

# SSC CGL TIER-I, 2018, 21 SETs

## 1. CGL Tier-I, 2018

Test Time : 10:00 AM - 11:00 AM

Test Date : 04/06/2019

1. A circle is inscribed in a triangle ABC. It touches the sides AB, BC and AC at the points R, P and Q respectively. If  $AQ = 4.5$  cm,  $PC = 5.5$  cm and  $BR = 6$  cm, then the perimeter of the triangle ABC is:

- (1) 30.5 cm                      (2) 28 cm  
(3) 32 cm                        (4) 26.5 cm

2. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

If the data related to the production of cars of type E is represented by a pie chart, then the central angle of the sector representing the data of production of cars in 2013 will be:

- (1)  $102^\circ$                       (2)  $84^\circ$   
(3)  $70^\circ$                         (4)  $80^\circ$

3. A truck covers a distance of 384 km at a certain speed. If the speed is decreased by 16 km/h, it will take 2 hours more to cover the same distance. 75% of its original speed (in km/h) is:

- (1) 45                              (2) 54  
(3) 48                              (4) 42

4. The ratio of the ages of A and B, four years ago, was 4:5. Eight years from now, the ratio of the ages of A and B will be 11:13. What is the sum of their present ages?

- (1) 80 years                      (2) 96 years  
(3) 72 years                      (4) 76 years

5. In  $\triangle ABC$ , F and E are the points on sides AB and AC, respectively, such that  $FE \parallel BC$  and FE divides the triangle in two parts of equal area. If  $AD \perp BC$  and AD intersects FE at G, then  $GD:AG = ?$

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

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

6. If  $4 - 2\sin^2\theta - 5\cos\theta = 0, 0^\circ < \theta < 90^\circ$ , then the value of  $\sin\theta + \tan\theta$  is:

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

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

7. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

What is the ratio of the total production of cars of type A in 2014 and type C in 2013 taken together to the total production of cars of type B in 2016 and type E in 2015 taken together?

- (1) 12:13                              (2) 11:12  
(3) 10:11                              (4) 12:11

8. If decreasing 120 by  $x\%$  gives the same result as increasing 40 by  $x\%$ , then  $x\%$  of 210 is what percent less than  $(x+20)\%$  of 180?

(1)  $33\frac{1}{3}$                               (2) 18

(3)  $16\frac{2}{3}$                               (4) 20

9. If  $(5\sqrt{5}x^3 - 81\sqrt{3}y^3) \div (\sqrt{5}x - 3\sqrt{3}y) = (Ax^2 + By^2 + Cxy)$ ; then the value of  $(6A + B - \sqrt{15}C)$  is:

- (1) 10                                      (2) 9  
(3) 15                                      (4) 12

10. If a nine-digit number  $985x3678y$  is divisible by 72, then the value of  $(4x - 3y)$  is:

- (1) 5                                      (2) 4  
(3) 6                                      (4) 3



11. If  $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$ , then  $\cos \theta$  is equal to:

(1)  $\frac{2p}{1+p^2}$  (2)  $\frac{p}{p^2 - 1}$

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

12. The ratio of the efficiencies of A, B and C is 2:5:3. Working together, they can complete a work in 27 days. B and

C together can complete  $\frac{4}{9}$  th part of that work in:

- (1) 27 days (2) 15 days  
(3) 17 days (4) 24 days

13. The average of twelve numbers is 42. The average of the last five numbers is 40, and that of the first four numbers is 44. The 6th number is 6 less than the fifth and 5 less than the 7th number. The average of the 5th and the 7th numbers is:

- (1) 44 (2) 44.5  
(3) 43 (4) 43.5

14. If  $x + y + z = 19$ ,  $x^2 + y^2 + z^2 = 133$  and  $xy = y^2$  then the difference between  $z$  and  $x$  is:

- (1) 5 (2) 3  
(3) 6 (4) 4

15.  $\frac{2 + \tan^2 \theta + \cot^2 \theta}{\sec \theta \cos \theta}$  is equal to:

- (1)  $\cot \theta$  (2)  $\cos \theta \sin \theta$   
(3)  $\sec \theta \cos \theta$  (4)  $\tan \theta$

16. In a circle of radius 10 cm, with center O, PQ and PR are two chords each of length 12 cm. PO intersects chord QR at point S. the length of OS is:

- (1) 2.8 cm (2) 2.5 cm  
(3) 3.2 cm (4) 3 cm

17. A sum amounts to ₹8,028 in 3 years and to ₹12,042 in 6 years at certain rate percent per annum when interest is compounded yearly. The sum is:

- (1) 5,352 (2) 5,235  
(3) 5,325 (4) 5,253

18. The value of  $2 \times 3 \div 2$  of  $3 \times 2 \div (4 + 4 \times 4 \div 4$  of  $4 \div 4 \div 4 \times 4)$  is:

- (1) 8 (2) 1  
(3) 4 (4) 2

19. After giving two successive discounts, each of  $x\%$ , on the marked price of an article, total discount is ₹259.20. If the marked price of the article is ₹720, then the value of  $x$  is:

- (1) 18 (2) 24  
(3) 20 (4) 25

20. A solid cube of volume  $13824 \text{ cm}^3$  is cut into 8 cubes of equal volumes. The ratio of the surface area of the original cube to the sum of the surface areas of three of the smaller cubes is:

- (1) 2:3 (2) 4:3  
(3) 8:3 (4) 2:1

21. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

The total production of type B cars in 2012, 2014 and 2015 taken together is approximately what percent more than the total production of type A cars in 2013 and 2016 taken together?

