PREVIOUS YEAR PAPER

SSC CGL 2017 Tier II — Quantitative Abilities — 18 February 2018

SSC CGL · 18 February 2018 · 10:30 AM - 12:30 PM

66 of the paper's 100 questions · marks per question not printed on the response sheet · 120 minutes

Left out of the original paper: 34 (any question that needs a figure or formatting we cannot show, has no answer in the response sheet, or could not be checked against a second copy of the paper).

Questions from the Staff Selection Commission's paper of 18 February 2018, 10:30 AM - 12:30 PM. Each question is followed by its answer, and the answer key is repeated on the last page.

Take it as a timed practice test: exambharo.com/ssc-cgl/previous-year-papers/ssc-cgl-2017-tier-2-quant-18-feb/

Quantitative Abilities

1. How many three digit numbers are there in which all the digits are odd?

(a) 100

(b) 125

(c) 500

(d) 250

Answer: (b)

2. If the sum of ten different positive integers is 100, then what is the greatest possible number among these 10 numbers?

(a) 45

(b) 91

(c) 55

(d) 64

Answer: (c)

6. If 56 × 75 × 60 × 84 × 210 = 2p × 3q × 5r × 7s, then what is the value of [(p + q)/s] + r?

(a) 6

(b) 8

(c) 12

(d) 10

Answer: (b)

8. What is the sum of all natural numbers between 100 and 400 which are divisible by 13?

(a) 5681

(b) 5334

(c) 5434

(d) 5761

Answer: (a)

10. If (333 + 333 + 333) (233 + 233) = 6x, then what is the value of x?

(a) 34

(b) 35

(c) 33

(d) 33.5

Answer: (a)

11. Which of the following statement(s) is/are true? I. (65)1/6 > (17)1/4 > (12)1/3 II. (17)1/4 > (65)1/6 > (12)1/3 III. (12)1/3 > (17)1/4 > (65)1/6

(a) Only I

(b) Only III

(c) Only II

(d) None of these

Answer: (b)

12. If P = 7 + 4√3 and PQ = 1, then what is the value of (1/P2) + (1/Q2)?

(a) 148

(b) 189

(c) 194

(d) 204

Answer: (c)

13. If x = (√5) + 1 and y = (√5) – 1, then what is the value of (x2/y2) + (y2/x2) + 4[(x/y) + (y/x)] + 6?

(a) 31

(b) 23√5

(c) 27√5

(d) 25

Answer: (d)

14. If x = 2 +√3, y = 2 – √3 and z = 1, then what is the value of (x/yz) + (y/xz) + (z/xy) + 2 [(1/x) + (1/y) + (1/z)]?

(a) 25

(b) 22

(c) 17

(d) 43

Answer: (a)

15. A root of equation ax2 + bx + c = 0 (where a, b and c are rational numbers) is 5 + 3√3. What is the value of (a2 + b2 + c2)/(a + b + c)?

(a) 35/3

(b) 37/3

(c) – 105/11

(d) – 105/13

Answer: (c)

16. If x = (a/b) + (b/a), y = (b/c) + (c/b) and z = (c/a) + (a/c), then what is the value of xyz – x2 – y2 – z2?

(a) – 4

(b) 2

(c) – 1

(d) – 6

Answer: (a)

17. If [a + (1/a)]2 – 2[a – (1/a)] = 12, then which of the following is a value of 'a'?

(a) – 8 + √3

(b) – 8 – √3

(c) – 8 + √5

(d) None of these

Answer: (d)

19. If x + y = 3, then what is the value of x3 + y3 + 9xy?

(a) 15

(b) 81

(c) 27

(d) 9

Answer: (c)

20. A = (x8 – 1)/(x4 + 1) and B = (y4 – 1)/(y2 + 1). If x . and y = 9, then what is the value of A2 + 2AB + AB2?

(a) 96475

(b) 98625

(c) 92425

(d) 89125

Answer: (b)

21. If x – 4y = 0 and x + 2y = 24, then what is the value of (2x + 3y)/(2x – 3y)?

(a) 9/5

(b) 11/5

(c) 13/7

(d) 9/7

Answer: (b)

24. In a triangle PQR, ∠PQR = 90o, PQ = 10 cm and PR = 26 cm, then what is the value (in cm) of inradius of incircle?

(a) 9

(b) 4

(c) 8

(d) 6

Answer: (b)

26. In a triangle PQR, PX, QY and RZ be altitudes intersecting at O. If PO = 6 cm, PX = 8 cm and QO = 4 cm, then what is the value (in cm) of QY?

