



10215

ROLL No.

TEST BOOKLET No.

TEST FOR LATERAL ENTRY TO B.TECH. DEGREE PROGRAMMES

Time: 3 Hours

Maximum Marks: 600

INSTRUCTIONS TO CANDIDATES

1. You are provided with a Test Booklet and an Optical Mark Reader (OMR) Answer Sheet to mark your responses. Do not soil the Answer Sheet. Read carefully all the instructions given on the Answer Sheet.
2. Write your Roll Number in the space provided on the top of this page.
3. Also write your Roll Number and Test Code in the columns provided for the same on the Answer Sheet. Darken the appropriate bubbles with **Ball Point Pen**. Put your signature in the column provided on the Answer Sheet in the presence of the Invigilator.
4. This paper consists of 200 objective type questions as detailed below:-

(i)	English	: 20 Nos. (Serial No. 1 to 20)
(ii)	Mathematics	: 50 Nos. (Serial No. 21 to 70)
(iii)	Engineering Mechanics	: 40 Nos. (Serial No. 71 to 110)
(iv)	Engineering Graphics	: 40 Nos. (Serial No. 111 to 150)
(v)	General Engineering	: 50 Nos. (Serial No. 151 to 200)
5. Each question has four alternative responses marked **A, B, C** and **D** and you have to **darken** the bubble corresponding to the correct response fully by **Ball Point Pen** as indicated in the example shown on the Answer Sheet.
6. Each correct answer carries **3** marks and each wrong answer carries **1** minus mark.
7. Space for rough work is provided at the end of this Test Booklet.
8. You should return the Answer Sheet to the Invigilator before you leave the examination hall. However, you can retain the Test Booklet.
9. Every precaution has been taken to avoid errors in the Test Booklet. In the event of any such unforeseen happening, the same may be brought to the notice of the Observer/Chief Superintendent in writing. Suitable remedial measures will be taken at the time of evaluation, if necessary.

SEAL

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TEST FOR LATERAL ENTRY TO B.TECH. DEGREE PROGRAMMES
ENGLISH

Direction (Qn. No. 1): Read the given passage carefully and choose the most appropriate statement from the following.

1. Cutting down the use of plastic should also begin in earnest, and the first item that has to be targeted is the single-use plastic bag. The Union government recently refused to ban the manufacture of single-use plastic bags; the least it could do to reduce consumption is to make such bags expensive, employing the same rationale that has been applied for tobacco products that are taxed heavily to reduce consumption.
- (A) In order to reduce the consumption of plastic the Union government banned the manufacture of single use plastic bags.
 - (B) The government must take steps to make the single use plastic bags expensive.
 - (C) The least the government could do to reduce the consumption of plastic is to make the single use plastic bags expensive.
 - (D) By banning the single use plastic bag the government will succeed in reducing the consumption of plastic.

Direction (Qn. Nos. 2 – 5): Select the correct question tag for the following.

2. You are employed here, _____?
- (A) are you
 - (B) didn't you
 - (C) do you
 - (D) aren't you
3. We used to read a lot, _____?
- (A) did we
 - (B) didn't we
 - (C) were we
 - (D) weren't we

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4. None of his students attended his marriage, _____ ?

- (A) did they
- (B) had they
- (C) didn't they
- (D) hadn't they

5. I am not good looking, _____ ?

- (A) do I
- (B) am I
- (C) shall I
- (D) was I

Direction (Qn. No. 6): Select the correct active voice form for the following.

6. A grand welcome to the new Managing Director is being organised by them.

- (A) They organised a grand welcome to the new Managing Director.
- (B) They will organise a grand welcome to the new Managing Director.
- (C) They had organised a grand welcome to the new Managing Director.
- (D) They are organising a grand welcome to the new Managing Director.

Direction (Qn. No.7): Pick out the mistaken part from the following:

7.

<u>The revolution which is mentioned here</u>	<u>has since been undermined</u>
1	2
<u>by political factions and rebels</u>	<u>struggled for power</u>
3	4

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



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Direction (Qn. Nos. 8 – 11): Select the most appropriate meaning for the following.

