 1.4 m/s

(B) 2.8 m/s

(C) 3.5 m/s

(D) 4.2 m/s

91. A body of mass  $m$  moving with velocity  $v$  makes a head-on elastic collision with a stationary body of mass  $nm$ . The fraction of the incident energy transferred to the body at rest is
- (A)  $\frac{n}{n+1}$
  - (B)  $\frac{n}{(n+1)^2}$
  - (C)  $\frac{2n}{(n+1)^2}$
  - (D)  $\frac{4n}{(n+1)^2}$
92. A particle of mass  $4m$  which is at rest explodes into three fragments. Two of the fragments and each of mass  $m$  are found to move with a speed  $v$ , each in mutually perpendicular directions. The total energy released in the process of explosion is
- (A)  $mv^2$
  - (B)  $1.5mv^2$
  - (C)  $m^2$
  - (D)  $4mv^2$
93. A man stands on a spring weighing scale in a lift which carries him upwards with an acceleration. The reading on the weighing scale will be
- (A) true weight of the man
  - (B) lower than the true weight
  - (C) greater than the true weight
  - (D) zero

94. Two bodies moving in the same direction with velocity  $V_1$  and  $V_2$  undergo elastic collision and upon separation the corresponding velocities are  $V_1'$  and  $V_2'$  respectively. The coefficient of restitution is defined as

(A)  $\frac{V_2' - V_1'}{V_1 - V_2}$

(B)  $\frac{V_2 - V_1}{V_1' - V_2'}$

(C)  $\frac{V_1' - V_1}{V_2' - V_2}$

(D)  $\frac{V_1 - V_2}{V_1' - V_2'}$

95. A ball impinges directly upon another similar ball at rest and itself comes to rest due to impact. During collision, half of the kinetic energy gets dissipated. The coefficient of restitution is

(A) 0.25

(B) 0.5

(C) 0.707

(D) 0.84

96. The moment of inertia of a circular section of diameter  $D$  is given by

(A)  $\frac{\pi D^4}{16}$

(B)  $\frac{\pi D^4}{32}$

(C)  $\frac{\pi D^4}{64}$

(D)  $\frac{\pi D^4}{128}$

97. The moment of inertia of a triangular section of base  $b$  and height  $h$  about its centroidal axis parallel to base is given by
- (A)  $\frac{bh^3}{12}$
  - (B)  $\frac{bh^3}{24}$
  - (C)  $\frac{bh^3}{36}$
  - (D)  $\frac{b^3h}{24}$
98. The moment of inertia of an area about a non-centroidal axis is calculated using
- (A) Theorem of perpendicular axis
  - (B) Theorem of parallel axis
  - (C) Polygon law of forces
  - (D) Parallelogram law of forces
99. The angle of friction is the angle
- (A) included between normal reaction and resultant
  - (B) included between limiting friction and resultant
  - (C) included between limiting friction and line of action of weight
  - (D) None of the above
100. The angle of repose ( $\alpha$ ) holds the following relation with the angle of friction ( $\phi$ ) in case of limiting equilibrium
- (A)  $\alpha = \phi$
  - (B)  $\alpha = 2\phi$
  - (C)  $\alpha = \frac{\phi}{2}$
  - (D)  $\alpha = \phi^2$

