

SSC CGL Tier-II

Practice Test

1

TIME : 2 Hours MARKS: 200

Section-I QUANTITATIVE APTITUDE

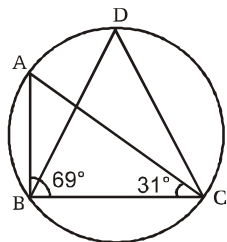
- If $x^4 + \frac{1}{x^4} = 47$, what will be the value of $x^3 + \frac{1}{x^3}$?
 A) 18 B) 17
 C) 19 D) 20
- Find the value of $\frac{15}{\sqrt{10} + \sqrt{20} + \sqrt{40} - \sqrt{5} - \sqrt{80}}$
 if $\sqrt{5} = 2.236$ and $\sqrt{10} = 3.162$.
 A) 5.498 B) 5.398
 C) 6.398 D) 3.498
- If $x = \frac{1}{2 - \sqrt{3}}$, what will be the value of $x^3 - 2x^2 - 7x + 5$?
 A) 0 B) 2
 C) 3 D) 4
- If $\frac{5 + 2\sqrt{3}}{7 + 4\sqrt{3}} = a + b\sqrt{3}$, the values of a and b respectively are :
 A) a = -11, b = 6
 B) a = 11, b = -6
 C) a = 6, b = 11
 D) a = -6, b = -11
- If $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$; a + b ≠ 0, then x = ?
 A) x = -a B) x = -b
 C) x = -a or -b D) x = a or b
- Evaluate : $\frac{\sec 39^\circ}{\operatorname{cosec} 51^\circ} + \frac{2}{\sqrt{3}} (\tan 17^\circ \cdot \tan 38^\circ \cdot \tan 60^\circ \cdot \tan 52^\circ \cdot \tan 73^\circ - 3 (\sin^2 31^\circ + \sin^2 59^\circ))$
 A) 2 B) 3
 C) 0 D) -2
- If $\frac{\cos \alpha}{\cos \beta} = m$ and $\frac{\cos \alpha}{\sin \beta} = n$, then $(m^2 + n^2) \cos^2 \beta = ?$
 A) 1 B) 2 n²
 C) n² + 3 D) n²
- If α, β and γ each is positive acute angle, and $\sin(\alpha + \beta - \gamma) = \frac{1}{2}$, $\cos(\beta + \gamma - \alpha) = \frac{1}{2}$ and $\tan(\gamma + \alpha - \beta) = 1$ then $2\alpha + \beta = ?$
 A) 105° B) 115°
 C) 110° D) 120°
- Evaluate : $\frac{\tan^2 60^\circ + 4 \cos^2 45^\circ + 3 \sec^2 30^\circ + 5 \cos^2 90^\circ}{\operatorname{cosec} 30^\circ + \sec 60^\circ - \cot^2 30^\circ}$
 A) 4 B) 9
 C) 7 D) 1
- If A + B = 90°, then $\sqrt{\frac{\tan A \cdot \tan B + \tan A \cdot \cot B}{\sin A \cdot \sec B} - \frac{\sin^2 B}{\cos^2 A}} = ?$
 A) 2 tan A B) tan A
 C) tan²A D) 2 cot²B
- At 5 : 45 am what will be the angle between hour hand and minute hand of a clock?
 A) 97.5° B) 98.5°
 C) 95° D) 100°