(a) 6.3

(b) 5.8

(c) 6

(d) 7

Answer: (d)

27. A line cuts two concentric circles. The lengths of chords formed by that line on the two circles are 4 cm and 16 cm. What is the difference (in cm2) in squares of radii of two circles?

(a) 240

(b) 120

(c) 60

(d) 90

Answer: (c)

38. A man is running at the speed of 20 km/hr. What is time (in seconds) taken by man to cover one round of a circular garden of radius 350 metres?

(a) 412

(b) 336

(c) 396

(d) 376

Answer: (c)

40. A regular hexagonal base prism has height 8 cm and side of base is 4 cm. What is the total surface area (in cm2) of the prism?

(a) $54(3 + \sqrt{3})$

(b) $36(3 + \sqrt{3})$

(c) $48(4 + \sqrt{3})$

(d) $24(4 + \sqrt{3})$

Answer: (c)

41. A cube is placed inside a cone of radius 20 cm and height 10 cm, one of its face being on the base of the cone and vertices of opposite face touching the cone. What is the length (in cm) of side of the cube?

(a) 5

(b) 6

(c) 8

(d) 9

Answer: (c)

42. A cylinder of radius 4.5 cm and height 12 cm just fits in another cylinder completely with their axis perpendicular. What is the radius (in cm) of second cylinder?

(a) 5

(b) 6

(c) 15

(d) 7.5

Answer: (d)

43. A right circular cylinder has height 28 cm and radius of base 14 cm. Two hemispheres of radius 7 cm each are cut from each of the two bases of the cylinder. What is the total surface area (in cm2) of the remaining part?

(a) 3842

(b) 4312

(c) 3296

(d) 4436

Answer: (b)

44. Two spheres of equal radius are taken out by cutting from a solid cube of side $(12 + 4\sqrt{3})$ cm. What is the maximum volume (in cm3) of each sphere?

(a) 1077.31

(b) 905.14

(c) 966.07

(d) 1007.24

Answer: (b)

45. Three toys are in a shape of cylinder, hemisphere and cone. The three toys have same base. Height of each toy is $2\sqrt{2}$ cm. What is the ratio of the total surface areas of cylinder, hemisphere and cone respectively?

(a) $4 : 3 : [(\sqrt{2}) + 1]$

(b) $4 : 3 : [2 + (\sqrt{2})]$

(c) $4 : 3 : 2\sqrt{2}$

(d) $2 : 1 : (1 + \sqrt{2})$

Answer: (a)

46. A solid cube is cut into 27 identical cubes. What is the percentage increase in the total surface area?

(a) 150

(b) 200

(c) 300

(d) 250

Answer: (b)

48. What is the value of [(sin 7x – sin 5x)÷(cos 7x + cos 5x)] – [(cos 6x – cos 4x)÷(sin 6x + sin 4x)]?
    (a) 1
    (b) 2 tan
    (c) tan 2
    (d) tan (3 /2)
    x

    Answer: (b)

49. What is the value of [(cos3 2θ + 3 cos 2θ)÷(cos6 θ – sin6 θ)]?
    (a) 0
    (b) 1
    (c) 4
    (d) 2

    Answer: (c)

52. What is the value of sin (630o + A) + cos A?
    (a) √3/2
    (b) 1/2
    (c) 0
    (d) 2/√3

    Answer: (c)

53. What is the value of [(sin 59o cos 31o + cos 59o 31o)÷(cos 20o cos 25o – sin 20o sin 25o)]?
    (a) 1/√2
    (b) 2√2
    (c) √3
    (d) √2

    Answer: (d)

54. What is the value of cos (90 – B) sin (C – A) + sin (90 + A) cos (B + C) – sin (90 – C) cos (A + B)?
    (a) 1
    (b) sin (+
    (c) cos (+
    (d) 0
    A B – C) B C – A)

    Answer: (d)

55. Two trees are standing along the opposite sides of a road. Distance between the two trees is 400 metres. There is a point on the road between the trees. The angle of depressions of the point from the top of the trees are 45o and 60o. If the height of the tree which makes 45o angle is 200 metres, then what will be the height (in metres) of the other tree?

(a) 200

(b) 200√3

(c) 100√3

(d) 250

Answer: (b)

56. A tower stands on the top of a building which is 40 metres high. The angle of depression of a point situated on the ground from the top and bottom of the tower are found to be 60o and 45o respectively. What is the height (in metres) of tower?

(a) 20√3

(b) 30(√3 + 1)

(c) 40(√3 – 1)

(d) 50(√3 – 1)

Answer: (c)

57. From a point P, the angle of elevation of a tower is such that its tangent is 3/4. On walking 560 metres towards the tower the tangent of the angle of elevation of the tower becomes 4/3. What is the height (in metres) of the tower?