- (1) 31.9 (2) 33.2  
(3) 36.3 (4) 34.4

22. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	30	35	48	45	56
B	42	48	40	38	56
C	48	36	38	35	44
D	51	24	30	46	54
E	20	42	40	35	43

The number of years, in which the production of cars of type B is less than the average production of type D cars over the years, is:

- (1) 4 (2) 1  
(3) 3 (4) 2

23. A person sold an article at a loss of 15%. Had he sold it for ₹30.60 more, he would have gained 9%. To gain 10%, he should have sold it for:

- (1) 140.25 (2) 132  
(3) 130 (4) 128.40



24. In a  $\Delta ABC$ , the bisectors of  $\angle B$  and  $\angle C$  meet at point O, inside the triangle. If  $\angle BOC = 122^\circ$ . then the measure of  $\angle A$  is:
- (1)  $64^\circ$  (2)  $62^\circ$   
 (3)  $72^\circ$  (4)  $68^\circ$
25. If  $x^4 + x^{-4} = 194$ ,  $x > 0$ , then the value of  $(x - 2)^2$  is:
- (1) 1 (2) 6  
 (3) 2 (4) 3

**Answers**

1. (3)	2. (2)	3. (3)	4. (1)	5. (2)
6. (2)	7. (1)	8. (3)	9. (4)	10. (2)
11. (1)	12. (2)	13. (2)	14. (1)	15. (3)
16. (1)	17. (1)	18. (4)	19. (3)	20. (2)
21. (1)	22. (4)	23. (1)	24. (1)	25. (4)

**2. CGL Tier-I, 2018**

**Test Time : 1:00 PM - 2:00 PM**

**Test Date : 04/06/2019**

1. If  $x$  is subtracted from each of 23, 39, 32 and 56, the numbers so obtained in this order, are in proportion. What is the mean proportional between  $(x + 4)$  and  $(3x + 1)$ ?
- (1) 15 (2) 14  
 (3) 10 (4) 12
2. A takes 30 minutes more than B to cover a distance of 15 km at a certain speed. But if A doubles his speed, he takes one hour less than B to cover the same distance. What is the speed (in km/h) of B?
- (1)  $6\frac{1}{2}$  (2)  $5\frac{1}{2}$   
 (3) 5 (4) 6
3. The ratio of the efficiencies of A, B and C is 4:5:3. Working together, they can complete that work in 25 days. A and C together will complete 35% of that work in:
- (1) 10 days (2) 15 days  
 (3) 18 days (4) 12 days
4. The table shows the production of different types of cars (in thousands).

Year \ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	42	48	55

The total production of cars of type B in 2013, 2014, 2015 and 2017 taken together is what percent less than the total production of all types of cars in 2017? (Correct to one decimal place)

- (1) 17.6 (2) 18.4  
 (3) 18.2 (4) 15.8

5. The value of  $5 \div 5$  of  $5 \times 2 + 2 \div 2$  of  $2 \times 5 - (5 - 2) \div 6 \times 2$  is:

- (1)  $\frac{23}{2}$  (2)  $\frac{9}{5}$   
 (3)  $\frac{19}{10}$  (4) 19

6. If  $\cos \theta = \frac{2p}{1+p^2}$ , then  $\tan \theta$  is equal to:

- (1)  $\frac{p^2}{1+p^2}$  (2)  $\frac{1-p^2}{1+p^2}$   
 (3)  $\frac{1-p^2}{2p}$  (3)  $\frac{2p}{1-p^2}$

7. A triangle ABC is inscribed in a circle with centre O. AO is produced to meet the circle at K and  $AD \perp BC$ . If  $\angle B = 80^\circ$  and  $\angle C = 64^\circ$ , then the measure of  $\angle DAK$  is:

- (1)  $10^\circ$  (2)  $20^\circ$   
 (3)  $16^\circ$  (4)  $12^\circ$

8. If  $16x^2 + 9y^2 + 4z^2 = 24(x - y + z) - 61$ , then the value of  $(xy + 2z)$  is:

- (1) 2 (2) 3  
 (3) 5 (4) 1

9. Renu bought an article for ₹ 1,240 and sold it at a loss of 25%. With this amount, she bought another article and sold it at a gain of 40%. Her overall percentage profit is:

- (1) 5 (2) 15

- (4)  $6\frac{2}{3}$  (4) 12

10. The table shows the production of different types of cars (in thousands).

Year \ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	42	48	55



If the data regarding the production of cars of type B is represented by a pie-chart, then the angle of the sector representing the production of cars in 2016 will be:

- (1)  $72^\circ$  (2)  $60^\circ$   
 (3)  $80^\circ$  (4)  $96^\circ$

11. The table shows the production of different types of cars (in thousands).

Year \ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	42	48	55

The ratio of the total production of cars of type C and E taken together in 2013 to the total production of cars of type D in 2014 and 2016 and type E in 2017 taken together is:

- (1) 13 : 32 (2) 8 : 11  
 (3) 8 : 13 (4) 5 : 8

12.  $\Delta ABC$  is similar to  $\Delta DEF$ . The area of  $\Delta ABC$  is  $100 \text{ cm}^2$  and the area of  $\Delta DEF$  is  $49 \text{ cm}^2$ . If the altitude of  $\Delta ABC = 5 \text{ cm}$ , then the corresponding altitude of  $\Delta DEF$  is:

- (1) 7 cm (2) 6 cm  
 (3) 4.5 cm (4) 3.5 cm

13. In  $\Delta ABC$ ,  $AD \perp BC$  and  $BE \perp AC$ .  $AD$  and  $BE$  intersect each other at  $F$ . If  $BF = AC$ , then the measure of  $\angle ABC$  is:

- (1)  $50^\circ$  (2)  $45^\circ$   
 (3)  $60^\circ$  (4)  $70^\circ$

14. The compound interest on a certain sum in  $2\frac{1}{2}$  years at 10% p.a., interest compounded yearly, is ₹1,623. The sum is:

- (1) 7,200 (2) 6,000  
 (3) 6,500 (4) 5,000

15. The marked price of an article is ₹315. It is sold for ₹288. If there is a loss of 4%, then by what percent above the cost is the article marked?

- (1) 5 (2)  $6\frac{1}{2}$   
 (3)  $5\frac{1}{2}$  (4) 8

16. The average weight of a certain number of students in a class is 68.5 kg. If 4 new students having weights 72.2 kg, 70.8 kg, 70.3 kg and 66.7 kg join the class, then the average weight of all the students increases by 300 g. The number of students in the class, initially, is:

- (1) 26 (2) 11  
 (3) 21 (4) 16

17. How much iron sheet (in  $\text{m}^2$ ) will be needed to construct a rectangular tank measuring  $10 \text{ m} \times 8 \text{ m} \times 6 \text{ m}$ , if a circular opening of radius one metre is to be left at the top of the tank? (correct to one decimal place)

- (1) 371.6 (2) 370.4  
 (3) 372.9 (4) 370.8

18. If  $x + y + z = 19$ ,  $xy + yz + zx = 114$ , then the value of

$$\sqrt{x^2 + y^2 + z^2 - 3xyz}$$
 is:

- (1) 19 (2) 17  
 (3) 13 (4) 21

19. Two circles of radii 10 cm and 8 cm intersect at the points  $P$  and  $Q$ . If  $PQ = 12 \text{ cm}$ , and the distance between the centres of the circles is  $x \text{ cm}$ . The value of  $x$  (correct to one decimal place) is:

- (1) 12.8 (2) 14.8  
 (3) 13.3 (4) 13.9

20.  $\left(\frac{\sin \theta - 2\sin^3 \theta}{2\cos^3 \theta - \cos \theta}\right)^2 + 1$ ,  $\theta \neq 45^\circ$ , is equal to:

- (1)  $\operatorname{cosec}^2 \theta$  (2)  $\cot^2 \theta$   
 (3)  $2\tan^2 \theta$  (4)  $\sec^2 \theta$

21. If  $0^\circ < \theta < 90^\circ$  and  $\cos^2 \theta = 3(\cot^2 \theta - \cos^2 \theta)$  then the

value of  $\left(\frac{1}{2} \sec \theta + \sin \theta\right)^{-1}$  is:

- (1)  $2(\sqrt{3} - 1)$  (2)  $2(2 - \sqrt{3})$   
 (3)  $\sqrt{3} + 1$  (4)  $\sqrt{3} + 2$

22. The table shows the production of different types of cars (in thousands).

Year \ Cars	2013	2014	2015	2016	2017
A	35	40	48	50	36
B	39	45	54	60	72
C	52	25	32	54	45
D	50	42	45	46	47
E	36	46	42	48	55



The production of cars of type A in 2015 and of type C in 2013 taken together is approximately what percent of the total production of cars of type D in five years?

- (1) 40.2 (2) 42.4  
(3) 42.8 (4) 43.5

23. If the 8-digit number  $789x531y$  is divisible by 72, then the value of  $(5x - 3y)$  is:

- (1) -1 (2) 1  
(3) 0 (4) 2

24. If  $[8(x+y)^3 - 27(x-y)^3] = (5y-x) = Ax^2 + Bxy + Cy^2$ , then the value of  $(A+B+C)$  is:

- (1) 19 (2) 16  
(3) 13 (4) 26

25. The income of Raju is 20% more than his expenditure. If his income increases by 60% and his expenditure increases by 70%, then by what percent does his savings increase/decrease?

- (1) It decreases by 2%  
(2) It decreases by 10%  
(3) It increases by 10%  
(4) It increases by 2%

**Answers**

1. (4)	2. (4)	3. (2)	4. (1)	5. (3)
6. (3)	7. (3)	8. (3)	9. (2)	10. (3)
11. (3)	12. (4)	13. (2)	14. (2)	15. (1)
16. (4)	17. (3)	18. (1)	19. (3)	20. (4)
21. (2)	22. (4)	23. (1)	24. (2)	25. (3)

**3. CGL Tier-I, 2018**

**Test Time : 4:00 PM - 5:00 PM**

**Test Date : 04/06/2019**

1. if  $(27x^3 - 343y^3) \div (3x - 7y) = Ax^2 + By^2 + 7Cyx$ , then the value of  $(4A - B + 5C)$  is:

- (1) 3 (2) 1  
(3) 0 (4) 2

2. If  $x$  is added to each of 12, 28, 21 and 45, the numbers so obtained, in this order, are in proportion. What is the mean proportional between  $(x + 3)$  and  $(4x + 1)$ ?