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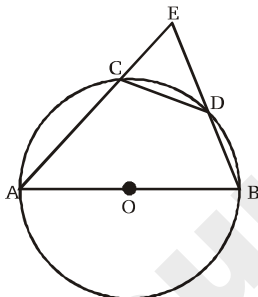
12. The angles of a triangle are in the ratio of 1 : 2 : 3. What will be the radian measure of the largest angle of the triangle?
- A) $\frac{\pi}{2}$ B) $\frac{\pi}{3}$
 C) $\frac{\pi}{4}$ D) $\frac{2\pi}{3}$
13. $\frac{\sin A - \sin B}{\cos A + \cos B} + \frac{\cos A - \cos B}{\sin A + \sin B} = ?$
- A) 1 B) $\cos A$
 C) $\sin A$ D) 0
14. $2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta) + 1 = ?$
- A) 1 B) 0
 C) -1 D) 2
15. If $\sin\theta + \sin^2\theta + \sin^3\theta = 1$, then, $\cos^6\theta - 4\cos^4\theta + 8\cos^2\theta = ?$
- A) 2 B) 3
 C) 4 D) 0
16. For what value of 'a', the polynomial $2x^3 + ax^2 + 11x + a + 3$, is exactly divisible by $(2x - 1)$?
- A) 7 B) -7
 C) 5 D) -5
17. If $a + b + c = 15$ and $a^2 + b^2 + c^2 = 83$, then $a^3 + b^3 + c^3 - 3abc = ?$
- A) 160 B) 175
 C) 180 D) 100
18. What will be the value of $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c)$ if $a + b + c = 3x$?
- A) 1 B) 3
 C) 0 D) 5
19. If $p = 2 - a$, then $a^3 + 6ap + p^3 - 8 = ?$
- A) 0 B) 8
 C) 6 D) 5
20. If the internal bisectors of angles $\angle ABC$ and $\angle ACB$ of $\triangle ABC$ intersect at point O, then $\angle BOC = ?$
- A) $90^\circ - \frac{\angle A}{2}$ B) $90^\circ + \frac{\angle A}{2}$
 C) $180^\circ - \frac{\angle A}{2}$ D) $90^\circ - \angle A$
21. In any triangle PQR, PS is the internal bisector of $\angle QPR$ and $PT \perp QR$ then $\angle TPS = ?$
- A) $\angle Q - \angle R$ B) $\frac{1}{2}(\angle Q + \angle R)$
 C) $\frac{1}{2}(\angle Q - \angle R)$ D) $\angle Q + \angle R$
22. In any triangle ABC the internal bisector of $\angle ABC$ and the external bisector of other base angle meet at point E. Then $\angle BEC = ?$
- A) $\angle A$ B) $2\angle A$
 C) $\frac{1}{2}\angle A$ D) $\frac{1}{2}\angle B$
23. $\triangle ABC$ is an isosceles triangle in which $AB = AC$. Side BA is extended to D such that $AB = AD$. What will be the value of $\angle BCD$?
- A) 90° B) 60°
 C) 30° D) 45°
24. In any triangle ABC, AD, BE and CF are medians. What is the relation between the perimeter of triangle and sum of all three medians?
- A) $AB + BC + AC < AD + BE + CF$
 B) $AB + BC + AC > AD + BE + CF$
 C) $AB + BC + AC \leq AD + BE + CF$
 D) $AB + BC + AC \geq AD + BE + CF$
25. In $\triangle ABC$, D, E and F are the mid-points of sides BC, CA and AB respectively. What is the area of quadrilateral BDEF?
- A) $\frac{1}{3}$ rd of area of $\triangle ABC$
 B) Half of the area of $\triangle ABC$
 C) $\frac{1}{4}$ th of the area of $\triangle ABC$
 D) None of these

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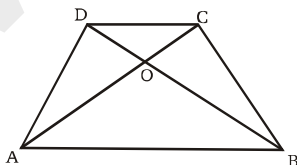
26. Two circles whose radii are 10 cm and 8 cm, intersect each other and their common chord is 12 cm long. What is the distance between their centres?
 A) 11.27 cm B) 12.29 cm
 C) 12.27 cm D) 13.29 cm
27. In the following figure, $\angle ABC = 69^\circ$, $\angle ACB = 31^\circ$ then $\angle BDC = ?$



- A) 80° B) 60°
 C) 65° D) 75°
28. In the following figure, AB is the diameter of circle and CD is a chord equal to the radius. AC and BD when extended meet at E. $\angle AEB = ?$



- A) 30° B) 60°
 C) 45° D) 90°
29. ABCD is a trapezium in which $AB \parallel DC$ and $AB = 2DC$. Then what is the ratio between the areas of $\triangle AOB$ and $\triangle COD$ respectively?



- A) 4 : 1 B) 1 : 3
 C) 2 : 1 D) 3 : 1
30. ABC is a right angled triangle in which $\angle C = 90^\circ$. If $BC = a$, $AB = c$, $CA = b$ and the length of perpendicular from C to AB be p, then, $\frac{1}{a^2} + \frac{1}{b^2} = ?$
 A) $\frac{1}{p}$ B) $\frac{2}{p^2}$
 C) $\frac{1}{p^2}$ D) None of these
31. The centre of a circle of radius 5 cm is 'O'. T is an external point where $OT = 13$ cm and OT intersects the circle at point E. AB is a tangent at point E. What is the length of AB?
 A) $\frac{10}{3}$ cm B) $\frac{20}{3}$ cm
 C) $\frac{40}{3}$ cm D) $\frac{16}{3}$ cm
32. The shadow of a vertical tower increases 10 metre, when the altitude of the sun changes from 45° to 30° . What is the height of tower? ($\pi = 1.73$)
 A) 12.65 metre B) 13.65 metre
 C) 14.65 metre D) 16.65 metre
33. The angle of elevation of an aeroplane from a point A on the ground is 60° . After a straight flight of the plane for 30 seconds, the angle of elevation becomes 30° . If the plane flies at a constant height of $3600\sqrt{3}$ metre, what is the speed of plane?
 A) 864 kmph B) 846 kmph
 C) 684 kmph D) None of these
34. What is the area of triangle formed by straight line $x - y = 1$, $2x + y = 8$ and y - axis?
 A) 12.5 sq. units B) 13.5 sq. units
 C) 14.5 sq. units D) None of these