101. The linear velocity  $v$  of a rotating body moving with angular velocity  $\omega$  along a radius  $R$  is given by
- (A)  $v = \omega R$
  - (B)  $v = \frac{\omega}{R}$
  - (C)  $v = \frac{R}{\omega}$
  - (D)  $v = \omega^2 R$
102. The linear acceleration  $a$  of a rotating body with angular acceleration  $\alpha$  is given by
- (A)  $a = \alpha R$
  - (B)  $a = \frac{R}{\alpha}$
  - (C)  $a = \frac{\alpha}{R}$
  - (D)  $a = \alpha R^2$
103. A stone is tied to one end of string of length  $L$  and revolved in a circle with constant velocity  $v$ . If the string is released, the stone will
- (A) go out radially
  - (B) go out tangentially
  - (C) go inward radially
  - (D) All the above are wrong
104. The range of a particle when thrown at an angle of  $15^\circ$  with the horizontal is 1.5 km. If it is thrown at an angle of  $45^\circ$  with the same initial velocity, the range is
- (A) 2 km
  - (B) 3 km
  - (C) 4 km
  - (D) 5 km
105. The maximum displacement of a body moving with simple harmonic motion (SHM) from its mean position is called
- (A) Beat
  - (B) Oscillation
  - (C) Amplitude
  - (D) None of the above

106. In a simple pendulum, periodic time is doubled, if the length of the pendulum is
- (A) doubled
  - (B) halved
  - (C) quadrupled
  - (D) independent of the length of the pendulum
107. A body of 5 kg mass is moving with an acceleration of  $10 \text{ m/s}^2$ , then the inertia force acting on the body is
- (A) 50 dyne
  - (B) 50 Newton
  - (C) 500 dyne
  - (D) 50 kgf
108. The centrifugal force of a rotating body is given by
- (A)  $\frac{mv^2}{r}$
  - (B)  $\frac{mv^2}{r^2}$
  - (C)  $\frac{mv}{r}$
  - (D)  $\frac{m^2v}{r}$
109. If two bodies, one light and other heavy, have equal kinetic energy, which one has a greater momentum?
- (A) the heavy body
  - (B) the light body
  - (C) both have equal momentum
  - (D) unpredictable
110. The shaft of a motor starts from rest and attains full speed of 1800 rpm in 10 seconds. The shaft has an angular acceleration ( $\text{rad/s}^2$ ) of
- (A)  $3\pi$
  - (B)  $6\pi$
  - (C)  $2\pi$
  - (D)  $18\pi$

111. A line is perpendicular to HP. What is its front view?
- (A) A point
  - (B) A line of shorter in length perpendicular to XY line
  - (C) A line of true length perpendicular to XY line
  - (D) A line parallel to XY line
112. If the top view of a line crosses XY line, which statement given below is true?
- (A) The line crosses HP
  - (B) The line crosses VP
  - (C) The line is in II quadrant
  - (D) The line is in IV quadrant
113. If the distance of the elevation of a point from XY line is same as the distance of its plane from XY line, which statement given below is true?
- (A) The point is in I quadrant
  - (B) The point is in II quadrant
  - (C) The point is equidistant from both HP and VP
  - (D) The distance of the point from HP is double the distance of the point from VP
114. All the three views of a cube are geometrically the same. Which statement given below is true?
- (A) The cube has one face parallel to VP
  - (B) The cube has one side making  $30^\circ$  to VP
  - (C) The cube has one side making  $60^\circ$  to VP
  - (D) All the above
115. The side view of a line is true length. Which statement about this line is true?
- (A) The line is in profile plane
  - (B) The line is parallel to VP
  - (C) The line is parallel to both planes
  - (D) The line is parallel to HP

116. A hexagonal pyramid has 30 mm side of base and 70 mm axis length. What will be the length of its slant edge?
- (A) 70 mm
  - (B) 76.16 mm
  - (C) 75.55 mm
  - (D) 74.67 mm
117. A cube of side “a” resting on the ground with all lateral faces equally inclined to VP is cut by a plane so that the true shape is the biggest possible equilateral triangle. What is the inclination of the cutting plane to HP?
- (A)  $45^\circ$
  - (B)  $60^\circ$
  - (C)  $54.73^\circ$
  - (D)  $35.26^\circ$
118. A cylinder with a co-axial square hole is resting on its base on HP. This is to be cut by a plane perpendicular to VP and inclined to HP to get true shape as an ellipse with a rectangle inside. How is the position of the solid?
- (A) One side of the square hole parallel to VP
  - (B) One side of the square hole  $60^\circ$  to VP
  - (C) All sides of the square hole equally inclined to VP
  - (D) None of the above
119. Perpendicular axis in perspective projection is
- (A) a line from the eye perpendicular to picture plane
  - (B) a line from the eye perpendicular to ground plane
  - (C) axis of the solid which is lying on ground plane on its side
  - (D) axis of the solid standing on ground plane on its base
120. The isometric axes are at ..... degrees to each other.
- (A)  $90^\circ$
  - (B)  $60^\circ$
  - (C)  $120^\circ$
  - (D)  $30^\circ$