8. ravine

- (A) attractive place (B) deep narrow valley
(C) beautiful scenery (D) dangerous place

9. polygamy

- (A) custom of having more than one husband at the same time
(B) custom of keeping only one wife at one time
(C) custom of having more than one wife at the same time
(D) custom of having only one husband at the same time

10. significance

- (A) importance (B) signature
(C) speciality (D) care

11. credible

- (A) believable (B) easily believing
(C) impossible to believe (D) changing

Direction (Qn. No. 12): Pick out the correct form of reported speech for the following.

12. He said to her: "Shut your mouth!"

- (A) He ordered her to shut her mouth
(B) He wanted her to shut her mouth
(C) He told her that she should shut her mouth
(D) He said to her that she had to shut her mouth



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18. He has _____ a new plan.
- (A) worked (B) evolved
(C) discovered (D) seen
19. A friend _____ nced is a friend indeed.
- (A) for (B) at
(C) of (D) in
20. Life is full of ups _____ downs.
- (A) with (B) and
(C) in (D) for

MATHEMATICS

21. $\lim_{x \rightarrow 0} \frac{\sin x}{x}$
- (A) 0 (B) 1
(C) 0.5 (D) ∞
22. $\frac{d}{dx}(\sin^{-1} x)$
- (A) $\frac{1}{\sqrt{1-x^2}}$ (B) $\frac{1}{\sqrt{1-x^2}}$
(C) $\frac{1}{\sqrt{1+x^2}}$ (D) $-\frac{1}{\sqrt{1+x^2}}$

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23. $\frac{d}{dx}(e^{ax+b}) =$

(A) $a e^{ax+b}$

(B) $a e^{ax}$

(C) e^{ax+b}

(D) $b e^{ax+b}$

24. $\frac{d}{dx}\left(\frac{u}{v}\right) =$

(A) $\frac{v du - u dv}{v}$

(B) $\frac{v du + u dv}{v}$

(C) $\frac{v du - u dv}{v^2}$

(D) $\frac{v du + u dv}{v^2}$

25. $\int_{-a}^a x dx =$

(A) $-a^2$

(B) a^2

(C) 0

(D) $\frac{a^2}{2}$

26. $\int_1^4 (5x - x^2 - 4) dx =$

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

(B) $\frac{9}{2}$

(C) $\frac{5}{7}$

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

27. $\int u dv =$

(A) $uv + \int v du$

(B) $uv - \int v du$

(C) $uv + v du$

(D) $uv - v du$



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28. The order and degree of the differential equation $\frac{dy}{dx} = \frac{y-x}{y+x}$ is
- (A) (1, 1) (B) (1, 2)
(C) (2, 1) (D) (1, 0)
29. The solution for the differential equation $\frac{d^2y}{dx^2} + 5\frac{dy}{dx} + 6y = 0$ is
- (A) $y = ae^{-3x} + be^{-2x}$ (B) $y = ae^{3x} + be^{5x}$
(C) $y = (a+bx)e^{3x}$ (D) $y = ae^{3x} + be^{2x}$
30. The solution for the differential equation $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 4y = 0$ is
- (A) $y = a + be^{2x}$ (B) $y = a + bxe^{2x}$
(C) $y = axe^{2x}$ (D) $y = (a+bx)e^{2x}$
31. The rank of the matrix $A = \begin{bmatrix} 1 & -1 & 2 \\ 3 & 0 & 1 \end{bmatrix}$ is
- (A) 3 (B) 1
(C) 2 (D) 0
32. The eigen value of $\begin{bmatrix} 0 & a \\ b & 0 \end{bmatrix}$ is
- (A) (a, a) (B) (a, b)
(C) $\pm\sqrt{ab}$ (D) $(0, 0)$
33. The sum of the eigen value of $\begin{pmatrix} 3 & 5 & 1 \\ 5 & 9 & 3 \\ 2 & 5 & -7 \end{pmatrix}$ is
- (A) 4 (B) 5
(C) 6 (D) 7