- (1) 12 (2) 18  
(3) 10 (4) 15

3. If the 8-digit number  $179x091y$  is divisible by 88, the value of  $(5x - 8y)$  is:

- (1) 9 (2) 4  
(3) 5 (4) 7

4. If  $x + y = 1$  and  $xy(xy - 2) = 12$ , then the value of  $x^4 + y^4$  is:

- (1) 20 (2) 19  
(3) 23 (4) 25

5. Anu allows a 20% discount on the marked price of an article and still makes a profit of 25%. If she gains ₹44.80 on the sale of the article, then the price of the article is:

- (1) 192.80 (2) 184.20  
(3) 179.20 (4) 188.80

6. If  $a^2 + b^2 + 64c^2 + 16c + 3 = 2(a + b)$ , then the value of  $4a^7 + b^7 + 8c^7$  is:

- (1)  $4\frac{1}{8}$  (2)  $4\frac{7}{8}$

- (3)  $5\frac{1}{8}$  (4)  $3\frac{7}{8}$

7. The value of  $2\frac{7}{8} \div \left(3\frac{5}{6} \div \frac{2}{7} \text{ of } 2\frac{1}{3}\right) \times \left[\left(2\frac{6}{7} \text{ of } 4\frac{1}{5} \div \frac{2}{3}\right) \times \frac{5}{9}\right]$

is:

- (1) 4 (2) 5

- (3)  $\frac{1}{23}$  (4)  $\frac{1}{4}$

8. The area of a triangle is 15 sq cm and the radius of its incircle is 3 cm. Its perimeter is equal to:

- (1) 12 cm (2) 10 cm  
(3) 20 cm (4) 5 cm

9. The value of  $\theta$ , when  $\sqrt{3} \cos \theta + \sin \theta = 1$  ( $0^\circ \leq \theta \leq 90^\circ$ ), is:

- (1)  $60^\circ$  (2)  $0^\circ$   
(3)  $30^\circ$  (4)  $90^\circ$

10. The areas of the three adjacent faces of a cuboid are 32 cm<sup>2</sup>, 24 cm<sup>2</sup> and 48 cm<sup>2</sup>, what is the volume of the cuboid?

- (1) 288 cm<sup>3</sup> (2) 192 cm<sup>3</sup>  
(3) 256 cm<sup>3</sup> (4) 128 cm<sup>3</sup>

11. The Table shows the production of different types of cars (in thousand):

Year	2014	2015	2016	2017	2018
Cars					
A	64	56	57	63	70
B	48	54	63	64	72
C	33	42	48	57	64
D	25	45	40	55	35
E	40	48	52	61	60





23. The Table shows the production of different types of cars in thousands).

Year \ Cars	2014	2015	2016	2017	2018
A	64	56	57	63	70
B	48	54	63	64	72
C	33	42	48	57	64
D	25	45	40	55	35
E	40	48	52	61	60

The total production of type D cars during 2015 to 2017 is what percent less than the total production of type E cars during 2014, 2015, 2016 and 2018 taken together?

- (1) 35 (2) 28  
(3) 32 (4) 30

24. A man purchases 100 copies of a book from the publisher and gets a discount of 25%. He buys 50 copies from a retailer at a discount of 10%. He got an overall discount of:

- (1) 17.5% (2) 16.5%  
(3) 20% (4) 35%

25. If  $a^2 + b^2 + c^2 = 21$ , and  $a + b + c = 7$ , then  $(ab + bc + ca)$  is equal to:

- (1) 8 (2) 14  
(3) 12 (4) 28

**Answers**

1. (4)	2. (4)	3. (2)	4. (4)	5. (3)
6. (3)	7. (2)	8. (2)	9. (4)	10. (2)
11. (3)	12. (3)	13. (3)	14. (3)	15. (3)
16. (4)	17. (4)	18. (2)	19. (2)	20. (4)
21. (2)	22. (3)	23. (4)	24. (3)	25. (4)

**4. CGL Tier-I, 2018**

**Test Time : 10:00 AM - 11:00 AM**

**Test Date : 06/06/2019**

1. When  $x$  is subtracted from each of 21, 22, 60 and 64, the numbers so obtained, in this order, are in proportion. What is the mean proportional between  $(x + 1)$  and  $(7x + 8)$ ?

- (1) 18 (2) 21  
(3) 24 (4) 27

2. The value of  $\sqrt{\sec^2 \theta + \operatorname{cosec}^2 \theta} \times \sqrt{\tan^2 \theta - \sin^2 \theta}$  is equal to:

- (1)  $\sin \theta \cos^2 \theta$  (2)  $\sin \theta \sec^2 \theta$   
(3)  $\operatorname{cosec} \theta \sec^2 \theta$  (4)  $\operatorname{cosec} \theta \cos^2 \theta$

3. A sum of ₹ 15,000 is lent at 16% p.a. compound interest. What is the difference between the compound interest for the second year and the third year?

- (1) 544 (2) 454.88  
(3) 445.44 (4) 548

4. The table shows the production of different types of cars by a company (in thousands) in 5 years.

Year \ Cars	A	B	C	L	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70

What is the ratio of the total production of type C cars in 2015 and type D cars in 2017 taken together to the total production of type B cars in 2016 and type A cars in 2017 taken together?

- (1) 11 : 9 (2) 4 : 3  
(3) 12 : 11 (4) 13 : 10

5. The table shows the production of different types of cars by a company (in thousands) in 5 years.

Year \ Cars	A	B	C	D	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70

The total production of type B cars in all the five years is what percent more than the total production of type A, B and D cars in 2017?