121. A plain scale is drawn with length 20 cm and its RF is 1 : 25. What is the maximum distance that can be measured using this scale?
- (A) 20 m
  - (B) 25 m
  - (C) 2.5 m
  - (D) 5 m
122. Which statement is **TRUE** for an ellipse?
- (A) Larger auxiliary circle passes through the vertices
  - (B) Distance between foci = twice minor axis
  - (C) For any ellipse  $1 > e > 0.5$
  - (D) The path traced by a point moving in a plane such that the difference of its distances from two fixed points always remains a constant is called an ellipse
123. Which statement is **FALSE** for a hyperbola?
- (A) The path traced by a point moving in a plane such that the difference of its distances from two fixed points always remains a constant is called a hyperbola
  - (B) Eccentricity is the ratio of diameters of inner and outer auxiliary circles
  - (C) The directrix divides the semi-transverse axis in the ratio of its eccentricity
  - (D) Distance of a point on the curve from the focus is always more than the distance of the same point from the directrix
124. Which one is a definition of a hyperbola?
- (A) The path traced by a point moving in a plane in such that the sum of its distances from two fixed points always remains a constant is called a hyperbola
  - (B) The path traced by a point moving in a plane such that the difference of its distances from two fixed points always remains a constant is called a hyperbola
  - (C) The path traced by a point on the circumference of a circle when it rolls without slipping over a fixed straight line is called a hyperbola
  - (D) The path traced by a point on the circumference of a circle when it rolls without slipping over a curved path is called a hyperbola
125. A cube is suspended on a string fixed at a corner. What is the shape of its top view?
- (A) A regular hexagon
  - (B) A rectangle
  - (C) A square
  - (D) A parallelogram

126. A sphere 100 mm diameter resting on the ground is cut by a horizontal cutting plane passing through 30 mm above the centre of the sphere. What is the shape of the cut surface?
- (A) Circle of 40 mm radius
  - (B) Circle of 30 mm radius
  - (C) Circle of 20 mm radius
  - (D) Circle of 50 mm radius
127. A cone is standing on HP on a point P of its base circle with axis parallel to VP and making  $40^\circ$  to HP. The generator containing P in this position will be
- (A) parallel to VP making  $40^\circ$  to HP
  - (B) parallel to VP and making less than  $40^\circ$  to HP
  - (C) parallel to HP and making  $40^\circ$  to VP
  - (D) parallel to VP and making more than  $40^\circ$  to HP
128. A hexagonal pyramid is to be cut by a plane to get the true shape as a regular hexagon of side equal to half the side of base. Where is the cutting plane?
- (A) Parallel to HP bisecting the axis
  - (B) Parallel to the base bisecting the axis
  - (C) Inclined to VP bisecting the axis
  - (D) None of the above
129. A pentagonal prism rests on HP on its base. A cutting plane perpendicular to VP and inclined to HP gives true shape as an isosceles triangle. How is it resting on HP?
- (A) One side of base parallel to VP
  - (B) One side of base perpendicular to VP
  - (C) One side of base  $60^\circ$  to VP
  - (D) None of the above
130. An equilateral triangle 50 mm side lies on ground plane with one side on picture plane. The station point is 60 mm in front of picture plane, 70 mm above ground plane and the central plane passes through the centre of the triangle. What is the shape of its perspective view?
- (A) Scalene triangle
  - (B) Equilateral triangle
  - (C) A line
  - (D) Isosceles triangle