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34. The product of the eigen values of the unit matrix of order 4 is
- (A) 4 (B) 3
(C) 2 (D) 1
35. The centre and the radius of the circle $x^2 + y^2 - 22x - 4y + 25 = 0$ is
- (A) $(-11, -2), 10$ (B) $(11, 2), 10$
(C) $(-10, 2), 11$ (D) $(-2, 11), 2$
36. The centre of $9x^2 + 25y^2 - 18x - 100y - 116 = 0$ is
- (A) $(1, 2)$ (B) $(2, 1)$
(C) $(2, 2)$ (D) $(1, 1)$
37. The standard equation of hyperbola is
- (A) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ (B) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
(C) $\frac{x}{a} + \frac{y}{b} = 1$ (D) $\frac{x^2}{a^2} + \frac{y^2}{a^2} = 1$
38. The midpoint of the points $(-7, -3)$ and $(5, 10)$ is
- (A) $(2, 1)$ (B) $(3, 2)$
(C) $(-1, 3.5)$ (D) $(1, 1)$
39. The distance between the pair of points $(6, 8)$ and $(3, 4)$ is
- (A) 6 (B) 3
(C) 4 (D) 5
40. The condition for two lines with slopes m_1 and m_2 to be parallel is
- (A) $m_1 \neq m_2$ (B) $m_1 m_2 = 1$
(C) $m_1 = m_2$ (D) $m_1 m_2 = -1$

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41. The condition for two lines with slopes m_1 and m_2 to be perpendicular is

(A) $m_1 m_2 = 1$ (B) $m_1 m_2 = -1$
 (C) $m_1 = 0$ (D) $m_1 = m_2$

42. The equation of the straight line with slope $\frac{5}{2}$ and passing through $(3, 6)$ is

(A) $2x - 5y + 3 = 0$ (B) $5x + 2y + 3 = 0$
 (C) $-5x + 2y - 3 = 0$ (D) $5x - 2y - 3 = 0$

43. The acute angle between the lines $3x - 2y + 9 = 0$ and $2x + y - 9 = 0$ is

(A) $\tan^{-1}\left(\frac{1}{2}\right)$ (B) $\tan^{-1}\left(\frac{7}{4}\right)$
 (C) $\tan^{-1}(1)$ (D) $\tan^{-1}\left(\frac{2}{7}\right)$

44. $\vec{a} \times \vec{b} =$

(A) $|\vec{a}| |\vec{b}| \sin \theta \hat{n}$ (B) $|\vec{a}| |\vec{b}| \sin \theta$
 (C) $|\vec{a}| |\vec{b}| \cos \theta \hat{n}$ (D) $|\vec{a}| |\vec{b}| \cos \theta$

45. If $\vec{a} = 3\vec{i} + 4\vec{j} + 5\vec{k}$, $\vec{b} = 2\vec{i} + \vec{j} + \vec{k}$, then $\vec{a} \cdot \vec{b} =$

(A) 4 (B) 5
 (C) 5 (D) 3

46. The directional derivative of $\phi = 2xy + 5yz + zx$ at the point $(1, 2, 3)$ is

(A) $5\vec{i} + 4\vec{j} + 11\vec{k}$ (B) $10\vec{i} + 14\vec{j} + 3\vec{k}$
 (C) $7\vec{i} + 17\vec{j} + 11\vec{k}$ (D) $7\vec{i} - 17\vec{j} + 3\vec{k}$

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47. If $\nabla\phi = yz\mathbf{i} + zx\mathbf{j} + xy\mathbf{k}$, then $\phi =$
- (A) $xyz + c$ (B) $x^2y^2z^2 + c$
 (C) $xy + yz + zx + c$ (D) $x^2y^2z^2$
48. The condition for solenoidal is
- (A) $\nabla \cdot \vec{F} = 0$ (B) $\nabla \cdot \vec{F} \neq 0$
 (C) $\nabla \times \vec{F} = 0$ (D) $\nabla \times \vec{F} \neq 0$
49. If $\vec{F} = (z + 3y)\mathbf{i} + (x - 2y)\mathbf{j} + (x + az)\mathbf{k}$ is solenoidal, then a is
- (A) -2 (B) 2
 (C) 1 (D) 5
50. If \vec{a} is a constant vector, then $\text{div}(\vec{r} \times \vec{a})$ is
- (A) 0 (B) 1
 (C) 1 (D) 2
51. If $\vec{r} = \sin t\mathbf{i} + \cos t\mathbf{j} + t\mathbf{k}$, then $\left|\frac{d\vec{r}}{dt}\right| =$
- (A) $\sqrt{3}$ (B) $\sqrt{2}$
 (C) $\sqrt{5}$ (D) $\frac{\sqrt{5}}{2}$
52. Laplace transform of $t^2 + 2t + 3$ is
- (A) $\frac{2}{s^3} + \frac{2}{s^2} + \frac{3}{s}$ (B) $\frac{2}{s^2} + \frac{2}{s} + \frac{3}{s^3}$
 (C) $\frac{2}{s^2} + \frac{2}{s} + \frac{2}{s^3}$ (D) $\frac{3}{s^2} + \frac{2}{s} + \frac{2}{s^3}$