(a) 720

(b) 960

(c) 840

(d) 1030

Answer: (b)

63. A beaker contains acid and water in the ratio 1 : x. When 300 ml of the mixture and 50 ml of water are mixed, the ratio of acid and water becomes 2 : 5. What is the value of x?

(a) 2

(b) 1

(c) 3

(d) 4

Answer: (a)

64. A mixture is composed of 11 parts of pure milk and 2 parts of water. If 35 litres of water were added to the mixture then the new mixture will contain twice as much pure milk as water, then how many litres of pure milk does the original mixture contain?

(a) 110

(b) 55

(c) 220

(d) 70

Answer: (a)

66. A, B and C invest in a business in the ratio 4 : 5 : 7. C is a sleeping partner, so his share of profits will be half of what it would have been if he were a working partner. If they make Rs 36,000 profit of which 25% is reinvested in the business, how much does B get (in Rs)?

(a) 7560

(b) 10800

(c) 8640

(d) 9200

Answer: (b)

67. A can do a work in 36 days and B in 12 days. If they work on it together for 3 days, then what fraction of work is left?

(a) 2/3

(b) 1/3

(c) 1/4

(d) 1/5

Answer: (a)

69. A,B and C together can finish a task in 7.5 days. C is thrice as productive as A and B alone can do the task in 15 days. In how many days can A and C do the job if B goes on leave?

(a) 30

(b) 10

(c) 20

(d) 15

Answer: (d)

70. A, B and C can do job in 9, 12 and 36 days respectively if they worked alone. A leaves after they have worked together for 3 days. In how many days can B and C do the rest of the job?

(a) 3

(b) 4

(c) 5

(d) 6

Answer: (a)

72. If a website is selling smartphone at Rs 18,000 which is marked at Rs 25,000, then what is the discount (in %) at which the smartphone is being sold?

(a) 25

(b) 22

(c) 28

(d) 20

Answer: (c)

73. If on an item there is 12% discount on the marked price of Rs 10,000 but the item is sold at Rs 8,360 only then what additional discount (in %) did the customer get? 10,000

(a) 6

(b) 7

(c) 5

(d) 8

Answer: (c)

74. A shopkeeper marks up his wares by 125% and offers 25% discount. What will be the selling price if the cost price (in Rs) is Rs 640?

(a) 1080

(b) 1000

(c) 920

(d) 860

Answer: (a)

75. Priya's marks in History and Geography are in the ratio 5 : 7. If she got 14 marks more in Geography than in History, what are her History marks?

(a) 49

(b) 42

(c) 56

(d) 35

Answer: (d)

76. The ratio of present ages of Rahul and [illegible] 3 : 4. Before 10 years the ratio of their ages was 13:19. What is Rahul's present age (in ye[illegible]

(a) 36

(b) 48

(c) 42

(d) 54

Answer: (a)

77. What is the third proportional to 9 and 15?

(a) 30

(b) 27

(c) 36

(d) 25

Answer: (d)

79. If Rs 7,800 is to be divided between A, B and C in the ratio 1/2 : 1/3 : 1/4, then how much share will B get (in Rs)?

(a) 3600

(b) 1800

(c) 2400

(d) 1200

Answer: (c)

80. Bunty had candies and chewing gums in his sweet box in the ratio 7 : 13. After he has eaten 8 candies and 11 chewing gums the ratio became 1 : 2. How many candies does he have now?

(a) 65

(b) 35

(c) 54

(d) 27

Answer: (d)

81. The average weight of P, Q and R is 71 kg. If the average weight of P and Q be 66 kg and that of Q and R be 76.5 kg, then the weight (in kg) of Q is.

(a) 60

(b) 72

(c) 81

(d) 75

Answer: (b)

82. Rita buys 5 sarees at an average cost of Rs 22[illegible] If she buys three more sarees at an average cost of Rs 2750, what will be the average (in [illegible]ll the sarees she buys?

(a) 2437.5

(b) 2500

(c) 2450

(d) 2332.5

Answer: (a)

83. In a one day match of 50 overs in an innings the team A had a run rate of 5.3 runs per over. Team B is playing and 5 overs are left and the required run rate to tie the match is 7.2 per over to match the score of Team A. What is team B's score?