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35. If $4x^2 + 4y^2 + 4z^2 = 12x + 12y - 18$ then $x + y + z = ?$
 A) 3 B) 4
 C) $\frac{3}{2}$ D) 2
36. What is the next term in the following sequence?
 2 3 11 38 102 ?
 A) 225 B) 227
 C) 230 D) 235
37. $2 \times \frac{16 \times 2^{n+1} - 4 \times 2^n}{16 \times 2^{n+2} - 2 \times 2^{n+2}} = ?$
 A) 1 B) $\frac{1}{3}$
 C) 2 D) $\frac{1}{2}$
38. For what value of k, the system of equations $5x + 2y = k$; $10x + 4y = 3$ has infinite solutions?
 A) $\frac{3}{2}$ B) $\frac{1}{2}$
 C) $\frac{5}{2}$ D) 2
39. a, b, c p are rational numbers where p is a not a perfect cube.
 If $a + bp^{\frac{1}{3}} + cp^{\frac{2}{3}} = 0$, which of the following relations is correct ?
 A) $a = b = c = 2$ B) $a \neq b = c$
 C) $a = b = c = 0$ D) $a \neq b \neq c \neq 0$
40. The area of a triangle formed by $y = x$, $x = 6$ and $y = 0$ is :
 A) 36 sq. units B) 18 sq. units
 C) 9 sq. units D) 72 sq. units
41. In 4 years, ₹ 6000 amounts to ₹ 8,000. In what time at the same rate will ₹525 amount to ₹ 700?
 A) 5 years B) 3 years
 C) 4 years D) None of these
42. The radius of a circle is so increased that its circumference increases by 5%. The area of the circle then increases by :
 A) 12.5% B) 10.25%
 C) 10.5% D) None of these
43. If the numerator of a fraction is increased by 150% and the denominator of the fraction is increased by 300% the resultant fraction is $\frac{5}{18}$. What is the original fraction?
 A) $\frac{4}{9}$ B) $\frac{8}{9}$
 C) $\frac{6}{9}$ D) None of these
44. A lawn is in the form of a rectangle having its breadth and length respectively in the ratio 2 : 3. The area of the lawn is 600 sq. metres. Find the length of the lawn
 A) 20m B) 30m
 C) 25m D) None of these
45. A bus left with some definite number of passengers. At the first stop, half the passengers left the bus and 35 boarded the bus. At the second stop $\frac{1}{5}$ th of the passengers left and 40 boarded the bus. The, the bus moved with 80 passengers towards its destination without stopping anywhere. How many passengers were there originally?
 A) 40 B) 20
 C) 50 D) 60
46. A sum of ₹ 45 is made up of 100 coins, partly of 50 paise and partly of 25 paise. How many 25 paise coins are there?
 A) 50 B) 20
 C) 40 D) 80
47. Twenty years ago the ratio between the ages of Sita and Meena was 1 : 4 and at present it is 1 : 2. What is the age of Sita at present?
 A) 25 B) 35
 C) 30 D) None of these
48. An alloy of gold and silver weighs 50 gms. It contains 80% gold. How much gold should be added to the alloy so that percentage of gold is increased to 90?
 A) 45gm B) 40 gm
 C) 50 gm D) None of these