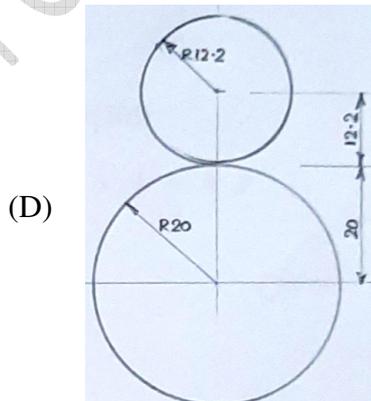
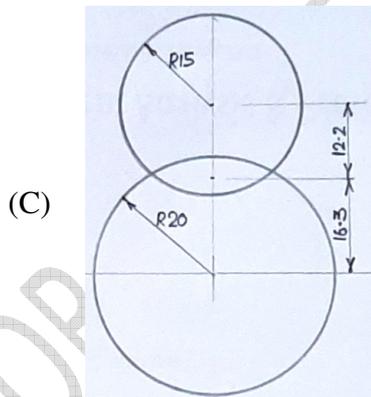
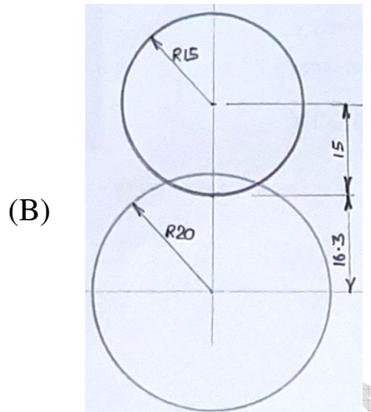
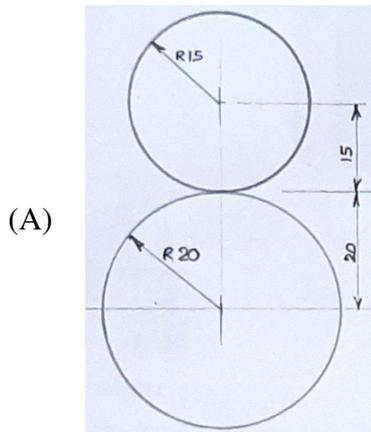
131. When height of observer is equal to the height of the cylinder which is standing on its base on ground plane, what is the shape of the perspective view of the top circular face?
- (A) A line
  - (B) A point
  - (C) An ellipse which is fully visible
  - (D) An ellipse which is partially visible
132. Isometric projection of a sphere with radius "R" is
- (A) an ellipse with major axis  $2R$
  - (B) an ellipse with major axis  $R$
  - (C) a circle of radius  $R$
  - (D) a circle of radius  $(R \times 0.816)$
133. A length of 5.0 km is represented by 10 mm in a drawing. What is the scale?
- (A) 10 : 5
  - (B) 50 : 100
  - (C) 1 : 500000
  - (D) 1 : 5000
134. The foci of an ellipse are 80 mm apart and its major axis is 100 mm. What is the length of its minor axis?
- (A) 60 mm
  - (B) 20 mm
  - (C) 50 mm
  - (D) 70 mm
135. What is meant by eccentricity of a parabola?
- (A) Abscissa/double ordinate
  - (B) Distance of vertex from double ordinate/ distance of focus from double ordinate
  - (C) Distance of a point on the curve from vertex/ distance of the same point on the curve from the focus
  - (D) Distance of a point on the curve from the focus/ distance of the same point on the curve from the directrix

136. Length of transverse axis of a hyperbola is

- (A) distance between the vertices
- (B) distance between the foci
- (C) radius of outer auxilliary circle
- (D) distance between vertex and centre

FOR REFERENCE ONLY - CUSAT

137. A sphere 15 mm radius is resting on top of another sphere 20 mm radius with their centres lying in a vertical line. Out of the four drawings given below, which one represents the isometric projection? (All dimensions are marked in millimetres.)