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53. $\Gamma(n+1) =$

(A) $(n+1)!$
(C) $n!$

(B) $0!$
(D) $(n-1)!$

54. Laplace transform of te^{-at} is

(A) $\frac{1}{(s+a)}$

(B) $\frac{1}{(s+a)^2}$

(C) $\frac{1}{(s+a)^3}$

(D) $\frac{1}{(s+a)^4}$

55. Laplace transform of t^n is

(A) $\frac{n!}{s^n}$

(B) $\frac{(n+1)!}{s^{n+1}}$

(C) $\frac{n!}{s^{n+1}}$

(D) $\frac{(n+1)!}{s^n}$

56. The points $A(1, 2, 3)$, $B(4, 0, 4)$ and $C(-2, 4, 2)$ are

(A) collinear

(B) non-collinear

(C) vertices of an equilateral triangle

(D) concyclic

57. The equation of the plane with intercepts of a, b, c is

(A) $\frac{x^2}{a} + \frac{y^2}{b} + \frac{z^2}{c} = 1$

(B) $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$

(C) $x^2y^2z^2 = abc$

(D) $ax + by + cz = 1$

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58. The direction cosines of the normal to the plane is $3x + 4y + 12z = 52$ is

- (A) $\frac{1}{13}, \frac{5}{13}, \frac{7}{13}$ (B) $\frac{3}{15}, \frac{4}{15}, \frac{12}{15}$
 (C) $\frac{3}{13}, \frac{4}{13}, \frac{12}{13}$ (D) $\frac{3}{13}, \frac{5}{13}, \frac{6}{13}$

59. Curl grad ϕ

- (A) 0 (B) 2
 (C) 3 (D) 1

60. $\sum(\hat{i} \cdot \hat{i}) =$

- (A) 1 (B) 2
 (C) 3 (D) 5

61. The condition for the equation $y = f(x)$ to be maximum is

- (A) $\frac{dy}{dx} = 0, \frac{d^2y}{dx^2} < 0$ (B) $\frac{dy}{dx} = 0, \frac{d^2y}{dx^2} > 0$
 (C) $\frac{dy}{dx} = 0, \frac{d^2x}{dy^2} < 0$ (D) $\frac{dy}{dx} = 0, \frac{d^2x}{dy^2} > 0$

62. The remainder when 2^{31} is divided by 5 is

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

63. The sum of all odd numbers upto 100 is

- (A) 2000 (B) 2250
 (C) 2350 (D) 2500



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64. If x is a whole number, then $x^2(x^2 - 1)$ is always divisible by
- (A) 12 (B) $12-x$
(C) 24 (D) 36
65. If $a * b = \frac{ab}{a+b}$, then $3 * (3 * (-1)) =$
- (A) 3 (B) $\frac{2}{3}$
(C) -1.5 (D) -1
66. The interval in which function $(x-3)^2$ is strictly increasing is
- (A) $(-\infty, 3)$ (B) $(-3, 3)$
(C) $(3, -\infty)$ (D) $(-\infty, +\infty)$
67. The solution of the differential equation $xydy = (x^2 + y^2)dx$ is
- (A) $y^2 = (c + \log x)x$ (B) $y^2 = (c + \log x)x^2$
(C) $y^2 = x^2 \log x + c$ (D) $y^2 = c \log x$
68. The number of roots of the equation $x - \frac{2}{x-1} = 1 + \frac{2}{x-1}$ is
- (A) 0 (B) 1
(C) 2 (D) infinitely many
69. The square root of $(272^2 - 128^2)$ is
- (A) 256 (B) 240
(C) 200 (D) 144