- (1) 49.5 (2) 57.3  
(3) 32.2 (4) 47.5

6. If  $12 \cot^2 \theta - 31 \operatorname{cosec} \theta + 32 = 0$ ,  $0^\circ < \theta < 90^\circ$ , then the values of  $\tan \theta$  will be:

- (1)  $\frac{4}{5}, \frac{4}{3}$  (2)  $\frac{4}{5}, \frac{5\sqrt{7}}{7}$

- (3)  $\frac{4}{3}, \frac{3\sqrt{7}}{7}$  (4)  $\frac{5}{4}, \frac{4}{3}$



7. If the 8-digit number  $2074x4y2$  is divisible by 88, then the value of  $(4x + 3y)$  is:  
 (1) 45 (2) 42  
 (3) 36 (4) 49
8. The average of thirteen numbers is 80. The average of the first five numbers is 74.5 and that of the next five numbers is 82.5. The 11th number is 6 more than the 12th number and the 12th number is 6 less than the 13th number. What is the average of the 11th and the 13th numbers?  
 (1) 86 (2) 86.5  
 (3) 87 (4) 87.5
9. ABCD is a cyclic quadrilateral whose diagonals intersect at P. If  $AB = BC$ ,  $\angle DBC = 70^\circ$  and  $\angle BAC = 30^\circ$ , then the measure of  $\angle PCD$  is:  
 (1)  $35^\circ$  (2)  $55^\circ$   
 (3)  $30^\circ$  (4)  $50^\circ$
10. A person sold an article at a loss of 8%. Had he sold it at a gain of 10.5%, he would have received ₹92.50 more. To gain 12%, he should have sold it for:  
 (1) 540.50 (2) 580  
 (3) 537.40 (4) 560
11. If  $x = a + \frac{1}{a}$  and  $y = a - \frac{1}{a}$  then  $\sqrt{x^4 + y^4 - 2x^2y^2}$  is equal to:  
 (1)  $\frac{8}{a^2}$  (2)  $16a^2$   
 (3) 4 (4) 8
12. Pipes A and B can fill a tank in one hour and two hours respectively while pipe C can empty the filled up tank in one hour and fifteen minutes. A and C are turned on together at 9 a.m. After 2 hours, only A is closed and B is turned on. When will the tank be emptied?  
 (1) 12:10 p.m. (2) 11:30 a.m.  
 (3) 12:20 p.m. (4) 10:30 a.m.
13. The income of A is 50% more than that of B. If the income of A is increased by 40% and the income of B is increased by 90%, then the percentage increase in their combined income will be:  
 (1) 55 (2) 60  
 (3) 70 (4) 64
14. ABCD is a trapezium in which  $AB \parallel DC$  and its diagonals intersect at P. If  $AP = (3x-1)$  cm,  $PC = (5x-3)$  cm,  $BP = (2x+1)$  cm and  $PD = (6x-5)$  cm, then the length of DB is:

- (1) 14 cm (2) 10 cm  
 (3) 16 cm (4) 12 cm
15. The value of  $(5 + 3 \div 5 \times 5) \div (3 \div 3 \text{ of } 6)$  of  $(4 \times 4 \div 4 \text{ of } 4 + 4 \div 4 \times 4)$  is:  
 (1)  $8\frac{1}{5}$  (2)  $7\frac{1}{3}$   
 (3)  $6\frac{2}{3}$  (4)  $9\frac{3}{5}$

16. The table shows the production of different types of cars by a company in thousands) in 5 years.

Cars \ Year	A	B	C	D	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70

If the data related to the production of cars in 2018 is represented by pie chart, then the central angle of the sector representing the production of type C cars will be:

- (1)  $91^\circ$  (2)  $93^\circ$   
 (3)  $72^\circ$  (4)  $59^\circ$

17.  $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = ?$

- (1)  $\sec \theta - \tan \theta$  (2)  $\sec \theta \sin \theta$   
 (3)  $\sec \theta \tan \theta$  (4)  $\sec \theta + \tan \theta$

18. The volume of a metallic cylindrical pipe is  $7480 \text{ cm}^3$ . If its length is 1.4 m and its external radius is 9 cm, then its thickness (given  $\pi = \frac{22}{7}$ ) is:

- (1) 0.9 cm (2) 1 cm  
 (3) 1.2 cm (4) 0.8 cm

19. The table shows the production of different types of cars by a company in thousands) in 5 years.

Cars \ Year	A	B	C	D	E
2014	52	54	48	46	64
2015	47	45	53	50	45
2016	48	47	56	54	65
2017	43	50	57	67	63
2018	38	40	54	68	70



The average production of type D cars in 5 years is what percent less than the production of type E cars in 2018? (Correct to one decimal place)

- (1) 16.8 (2) 18.6  
(3) 17.4 (4) 15.9

20. A shopkeeper marks his goods at 40% more than their cost price and allows a discount of 25% on the marked price. His gain or loss percent is:

- (1) 15% gain (2) 5% loss  
(3) 10% loss (4) 5% gain

21. A circle is inscribed in  $\Delta ABC$ , touching AB at P, BC at Q and AC at R. If AR = 5 cm, RC = 6 cm and AB = 12 cm, then the perimeter of  $\Delta ABC$  is:

- (1) 37 cm (2) 40 cm  
(3) 32 cm (4) 36 cm

22. A and B are travelling towards each other from the points P and Q respectively. After crossing each other, A and B

take  $6\frac{1}{8}$  hours and 8 hours, respectively, to reach their destinations Q and P, respectively. If the speed of B is 16.8 km/h, then the speed (in km/h) of A is:

- (1) 19.2 (2) 20.4  
(3) 19.8 (4) 20.8

23. If  $ab + bc + ca = 8$  and  $a^2 + b^2 + c^2 = 20$ , then a possible

value of  $\frac{1}{2}(a+b+c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$  is:

- (1) 84 (2) 72  
(3) 56 (4) 80

24. If  $(8x^3 - 27y^3) \div (2x - 3y) = (Ax^2 + Bxy + Cy^2)$ , then the value of  $(2A+B-C)$  is:

- (1) 6 (2) 5  
(3) 3 (4) 4

25. G is the centroid of the triangle ABC, where AB, BC and CA are 7 cm, 24 cm and 25 cm respectively, then BG is:

- (1)  $8\frac{1}{3}$  cm (2)  $6\frac{1}{3}$  cm  
(3)  $5\frac{1}{2}$  cm (4)  $4\frac{1}{6}$  cm

### Answers

1. (3)	2. (2)	3. (3)	4. (2)	5. (4)
6. (3)	7. (1)	8. (3)	9. (4)	10. (4)
11. (3)	12. (3)	13. (2)	14. (4)	15. (4)
16. (3)	17. (4)	18. (2)	19. (2)	20. (4)
21. (4)	22. (1)	23. (2)	24. (2)	25. (1)

## 5. CGL Tier-I, 2018

Test Time : 1:00 PM - 2:00 PM

Test Date : 06/06/2019

1. Abhi bought two articles for ₹ 624. He sold one at a loss of 14% and the other at a profit of 14%. If the selling price of both the articles is equal, then the difference between their cost prices (in ₹) is:

- (1) 87.36 (2) 89.64  
(3) 89.68 (4) 88.84

2. The vertices of a  $\Delta PQR$  lie on a circle with centre O. SR is a tangent to the circle at the point R. If QR bisects the  $\angle ORS$ , then what is the measure of  $\angle RPQ$ ?

- (1)  $30^\circ$  (2)  $60^\circ$   
(3)  $40^\circ$  (4)  $45^\circ$

3. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	54	58	60	63	55
B	40	54	56	61	67
C	46	50	63	73	77
D	33	35	48	45	49
E	47	43	53	48	52

The total production of type E cars in 2012 and 2013 is approximately what percent more than the average production of type A cars during the years 2012 to 2016?

- (1) 52.2 (2) 55.2  
(3) 56.4 (4) 53.8

4. A trader marks his goods at 40% above the cost price. He sells 70% of the goods at the marked price and the rest, he sells by allowing a 40% discount on the marked price. His percentage profit is:

- (1) 23.4 (2) 24.2  
(3) 24.4 (4) 23.2

5. If  $2x^2 + y^2 + 6x - 2xy + 9 = 0$ , then the value of  $(4x^3 - y^3 + x^2y^2)$  is:

- (1) 0 (2) -3  
(3) 9 (4) -9

6. If  $\frac{\cos^2 \theta}{\cot^2 \theta - \cos^2 \theta} = 3, 0^\circ < \theta < 90^\circ$ , then the value of  $\cot \theta + \operatorname{cosec} \theta$  is:

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



7. The length of a metallic pipe is 7.56 m. Its external and internal radii are 2.5 cm and 1.5 cm respectively. If 1 cm<sup>3</sup> the metal weigh 7.5 g, then the weight of the pipe is:  
(Take  $\pi = \frac{22}{7}$ )
- (1) 70.14 kg (2) 71.28 kg  
(3) 72.82 kg (4) 69.68 kg
8. If  $x + y = 12$  and  $xy = 27$ ,  $x > y$ , then the value of  $(x^3 - y^3)$  is:  
(1) 724 (2) 710  
(3) 720 (4) 702
9. The average of twelve numbers is 46. The average of the first four numbers is 43 and that of the last five numbers is 49.4. The 5th and the 6th numbers are respectively 4 and 6 more than the 7th number. What is the average of the 5th and the 7th numbers?  
(1) 43.5 (2) 44  
(3) 43 (4) 44.5
10. If a 9-digit number  $32x4115y2$  is divisible by 88, then the value of  $(4x - y)$  for the smallest possible value of  $y$  is:  
(1) 31 (2) -1  
(3) 11 (4) 20
11. If  $\theta = 4 \cos \theta$ , then what is the value of  $\sin \theta \cos \theta$  ?  
(1)  $\frac{2}{9}$  (2)  $\frac{4}{17}$   
(3)  $\frac{3}{10}$  (4)  $\frac{3}{4}$
12. If  $x^2 + y^2 + z^2 = 133$ ,  $xy + yz + zx = 114$  and  $xyz = 216$ , then the value of  $x^3 + y^3 + z^3$  is:  
(1) 942 (2) 1009  
(3) 999 (4) 948
13. The ratio of the present ages of A and B is 8 : 9. After 9 years, this ratio will become 19 : 21. C is 3 years younger to B. What is the present age (in years) of C?  
(1) 49 (2) 48  
(3) 52 (4) 51
14. In a circle with centre O, ACBO is a parallelogram where is C a point on the minor arc AB. What is the measure of  $\angle AOB$ ?  
(1) 110° (2) 120°  
(3) 100° (4) 150°
15. What is the compound interest on a sum of ₹10,000 at 14% p.a. for  $2\frac{5}{7}$  years where the interest is compounded yearly? (nearest to ₹1)  
(1) 4,439 (2) 4,394  
(3) 4,259 (4) 4,296
16. When the price of an item was reduced by 20%, then its sale increased by  $x\%$ . If there is an increase of 60% in the receipt of the revenue, then the value of  $x$  is:  
(1) 96 (2) 80  
(3) 120 (4) 100
17. The efficiencies of A, B and C are in the ratio 5 : 3 : 8. Working together they can complete a work in 30 days. A and B worked together for 20 days. The remaining work will be completed by C alone in:  
(1) 30 days (2) 40 days  
(3) 36 days (4) 32 days
18. In  $\Delta ABC$  with sides 6 cm, 7 cm and 8 cm, the angle bisector of the largest angle divides the opposite side into two segments. What is the length of the shorter segment?  
(1)  $\frac{24}{5}$  cm (2)  $\frac{21}{5}$  cm  
(3)  $\frac{48}{13}$  cm (4)  $\frac{56}{13}$  cm
19. ABDC is a parallelogram in which diagonals AD and BC intersect at O. AE and DF are perpendiculars on BC at E and F respectively. Which of the following is NOT true?  
(1)  $\Delta ABC \cong \Delta DCB$  (2)  $\Delta AOE \cong \Delta DOF$   
(3)  $\Delta AEB \cong \Delta DFC$  (4)  $\Delta ADC \cong \Delta ABD$
20. The distance between two stations A and B is 800 km. A train X starts from A and moves towards B at 40 km/h and another train Y starts from B and moves towards A at 60 km/h. How far from A will they cross each other?  
(1) 320 km (2) 360 km  
(3) 300 km (4) 380 km
21. The value of  $\frac{9}{15}$  of  $\left(\frac{2}{3} \div \frac{2}{3}$  of  $\frac{3}{2}\right) \div \left(\frac{3}{4} \times \frac{3}{4} \div \frac{3}{4}$  of  $\frac{4}{3}\right)$  of  $\left(\frac{5}{4} \div \frac{5}{2} \times \frac{2}{5}$  of  $\frac{4}{5}\right)$  is:  
(1)  $\frac{18}{125}$  (2)  $\frac{4}{25}$   
(3)  $\frac{20}{9}$  (4)  $\frac{40}{9}$