138. A cylinder 60 mm diameter standing on its base is cut by a plane perpendicular to VP and inclined to HP such that the true shape of section is the biggest possible ellipse with major axis 100 mm. What is the height of the cylinder?
- (A) 100 mm
  - (B) 120 mm
  - (C) 80 mm
  - (D) 60 mm
139. A cube of side “a” is cut by a cutting plane so that true shape is the biggest possible rhombus. What are the lengths of the diagonals of this rhombus?
- (A) “a” and “ $a\sqrt{2}$ ”
  - (B) “a” and “ $a\sqrt{3}$ ”
  - (C) “ $a\sqrt{3}$ ” and “ $(a\sqrt{3})/2$ ”
  - (D) “ $a\sqrt{3}$ ” and “ $a\sqrt{2}$ ”
140. A square prism of side of base 40 mm and height 60 mm rests on HP on its base with a side of base making  $70^\circ$  to VP. This is cut by a vertical plane to get the true shape of section as a rectangle of sides 40 mm and 60 mm. Where is the cutting plane?
- (A) Passing through diagonally opposite corners
  - (B) Passing through the axis making  $45^\circ$  to VP
  - (C) Parallel to one side of base
  - (D) None of the above
141. Perspective views of lines that are inclined to PP and parallel to each other
- (A) will be parallel to ground line
  - (B) will be parallel to each other
  - (C) will be parallel to horizon line
  - (D) None of the above
142. In a diagonal scale, the unit on the left side is meter. The height is divided into 20 equal parts and marked 0, 5, 10, 15, 20... up to 100. What is the suitable unit for this?
- (A) decimeter
  - (B) centimeter
  - (C) decameter
  - (D) millimeter

143. Perspective views of parallel lines that are parallel to picture plane
- (A) will be parallel to each other
  - (B) will be parallel to ground line
  - (C) will be parallel to horizon line
  - (D) All of the above
144. Horizon plane in perspective projection is
- (A) a plane passing through the axis of solid
  - (B) a plane passing through the eye parallel to ground plane
  - (C) a plane passing through the eye perpendicular to ground plane
  - (D) a plane passing through the horizontal axis of solid
145. In a diagonal scale, the unit on the left side is meter. The height is divided into 20 equal parts and marked 0, 5, 10, 15, 20... up to 100. What is the smallest distance that can be represented on this scale?
- (A) 1 decimeter
  - (B) 1 centimeter
  - (C) 5 decimeter
  - (D) 5 centimeter
146. Which statement is **TRUE** in perspective projection?
- (A) When a point lies on ground plane, its perspective view will be a point on GL
  - (B) When a point lies on picture plane, its perspective view will be a point on GL
  - (C) When a point lies on picture plane as well as ground plane, its perspective view will be a point on GL
  - (D) When a point lies on picture plane, its perspective view will be point on HL
147. Which statement is **WRONG** for a parabola?
- (A) A chord is a line connecting any two points on the curve
  - (B) Focal chord passes through the focus
  - (C) Latus rectum is a focal chord
  - (D) Length of abscissa = single ordinate
148. The curve satisfying Boyle's Law is a
- (A) rectangular hyperbola
  - (B) parabola
  - (C) cycloid
  - (D) hyperbola