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81. The product of inertia can be
- (A) negative
 - (B) positive
 - (C) zero
 - (D) Any of the above
82. One of the major assumptions in the analysis of plane trusses is that
- (A) the loads act only at the joints
 - (B) the loads act in any member
 - (C) the joints are rigidly connected
 - (D) the joints do not permit rotation
83. The unit of second moment of area (area moment of inertia) is
- (A) m^2
 - (B) m^4
 - (C) m^3
 - (D) m^6
84. Forces are called coplanar when all of them acting on the body lie in
- (A) one point
 - (B) one plane
 - (C) different planes
 - (D) perpendicular planes
85. When trying to turn a key into a lock, which of the following is applied?
- (A) Coplanar force
 - (B) Non-coplanar force
 - (C) Moment
 - (D) Couple
86. If two forces each equal to P in magnitude act at right angles, their effect may be neutralised by a third force acting along their bisector in opposite direction whose magnitude is equal to
- (A) 2P
 - (B) P/2
 - (C) $\sqrt{2}P$
 - (D) $P/\sqrt{2}$



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87. At what height from the base of a pillar must the end of a rope of given length 'L' be fixed so that a man standing on the ground and pulling it at the other end with given force may have the greatest tendency to make the pillar overturn?
- (A) $L/2$ (B) $2L/3$
(C) $L/\sqrt{2}$ (D) $3L/4$
88. The centre of percussion of a solid cylinder of radius 'r' resting on a horizontal plane will be
- (A) $r/2$ (B) $2r/3$
(C) $r/4$ (D) $3r/2$
89. On a ladder resting on a smooth ground and leaning against vertical wall, the force of friction will be
- (A) towards the wall at its upper end
(B) away from the wall at its upper end
(C) upwards at its upper end
(D) downwards at its upper end
90. For maximum range of a projectile, the angle of projection should be
- (A) 30° (B) 45°
(C) 60° (D) 90°
91. If n = number of members and j = number of joints, then for a perfect frame, $n =$
- (A) $j - 2$ (B) $2j - 1$
(C) $2j - 3$ (D) $3j - 2$
92. M.I of a triangular section of base 'a' and height 'h' about an axis passing through its C.G. and parallel to base is
- (A) $ah^3/8$ (B) $ah^3/12$
(C) $ah^3/36$ (D) $ah^3/24$

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93. A body of weight 'W' is resting on a plane at 30° to the horizontal. If it is attached to a string making an angle of 60° with the horizontal, find the tension in the string, if the friction angle is 30°
- (A) zero (B) $W/2$
(C) W (D) $2W$
94. If a body is transmitting torque 'T' kgf.m at 'N' rpm, then the horse power transmitted will be
- (A) TN (B) $TN/75$
(C) $TN/4500$ (D) $2\pi NT/75$
95. An elevator weighing 1000 kgf attains an upward velocity of 4 m/s in 2 seconds with uniform acceleration. The tension in the supporting cable in kgf will be
- (A) 1000 (B) 800
(C) 1200 (D) 2000
96. The velocity of a mass of 5 kg after falling a height of 5 m from rest would be approximately equal to
- (A) 5 m/s (B) 10 m/s
(C) 25 m/s (D) 50 m/s
97. The angular velocity of a particle changes from 69 to 71 rpm in 30 seconds. Its angular acceleration in revolutions per minute² is equal to
- (A) 1 (B) 2
(C) 4 (D) 8
98. A body of mass 'm' moving with a constant velocity 'v' hits another body of same mass at rest and sticks to it. The velocity of both together will be equal to
- (A) v (B) zero
(C) 2v (D) $v/2$

99. A 10 cm diameter wheel is rotating at 420 rpm. Its angular speed in radians/s is equal to
- (A) 42 (B) 84
(C) 44 (D) 420
100. A simple pendulum is set into oscillations. The bob of pendulum comes to rest after some time due to
- (A) friction of air (B) its mass
(C) tension in the string (D) gravity
101. In case of simple pendulum, the period of one oscillation is given by
- (A) $\pi\sqrt{L/2g}$ (B) $\pi\sqrt{2L/g}$
(C) $2\pi\sqrt{L/g}$ (D) $2\pi\sqrt{L/2g}$
102. The escape velocity in km/s on the surface of earth is
- (A) 1.0 (B) 3.6
(C) 8.8 (D) 11.2
103. Two cars are 10 km apart and moving in the same direction at speed of 40 km/hr. A car moving in opposite direction meets these cars at interval of 8 minutes. At what speed (km/hr) the other car is moving?
- (A) 75 (B) 60
(C) 45 (D) 35
104. A train travels between two stations 15 km apart in 18 minutes. If the train accelerates for a part of journey uniformly, followed by uniform retardation, the maximum speed in km/hr attained by the train during the journey will be
- (A) 60 (B) 80
(C) 100 (D) 125