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49. The breadth of a rectangular plot is decreased by 20 percent. By what percent should the length be increased to keep the area same?
A) 25 B) 20
C) 30 D) None of these
50. The sum of the first two of three consecutive odd numbers is 33 more than the third number. What is the second number?
A) 35 B) 37
C) 39 D) 33
51. 12 men and 18 boys working $7\frac{1}{2}$ hours a day can do a work in 60 days. If one man works equal to 2 boys, then the number of boys required to help 21 men to do twice the work in 50 days working 9 hours a day will be :
A) 42 B) 44
C) 46 D) None of these
52. The C.P. of two shirts taken together is ₹ 840. If by selling one at a profit of 16% and the other at a loss of 12%, there is no loss or gain in the whole transaction, then the C.P. of the two shirts are respectively :
A) ₹ 360, ₹ 480 B) ₹ 480, ₹ 360
C) ₹ 380, ₹ 460 D) None of these
53. 5% of income of A is equal to 15% of income of B and 10% of income of B is equal to 20% of income of C. If income of C is ₹ 2000, then total income of A, B and C is :
A) ₹ 26,000 B) ₹ 16,000
C) ₹ 18,000 D) ₹ 20,000
54. If the difference between simple and compound interest on some principal amount at 20% per annum for three years is ₹ 48, then the principal amount is :
A) ₹ 450 B) ₹ 375
C) ₹ 390 D) None of these
55. If a man decides to travel 80 km, in 8 hours, partly by foot and partly on a bicycle, his speed on foot being 8km/hr and that on bicycle being 16 km/hr, what distance would he travel on foot?
A) 20 km B) 48 km
C) 36 km D) None of these
56. Rakesh got married 8 years ago. His present age is $\frac{6}{5}$ times his age at the time of his marriage. Rakesh's sister was 10 years younger to him at the time of his marriage. The age of Rakesh's sister is :
A) 38 B) 36
C) 32 D) None of these
57. A train passes through a tunnel whose length is 500 metres in 1 minute while running at a speed of 72 km per hour. The length of the train is :
A) 750 metres B) 700 metres
C) 800 metres D) None of these
58. When three coins are tossed together, the probability that all coins have the same face is :
A) $\frac{1}{4}$ B) $\frac{1}{6}$
C) $\frac{1}{3}$ D) None of these
59. The sum of two numbers is 1215 and their HCF is 81. How many such pairs of numbers can be formed?
A) 3 B) 4
C) 6 D) None of these
60. A mixture contains alcohol and water in the ratio 4 : 3. If 5 litres of water is added to the mixture the ratio becomes 4 : 5. The quantity of alcohol in the given mixture is :
A) 12 litres B) 10 litres
C) 14 litres D) 16 litres
61. The average weight of 29 students is 40 kg. If the weight of teacher be included, the average weight is increased by 300 gms. The weight of the teacher is :
A) 49 kg B) 56 kg
C) 58 kg D) None of these

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62. The population of a town is 10,000. If the males increases by 5% and the females by 6% the population will be 10,540. How many females are there?
 A) 4000 B) 4500
 C) 4800 D) 5400
63. A reduction of 21% in the price of wheat enables a person to buy 10.5 kg more for ₹ 100. What is the reduced price per kg?
 A) ₹ 2 B) ₹ 3
 C) ₹ 2.5 D) ₹ 3.5
64. Mahima secured 50% marks in Hindi, 60% in English and 70% in Maths as well as in science. What were her total marks if the maximum marks obtainable in each of these 4 subjects was 50?
 A) 175 B) 150
 C) 125 D) None of these
65. Rita, Sita and Meeta are employed to do a piece of work for ₹ 625. Rita and Sita together are supposed to do $\frac{17}{23}$ of the work. What should Meeta be paid?
 A) ₹ 162.04
 B) ₹ 163.04
 C) ₹ 161.04
 D) None of these
66. ₹ 120 is divided between x , y and z , so that x 's share is ₹ 20 more than y 's and ₹ 20 less than z 's. What is y 's share
 A) ₹ 25 B) ₹ 20
 C) ₹ 30 D) None of these
67. If sweets are bought at 15 for a rupee, how many must be sold for a rupee to gain 25%?
 A) 10 B) 11
 C) 12 D) 8
68. If $4b^2 + \frac{1}{b^2} = 2$, then the value of $8b^3 + \frac{1}{b^3}$ is :
 A) 0 B) 1
 C) 2 D) None of these
69. A rational number between $\frac{1}{2}$ and $\frac{3}{5}$ is :
 A) $\frac{2}{5}$ B) $\frac{3}{5}$
 C) $\frac{11}{20}$ D) None of these
70. The ratio of the volumes of two spheres is 8 : 27. Find the ratio of their surface areas?
 A) 4 : 9 B) 3 : 5
 C) 2 : 5 D) None of these
71. How many numbers are there between 99 and 1000 such that the digit 8, occupies the unit's place?
 A) 64 B) 74
 C) 82 D) 90
72. The difference between the ages of two sisters is half the difference between the ages of their parents. The elder sister is 18 years of age. Their father's age was 32 years when the younger sister was born who is now 15 years old. What is their mother's age?
 A) 40 B) 41
 C) 42 D) 43
73. In a football championship, 153 matches were played. Every team played one match with each other. The number of teams participating in the championship is :
 A) 16 B) 17
 C) 18 D) None of these
74. One third of the boys and one half of the girls of a college participate in a social work project. If the number of participating students is 300 out of which 100 are boys, what is the total number of students in the college?
 A) 500
 B) 700
 C) 800
 D) None of these