149. The perspective view of an object becomes larger than the actual size if
- (A) height of observer > height of object
  - (B) distance of observer from PP > height of observer
  - (C) PP in between object and observer
  - (D) object in between PP and observer
150. A cube of side “a” is cut by a cutting plane so that true shape is a regular hexagon. What is the side of the hexagon?
- (A) a
  - (B)  $a\sqrt{3}$
  - (C)  $a / \sqrt{2}$
  - (D)  $a\sqrt{2}$
151. Which of the following brick masonry bonds is the strongest?
- (A) Header bond
  - (B) English bond
  - (C) Flemish bond
  - (D) Stretcher bond
152. The ease with which concrete can be compacted fully without segregating and bleeding is known as
- (A) Durability
  - (B) Impermeability
  - (C) Workability
  - (D) Strength
153. The ideal thermodynamic cycle that describes the functioning of a typical spark ignition piston engine is
- (A) Carnot cycle
  - (B) Diesel cycle
  - (C) Otto cycle
  - (D) Steam cycle
154. The loops of electrical current induced within conductors by a changing magnetic field in the conductor is known as
- (A) Direct current
  - (B) Eddy current
  - (C) Alternating current
  - (D) Surface current

155. A thermometer works on the principle of
- (A) First law of thermodynamics
  - (B) Second law of thermodynamics
  - (C) Third law of thermodynamics
  - (D) Zeroth law of thermodynamics
156. The type of foundation used when top soil is not capable of taking the load of the structure even at 3–4 m depth is
- (A) Arch foundation
  - (B) Pier foundation
  - (C) Pad foundation
  - (D) Pile foundation
157. Energy consumed by an electric iron of rating 1500 W by operating it for a period of two hours will be
- (A) 1.5 units
  - (B) 2 units
  - (C) 3 units
  - (D) 7.5 units
158. Which of the following cycles consists of one constant pressure, one constant volume and two isentropic processes?
- (A) Stirling cycle
  - (B) Carnot cycle
  - (C) Joule cycle
  - (D) Diesel cycle
159. A compiler is a program written in
- (A) High level language
  - (B) Machine language
  - (C) Linguistic terms
  - (D) None of the above
160. Which part of the central processing unit selects, interprets and ensures the execution of program instructions?
- (A) ALU
  - (B) Memory
  - (C) Register unit
  - (D) Control unit

161. An AC signal has a frequency of 200 Hz. How many cycles will it make in 4 seconds?
- (A) 200
  - (B) 400
  - (C) 800
  - (D) 50
162. The emf per turn in a 400/2000 V transformer is 20 V. The number of primary turns in this transformer is
- (A) 20
  - (B) 100
  - (C) 40
  - (D) 400
163. The pressure gauge fitted on a tank shows a reading of 35 bar. The absolute pressure in the tank is
- (A) 33.987 bar
  - (B) 35 bar
  - (C) 36.013 bar
  - (D) 44.812 bar
164. An ordinary resistor is an example of
- (A) A three-terminal device
  - (B) A passive load
  - (C) An active load
  - (D) A switching device
165. The constant is defined in the C language
- (A) After main
  - (B) Before main
  - (C) Anywhere, but starting on a new line
  - (D) None of the above
166. Which of the following is a computer network security system that restricts internet traffic in, out, or within a private network?
- (A) Hacker-proof program
  - (B) Firewall
  - (C) Encryption wall
  - (D) Hacker-proof server

167. Strain gauge transducers usually employ four strain gauge elements. Which of the following bridge circuits is formed when these elements are electrically connected?
- (A) Maxwell
  - (B) Wien
  - (C) Kelvin
  - (D) Wheatstone
168. A junction is formed between a sample of P-type and N-type material. Which of the following actions is caused by this junction?
- (A) Rectifying
  - (B) Conducting
  - (C) Insulating
  - (D) None of the above
169. Which of the following is used to lay concrete under static or slowly running water?
- (A) Rapid hardening cement
  - (B) Quick setting cement
  - (C) Low heat cement
  - (D) Expanding cement
170. The method of survey in which field observations and plotting proceed simultaneously
- (A) Tacheometric survey
  - (B) Compass survey
  - (C) Plain table survey
  - (D) Chain survey
171. Two resistances of 8 ohms and 12 ohms are connected in parallel across a 12 volts supply, the total resistance of the circuit will be
- (A) 8 ohms
  - (B) 4.8 ohms
  - (C) 2.4 ohms
  - (D) 1.7 ohms
172. The air-fuel ratio of a petrol engine is regulated by
- (A) Carburetor
  - (B) Governor
  - (C) Injector
  - (D) None of the above