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ENGINEERING GRAPHICS

111. An example for a reducing scale is
- (A) 2:1 (B) 1:1
(C) 1:2 (D) 10:1
112. When measurements are required in three units, which type of scale is used?
- (A) Diagonal scale (B) Plain scale
(C) Vernier scale (D) Comparative scale
113. 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
114. An RF with a larger numerator and smaller denominator is preferred when we make the detailed drawing of a
- (A) bridge (B) building
(C) watch (D) land
115. The eccentricity in a conic is
- (A) distance of the point from the directrix/distance of the point from focus
(B) distance of the point from the focus/distance of the point from the directrix
(C) distance from the point from the focus/distance of the point from the centre
(D) distance of the point from the centre/distance of the point from the directrix



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116. A rectangular hyperbola graphically represents
- (A) Charles Law (B) Boyles Law
(C) Pascals Law (D) Archimedes Principle
117. Length of transverse axis of a hyperbola is the
- (A) distance between the vertices
(B) distance between the foci
(C) radius of outer auxiliary circle
(D) distance between vertex and centre
118. 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
119. If a line is parallel to both the reference planes, then its side view will be seen as a
- (A) straight line
(B) point
(C) inclined line
(D) parallel line to the reference planes
120. If a line is inclined to both VP and HP, then its
- (A) front view and top view are equal in length
(B) front view and top view coincide
(C) front view and top view are longer than the true length
(D) front view and top view are shorter than the true length
121. 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

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122. If the top view and front view of a point K coincide and is below XY line, the point K is in
- (A) III quadrant (B) II quadrant
(C) I quadrant (D) IV quadrant
123. The side view of a line shows its 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
124. Which of the following is not a solid of revolution?
- (A) Triangular pyramid (B) Sphere
(C) Right circular cylinder (D) Right circular cone
125. A cube is resting on HP on an edge which is perpendicular to VP. Which statement is true?
- (A) Front view and end view are geometrically same
(B) Top view and end view are geometrically same
(C) Front view and top view are geometrically same
(D) None of the above
126. A tetrahedron of 50 mm side has
- (A) 4 axes of 50 mm length
(B) 3 axes of $(50\sqrt{3})$ mm length
(C) 4 axes of $(50/\sqrt{3})$ mm length
(D) 4 axes of $(50\sqrt{2})/\sqrt{3}$ mm length
127. When the flat face of a hemisphere is inclined to the HP and perpendicular to the VP, then the top view will be
- (A) Circle (B) Semi circle
(C) Ellipse (D) None of the above

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139. If a principal face of an object is parallel to the picture plane, the perspective projection is called
- (A) Parallel perspective
 - (B) Angular perspective
 - (C) Oblique perspective
 - (D) None of the above
140. 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
141. Central plane in perspective projection is a
- (A) plane passing through the axis of solid
 - (B) plane passing through the eye, parallel to ground plane
 - (C) plane passing through the eye, perpendicular to ground plane and picture plane
 - (D) plane passing through the midpoint of axis of solid
142. As the distance of an object from the observer increases, its size in the perspective view
- (A) remains constant
 - (B) increases
 - (C) decreases
 - (D) None of the above
143. The line joining any point on the object to the station point is known as
- (A) axis of vision
 - (B) visual ray
 - (C) centre line
 - (D) horizon line
144. Perspective views of lines that are parallel to picture plane and ground plane
- (A) will have actual lengths
 - (B) will be parallel to ground line
 - (C) will lie on horizon line
 - (D) None of the above

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145. 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
146. Planes which are inclined to both the horizontal and vertical planes are called
- (A) Oblique planes
 - (B) Profile planes
 - (C) Auxiliary planes
 - (D) None of the above
147. In first angle projection method, the relative position of the object, plane and observers are
- (A) object is placed in between
 - (B) plane is placed in between
 - (C) observer is placed in between
 - (D) can be placed in any order
148. The recommended symbol for indicating the angle of projection shows two views of a frustum of a
- (A) square pyramid
 - (B) triangular pyramid
 - (C) hexagonal prism
 - (D) cone
149. In orthographic projection, the rays are assumed to be
- (A) parallel
 - (B) perpendicular
 - (C) divergent
 - (D) convergent
150. Objects that are symmetric can be shown effectively using which type of section?
- (A) Quarter section
 - (B) Half section
 - (C) Full section
 - (D) Symmetric section