22. Let  $a = \frac{2\sin x}{1 + \sin x + \cos x}$  and  $b = \frac{c}{1 + \sin x}$ . Then  $a = b$ , if  $c = ?$
- (1)  $1 + \sin x - \cos x$
  - (2)  $1 + \cos x - \sin x$
  - (3)  $1 + \sin x \cos x$
  - (4)  $1 - \sin x \cos x$

23. The table shows the production of different types of cars in thousands).

Year Cars	2012	2013	2014	2015	2016
A	54	58	60	63	55
B	40	54	56	61	67
C	46	50	63	73	77
D	33	35	48	45	49
E	47	43	53	48	52

If the data related to the production of type D cars is represented by a pie chart, then the central angle of the sector representing the production of cars in 2013 will be:

- (1)  $84^\circ$
  - (2)  $60^\circ$
  - (3)  $77^\circ$
  - (4)  $75^\circ$
24. The table shows the production of different types of cars (in thousands).

Year	2012	2013	2014	2015	2016
Cars					
A	54	58	60	63	55
B	40	54	56	61	67
C	46	50	63	73	77
D	33	35	48	45	49
E	47	43	53	48	52

The total production of all type of cars, except type B, in 2012 is what percent less than the total production of all types of cars in 2016?

- (1) 26.7
  - (2) 42
  - (3) 25.8
  - (4) 40
25. The table shows the production of different types of cars (in thousands).

Year Cars	2012	2013	2014	2015	2016
A	54	58	60	63	55
B	40	54	56	61	67
C	46	50	63	73	77
D	33	35	48	45	49
E	47	43	53	48	52

What is the ratio of the total production of type E cars in 2014 and type C cars in 2016 taken together to the total production of type B cars in 2014 and type D cars in 2013 taken together?

- (1) 10:7
- (2) 11:5
- (3) 11:8
- (4) 9:8

### Answers

1. (1)	2. (4)	3. (2)	4. (4)	5. (1)
6. (3)	7. (2)	8. (4)	9. (3)	10. (2)
11. (2)	12. (2)	13. (4)	14. (2)	15. (4)
16. (4)	17. (2)	18. (3)	19. (4)	20. (1)
21. (4)	22. (1)	23. (2)	24. (4)	25. (1)

### 6. CGL Tier-I, 2018

Test Time : 4:00 PM - 5:00 PM

Test Date : 06/06/2019

1. If a 10-digit number  $2094x843y2$  is divisible by 88, then the value of  $(5x-7y)$  for the largest possible value of  $x$ , is:
  - (1) 6
  - (2) 2
  - (3) 3
  - (4) 5
2.  $\left( \frac{1}{1 + \sin^2 \theta} + \frac{1}{1 + \cos^2 \theta} \right) =$ 
  - (1) 1
  - (2)  $\operatorname{cosec} \theta$
  - (3)  $\sin^2 \theta$
  - (4) 2
3. If  $3\sqrt{3}x^3 - 2\sqrt{2}y^3 = (\sqrt{3}x - \sqrt{2}y)(Ax^2 + By^2 + Cxy)$ , then the value of  $(A \times B) \div C$  is:
  - (1)  $6\sqrt{6}$
  - (2)  $\sqrt{3}$
  - (3)  $6\sqrt{3}$
  - (4)  $\sqrt{6}$
4. If  $\frac{\cos \theta}{1 - \sin \theta} + \frac{\cos \theta}{1 + \sin \theta} = 4$ ,  $0^\circ < \theta < 90^\circ$ , then the value of  $(\tan \theta + \operatorname{cosec} \theta)$  is:
  - (1)  $\frac{5\sqrt{2}}{2}$
  - (2)  $\frac{5\sqrt{3}}{3}$
  - (3)  $\frac{4\sqrt{3}}{3}$
  - (4)  $\frac{5\sqrt{2}}{3}$