173. Which of the following networks can be simplified to an equivalent circuit using Norton's theorem?
- (A) Both linear networks and nonlinear networks
  - (B) Neither linear nor nonlinear networks
  - (C) Nonlinear networks
  - (D) Linear networks
174. The current gain and voltage gain of an amplifier is C and V respectively. The power gain of the amplifier will be
- (A)  $C \cdot V$
  - (B)  $C + V$
  - (C)  $C/V$
  - (D)  $C - V$
175. The efficiency of a half wave rectifier is equal to
- (A) 50%
  - (B) 100%
  - (C) 40.6%
  - (D) 59.4%
176. The smallest unit of data in a computer is
- (A) KB
  - (B) Nibble
  - (C) Bit
  - (D) Byte
177. What is the result of logical or relational expression in C?
- (A) 0 or 1
  - (B) True or False
  - (C) 0 if an expression is false and any positive number if an expression is true
  - (D) None of the above
178. A term, symbol or name used to define or specify a computing function is known as
- (A) Mnemonic
  - (B) Code
  - (C) Assembler
  - (D) Compiler

179. Let  $p_1$  and  $p_2$  be integer pointers. Which of the following is a syntactically wrong statement?
- (A)  $p_1 = p_1 + p_2$
  - (B)  $p_1 = p_1 - 9$
  - (C)  $p_2 = p_2 + 9$
  - (D) `cout << p1 - p2`
180. Which type of modulation is generally used for transmission of sound in television?
- (A) Frequency
  - (B) Amplitude
  - (C) Phase
  - (D) Pulse
181. Base bias is associated with
- (A) Amplifiers
  - (B) Switching circuits
  - (C) Stable Q point
  - (D) Fixed emitter current
182. Silica bricks belong to the category of
- (A) Fire bricks
  - (B) Paving bricks
  - (C) Building bricks
  - (D) Facing bricks
183. The desired compressive strength of concrete is contributed by the presence of
- (A) Cement
  - (B) Aggregates
  - (C) Water
  - (D) Admixture
184. The second law of thermodynamics focusses on the
- (A) Amount of energy transferred
  - (B) Direction of energy transfer
  - (C) Non-cyclic processes only
  - (D) Irreversible processes only

185. A factory has a fluctuating demand of steam. The type of boiler best suited to this factory is
- (A) Lancashire boiler
  - (B) Locomotive boiler
  - (C) Cornish boiler
  - (D) Babcock and Wilcox boiler
186. The transducer, which can produce one of the electrical quantities such as voltage and current is known as
- (A) Passive transducer
  - (B) Inductive transducer
  - (C) Active transducer
  - (D) Resistive transducer
187. Which of the following will copy the null-terminated string that is in array src into array dest?
- (A) dest = src
  - (B) strcpy(dest, src)
  - (C) dest= =src
  - (D) strcpy(src, dest)
188. The most commonly used wattmeter is
- (A) Induction type
  - (B) Moving iron type
  - (C) Electrostatic type
  - (D) Dynamometer type
189. The total current in a parallel A.C circuit can be determined by
- (A) Admittance method
  - (B) Susceptance method
  - (C) Kirchoff's law
  - (D) Super imposed theorem
190. Which type of footing is used in load bearing masonry construction?
- (A) Strap
  - (B) Pile
  - (C) Isolated
  - (D) Strip