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151. Pantograph is used for
- (A) measuring distances (B) measuring areas
 (C) enlarging or reducing plans (D) setting out right angles
152. The foundation in which a cantilever beam is provided to join two footings, is known as
- (A) strip footing (B) strap footing
 (C) combined footing (D) None of the above
153. The operation of leveling to determine the elevation between two points is known as
- (A) Simple leveling (B) Fly leveling
 (C) Differential leveling (D) None of the above
154. The surface of still water is considered to be
- (A) level (B) smooth
 (C) horizontal (D) straight
155. The instrument used for setting out an offset at a right angle is called
- (A) Open cross staff (B) French cross staff
 (C) Adjustable cross staff (D) Optical square
156. For mass concrete in piers and abutments, the grade of concrete mix used, is
- (A) 1 : 1 : 2 (B) 1 : 1.5 : 3
 (C) 1 : 2 : 4 (D) 1 : 3 : 6



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157. Reinforced cement concrete is equally strong in taking
- (A) tensile and compressive stresses
 - (B) tensile and shear stresses
 - (C) compressive and shear stresses
 - (D) tensile, compressive and shear stresses
158. The maximum particle size of coarse aggregate is
- (A) 45 mm
 - (B) 55 mm
 - (C) 75 mm
 - (D) 85 mm
159. When two or more footings are connected by a beam, it is called
- (A) beam footing
 - (B) strap footing
 - (C) mat footing
 - (D) combined footing
160. Series of closely spaced lines in a contour represents
- (A) gentle slope
 - (B) uniform slope
 - (C) steep slope
 - (D) None of the above
161. The second law of thermodynamics states that
- (A) energy may be converted from one form to another
 - (B) energy is neither created nor destroyed
 - (C) when energy is converted from one form to another, some of the energy is destroyed
 - (D) when energy is converted from one form to another, some of the energy is converted to heat
162. Otto cycle means
- (A) constant temperature cycle
 - (B) constant pressure cycle
 - (C) constant volume cycle
 - (D) dual cycle
163. Compression ratio in diesel engines is of the order of
- (A) 5-7
 - (B) 7-10
 - (C) 10-12
 - (D) 14-20

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164. In a reaction turbine, when steam flows through the fixed blades
- (A) pressure decreases while velocity increases
 - (B) pressure increases while velocity decreases
 - (C) pressure and velocity both decreases
 - (D) pressure and velocity both increases
165. The value of 1 bar in SI unit is equal to
- (A) 100 N/m^2
 - (B) 1000 N/m^2
 - (C) $1 \times 10^4 \text{ N/m}^2$
 - (D) $1 \times 10^5 \text{ N/m}^2$
166. The latent heat of vapourisation at critical point is
- (A) lesser than zero
 - (B) greater than zero
 - (C) equal to zero
 - (D) None of the above
167. The specific volume of water when heated at 0°C
- (A) first increases and then decreases
 - (B) first decreases and then increases
 - (C) increases steadily
 - (D) decreases steadily
168. In a reversible cycle the entropy of the system
- (A) increases
 - (B) decreases
 - (C) does not change
 - (D) first increases and then decreases
169. Rankine cycle efficiency of a good steam plant may be in the range of
- (A) 15 to 20%
 - (B) 35 to 45%
 - (C) 70 to 80 %
 - (D) 90 to 95%



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170. For a gas turbine the pressure ratio may be in the range of
- (A) 2 to 3 (B) 3 to 5
(C) 16 to 18 (D) 18 to 22
171. A coil induces 5 V with a rate of change of current of 1 A/s. The inductance of the coil will be
- (A) 5 H (B) 5 mH
(C) 0.2 H (D) 0.2 mH
172. The property of a material by which it opposes the production of magnetic flux in it is known as
- (A) mmf (B) reluctance
(C) permeance (D) permittivity
173. The range of a dc milli ammeter can be extended by using a
- (A) series low resistance (B) series high resistance
(C) shunt of low resistance (D) shunt of high resistance
174. The principle of dynamically induced emf is employed in
- (A) choke (B) transformer
(C) thermocouple (D) generator
175. A wire having a resistance of 'R' ohms is stretched to double its length. The resistance of the stretched wire would be
- (A) R/2 (B) 2R
(C) 4 R (D) R/4
176. Thevenin's theorem is the following form of an equivalent circuit
- (A) Voltage (B) Current
(C) Both voltage and current (D) None of the above