(a) 265

(b) 238

(c) 254

(d) 229

Answer: (d)

84. Average of all even numbers between 104 and 148 is _____.

(a) 128

(b) 130

(c) 124

(d) 126

Answer: (d)

85. A vendor buys bananas at 4 for Rs 3 and sells at 3 for Rs 4. What will be the result?

(a) 43.75% profit

(b) 77.7% loss

(c) 77.7% profit

(d) 43.75% loss

Answer: (c)

86. A wholesaler sells a watch to a retailer at a profit of 8% and the retailer sells it to a customer at a profit of 12%. If the customer pays Rs. 8,448 what had it cost (approximately) to the wholesaler (in Rs)?

(a) 6984

(b) 6082

(c) 7120

(d) 7022

Answer: (a)

87. A trader had 2000 kgs of rice. He sold a part of [illegible] 10% profit and the rest at 16% profit, so that he made a total profit of 14.2%. How much [illegible] (in [illegible]) did he sell at 10% profit?

(a) 1400

(b) 600

(c) 800

(d) 1000

Answer: (b)

88. A used car dealer sells a car for Rs 7.6 lakhs and makes some loss. If he had sold it for Rs 9.2 lakhs his profit would have been thrice his loss. What was the cost price of the car (in Rs lakhs)?

(a) 8.5

(b) 8.75

(c) 8.25

(d) 8

Answer: (d)

89. 0.09% of 25% of 1200 is equal to_____.

(a) 0.27

(b) 2.7

(c) 27

(d) 270

Answer: (a)

90. When a number is increased by 20, it becomes 116% of itself. What is the number?

(a) 100

(b) 250

(c) 125

(d) 400

Answer: (c)

91. Two numbers are 50% and 75% lesser than a third number. By how much percent is the second number to be enhanced to make it equal to the first number?

(a) 50

(b) 25

(c) 75

(d) 100

Answer: (d)

92. Price of petrol increased from Rs 60/liter to Rs 75/liter. How much should the consumption of petrol be reduced (in %) so as to increase expenditure by only 10%?

(a) 12

(b) 20

(c) 15

(d) 18

Answer: (a)

93. A train has to cover a distance of 900 km in 25 hours. What should be its average speed in meters/second?

(a) 20

(b) 10

(c) 18

(d) 36

Answer: (b)

95. Two cyclists A and B start cycling at 21 km/hr and 24 km/hr towards each other. They meet after 1 hour and 12 minutes. How far (in km) were they from each other when they started?

(a) 48

(b) 42

(c) 54

(d) 36

Answer: (c)

96. Excluding stoppages, the speed of a bus is 60 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?

(a) 12

(b) 9

(c) 15

(d) 10

Answer: (c)

98. If the amount received at the end of 2nd and 3rd year at compound Interest on a certain Principal is Rs 9,600 and Rs 10,272 respectively, what is the rate of interest (in %)?

(a) 7

(b) 8

(c) 6

(d) 5

Answer: (a)

99. A invested an amount of x rupees in a bank for 2 years which gave 5% interest in year 1 and 6% interest in year 2. The amount received after 2 years is Rs 24,486. What is the value of x?

(a) 23000

(b) 22500

(c) 22000

(d) 21500

Answer: (c)

100. What is the difference (in Rs) in Compound interest earned in 1 year on a sum of Rs 10,000 at 40% per annum compounded quarterly and annually?

(a) 461

(b) 346

(c) 463

(d) 641

Answer: (d)

Answer key

Answer key as marked in the Staff Selection Commission's response sheet. "—" means the sheet did not show it clearly.

Quantitative Abilities

1	**(b)**	2	**(c)**	6	**(b)**	8	**(a)**	10	**(a)**	11	**(b)**	12	**(c)**	13	**(d)**
14	**(a)**	15	**(c)**	16	**(a)**	17	**(d)**	19	**(c)**	20	**(b)**	21	**(b)**	24	**(b)**
26	**(d)**	27	**(c)**	38	**(c)**	40	**(c)**	41	**(c)**	42	**(d)**	43	**(b)**	44	**(b)**
45	**(a)**	46	**(b)**	48	**(b)**	49	**(c)**	52	**(c)**	53	**(d)**	54	**(d)**	55	**(b)**
56	**(c)**	57	**(b)**	63	**(a)**	64	**(a)**	66	**(b)**	67	**(a)**	69	**(d)**	70	**(a)**
72	**(c)**	73	**(c)**	74	**(a)**	75	**(d)**	76	**(a)**	77	**(d)**	79	**(c)**	80	**(d)**
81	**(b)**	82	**(a)**	83	**(d)**	84	**(d)**	85	**(c)**	86	**(a)**	87	**(b)**	88	**(d)**
89	**(a)**	90	**(c)**	91	**(d)**	92	**(a)**	93	**(b)**	95	**(c)**	96	**(c)**	98	**(a)**
99	**(c)**	100	**(d)**												