191. Which device is attached to the steam chest of a boiler to prevent explosions due to excessive internal pressure of steam?
- (A) Water level indicator
  - (B) Safety valve
  - (C) Feed check valve
  - (D) Pressure gauge
192. The largest current in a PNP transistor is
- (A) Base current
  - (B) Collector current
  - (C) Emitter current
  - (D) None of the above
193. The bandwidth required for a modulated carrier depends on
- (A) Signal to noise ratio
  - (B) Baseband frequency range
  - (C) Amplitude of carrier frequency
  - (D) Carrier frequency
194. Which of the following internal combustion engines is based on rotary mechanism?
- (A) Petrol engine
  - (B) Diesel engine
  - (C) Gas engine
  - (D) Jet engine
195. Which minimum grade of concrete should be used for reinforced concrete works as per IS: 456–2000?
- (A) M<sub>20</sub>
  - (B) M<sub>15</sub>
  - (C) M<sub>10</sub>
  - (D) M<sub>40</sub>
196. The type of levelling which is based on the principle that boiling point of water decreases with the elevation of the place.
- (A) Direct leveling
  - (B) Indirect leveling
  - (C) Hypsometric leveling
  - (D) Barometric leveling

197. The line current taken by 3 phase delta connected load is 10 Amp. The current in each phase will be
- (A)  $10\sqrt{3}$  Amp
  - (B)  $10/\sqrt{3}$  Amp
  - (C) 10 Amp
  - (D)  $3 \times 10$  Amp
198. Which of the following is a non-volatile memory?
- (A) EERAM
  - (B) RAM
  - (C) ROM
  - (D) PROM
199. The turbines in which high-velocity jets of water or steam collide with the blades of the turbine to rotate it and produce electricity are known as
- (A) Impulse turbine
  - (B) Reaction turbine
  - (C) Radial flow turbine
  - (D) Mixed flow turbine
200. The resonant frequency in a series RLC circuit is 100 kHz along with a bandwidth of 2 kHz. The quality factor is
- (A) 100
  - (B) 200
  - (C) 50
  - (D) 400

## *Final Answer Key*

Sl. No	Key												
1	D	31	B	61	A	91	D	121	D	151	B	181	B
2	A	32	D	62	B	92	B	122	A	152	C	182	A
3	B	33	B	63	C	93	C	123	B	153	C	183	B
4	C	34	D	64	A	94	A	124	B	154	B	184	B
5	C	35	A	65	A	95	C	125	A	155	D	185	B
6	A	36	B	66	B	96	C	126	A	156	D	186	C
7	C	37	C	67	B	97	C	127	D	157	C	187	B
8	D	38	C	68	D	98	B	128	B	158	D	188	D
9	C	39	D	69	A	99	A	129	B	159	B	189	A
10	B	40	D	70	A	100	A	130	D	160	D	190	D
11	D	41	D	71	D	101	A	131	A	161	C	191	B
12	B	42	A	72	B	102	A	132	C	162	A	192	C
13	D	43	B	73	B	103	B	133	C	163	C	193	B
14	A	44	C	74	B	104	B	134	A	164	B	194	D
15	C	45	D	75	D	105	C	135	D	165	C	195	A
16	A	46	B	76	B	106	B	136	A	166	B	196	C
17	B	47	A	77	C	107	B	137	C	167	D	197	B
18	D	48	B	78	C	108	A	138	C	168	A	198	C
19	B	49	C	79	A	109	A	139	D	169	B	199	A
20	C	50	A	80	C	110	B	140	C	170	C	200	C
21	B	51	C	81	D	111	C	141	D	171	B		
22	A	52	A	82	C	112	B	142	B	172	A		
23	B	53	B	83	B	113	C	143	A	173	D		
24	C	54	C	84	D	114	A	144	B	174	A		
25	C	55	B	85	B	115	A	145	D	175	C		
26	A	56	B	86	D	116	B	146	C	176	C		
27	C	57	B	87	D	117	C	147	D	177	A		
28	B	58	C	88	D	118	A	148	A	178	A		
29	B	59	B	89	A	119	A	149	D	179	A		
30	D	60	A	90	B	120	C	150	C	180	A		