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177. Two charges when placed in air experience a force of 4N. If placed in a medium of relative permittivity 2, the force would be
- (A) 8 N (B) 2 N
(C) 1 N (D) 16 N
178. Tesla is the unit of
- (A) magnetic flux density (B) electric flux
(C) a magnetic flux (D) magnetic moment
179. This type of ammeter can be used only in d.c
- (A) moving iron type (B) induction type
(C) dynamometer type (D) PMMC type
180. An a.c. series circuit has $R = 6$ ohms, $X_L = 20$ ohms and $X_C = 12$ ohms. The circuit power factor will be
- (A) 0.8 lagging (B) 0.5 leading
(C) 0.6 lagging (D) 0.6 leading
181. Zener diode is mainly used in power supplies as
- (A) rectifier (B) filter
(C) voltage regulator (D) All of the above
182. The process of deliberately adding impurities to a semiconductor is known as
- (A) sintering (B) drifting
(C) intrusion (D) doping
183. For a full wave bridge rectifier supplied with 50 Hz ac, the lowest ripple frequency in the output will be
- (A) 50 Hz (B) 100 Hz
(C) 200 Hz (D) 25 Hz



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184. The strain gauges should have low
- (A) gauge factor
 - (B) resistance temp coefficient
 - (C) resistance
 - (D) All of the above
185. Removing bypass capacitor across the emitter-leg resistor in a CE amplifier causes
- (A) increase in current gain
 - (B) decrease in current gain
 - (C) increase in voltage gain
 - (D) decrease in voltage gain
186. Space charge region around a p-n junction
- (A) does not contain mobile carriers
 - (B) contains both free electrons and holes
 - (C) contains one type of mobile carriers depending on the level of doping of the p or n regions
 - (D) contains electrons only as free carriers
187. The reverse -- saturation current of a silicon diode
- (A) doubles for every 10°C increase in temperature
 - (B) does not change with temperature
 - (C) halves for every 1°C decrease in temperature
 - (D) increases by 1.5 times for every 2°C increment in temperature
188. A circuit produces an output $y(t) = a + bx(t)^2$, where $x(t)$ is its input. This circuit can produce which one of the following?
- (A) Rectified output
 - (B) Pulse modulation
 - (C) Amplitude modulation
 - (D) Frequency modulation
189. The electrical transducer is a device which converts
- (A) non mechanical to the mechanical output
 - (B) mechanical to the non-mechanical output
 - (C) non electrical to the electrical output
 - (D) electrical to the non-electrical output



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190. The forward characteristic of a diode has a slope of approximately 50 mA/V at a desired point. The approximate incremental resistance of the diode is
- (A) 50 Ω (B) 35 Ω
(C) 20 Ω (D) 10 Ω
191. Which of the following is an example of an Operating System?
- (A) MS DOS (B) Access
(C) Spreadsheets (D) Photoshop
192. The fast memory placed in between the main memory and the CPU is
- (A) Register (B) RAM
(C) Accumulator (D) Cache
193. The number of phases in a compiler is
- (A) 8 (B) 7
(C) 6 (D) 4
194. A single character input from the keyboard can be obtained by using the function
- (A) printf () (B) getchar ()
(C) putchar () (D) scanf ()
195. Main () is an example of
- (A) library function (B) header
(C) user-defined function (D) statement
196. Which of the following is useful in traversing a given graph by breadth first search?
- (A) Stack (B) Set
(C) Queue (D) List



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197. The scheduling in which CPU is allocated to the process with least CPU-burst time is called
- (A) priority scheduling
 - (B) shortest job first scheduling
 - (C) round robin scheduling
 - (D) multilevel queue scheduling
198. Which of the following grammar is used to implement Finite State Automata?
- (A) Context- Sensitive
 - (B) Regular
 - (C) Context free
 - (D) None of the above
199. The process of binding data and function together in a single unit is called
- (A) Polymorphism
 - (B) Inheritance
 - (C) Message passing
 - (D) Encapsulation
200. ATM is an example of
- (A) Ring topology
 - (B) Star topology
 - (C) Bus topology
 - (D) None of the above