5. In  $\Delta ACE$ , B and D are the points on side AC and CE, respectively, such that  $BD \parallel AE$  and  $AE = \frac{8}{3} BD$ . What is the ratio of the area of  $\Delta BDC$  to that of  $\Delta AEC$ ?
- (1) 9 : 64                      (2) 9 : 16  
(3) 3 : 8                        (4) 8 : 11
6. Sudha saves 15% of her income. If her expenditure increases by 20% and savings increase by 60%, then by what percent has her income increased?
- (1) 35                              (2) 24  
(3) 26                              (4) 30
7. To do a certain work, the ratio of the efficiencies of A, B and C is 7 : 5 : 6. Working together, they can complete the same work in 35 days. B and C work together for 21 days. The remaining work will be completed by A alone in:
- (1) 54 days                      (2) 50 days  
(3) 57 days                      (4) 60 days
8. The value of  $16 \div 4$  of  $4 \times [3 \div 4$  of  $\{4 \times 3 \div (3+3)\}] \div (2 \div 4$  of 8) is:
- (1) 9                                (2) 6  
(3) 48                              (4) 16
9. A train travelling at 44 km/h crosses a man walking with a speed of 8 km/h, in the same direction, in 15 seconds. If the train crosses a woman coming from the opposite direction in 10 seconds, then what is the speed (in km/h) of the woman?
- (1) 10.5                          (2) 8.5  
(3) 9                                (4) 10
10. In  $\Delta ABC$ , D is a point on AC such that  $AB = BD = DC$ . If  $\angle BAD = 70^\circ$ , then the measure of  $\angle B$  is:
- (1)  $70^\circ$                           (2)  $82^\circ$   
(3)  $75^\circ$                           (4)  $80^\circ$
11. The area of a  $\Delta ABC$  is one unit. DE is a straight line parallel to BC, joining the points D and E on AB and AC respectively such that  $AD : DB = 1 : 6$ . The ratio of the areas of the triangles ADE and ABC is:
- (1) 1 : 36                          (2) 1 : 6  
(3) 1 : 49                          (4) 1 : 7
12. The table shows the production of different types of cars (in thousands).

Year Cars	2013	2014	2015	2016	2017
A	48	47	50	61	64
B	47	55	58	54	66
C	52	58	62	66	72
D	60	53	56	65	66
E	43	47	54	64	62

The total production of type B cars in 2015 and type C cars in 2013 is what percent more than the total production of type E cars in 2013 and 2014? (Correct to one decimal place)

- (1) 24.8                              (2) 23.4  
(3) 25.6                              (4) 22.2
13. If  $a + b + c = 2$ ,  $a^2 + b^2 + c^2 = 26$ . then the value of  $a^3 + b^3 + c^3 - 3abc$  is:
- (1) 78                                (2) 71  
(3) 74                                (4) 69
14. If  $(1 + \tan^2 \theta) + (1 + (\tan^2 \theta)^{-1}) = k$ , then  $\sqrt{k} = ?$
- (1)  $\sin \theta \sec \theta$                       (2)  $\operatorname{cosec} \theta \sec \theta$   
(3)  $\operatorname{cosec} \theta \cos \theta$                       (4)  $\sin \theta \cos \theta$
15. The table shows the production of different types of cars (in thousands).
- | Year<br>Cars | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------|------|------|------|------|------|
| A            | 48   | 47   | 50   | 61   | 64   |
| B            | 47   | 55   | 58   | 54   | 66   |
| C            | 52   | 58   | 62   | 66   | 72   |
| D            | 60   | 53   | 56   | 65   | 66   |
| E            | 43   | 47   | 54   | 64   | 62   |
- The ratio of the total production of type A cars in 2017 and type D cars in 2015 to the total production of type B and type E cars in 2013 is:
- (1) 4 : 3                              (2) 3 : 4  
(3) 8 : 7                              (4) 7 : 8
16. PQRS is a cyclic quadrilateral. If angle P is three times the angle R and angle S is five times the angle Q, then the sum of the angles Q and R is:
- (1)  $72^\circ$                               (2)  $75^\circ$   
(3)  $70^\circ$                               (4)  $65^\circ$
17. The value of  $\frac{1}{\sin \theta} - \frac{\cot^2 \theta}{1 + \operatorname{cosec} \theta}$  is:
- (1) 0                                (2) -1  
(3) 1                                (4) 2



18. The average of eleven numbers is 54. The average of the first four numbers is 48 and that of the next four numbers is 25% more than the average of the first four. The ninth number is 8 greater than the 11th number and the tenth number is 4 greater than the 11th number. What is the average of the 9th and the 10th numbers?

- (1) 54 (2) 52.6  
(3) 56 (4) 54.4

19. The table shows the production of different types of cars (in thousands).

Year \ Cars	2013	2014	2015	2016	2017
A	48	47	50	61	64
B	47	55	58	54	66
C	52	58	62	66	72
D	60	53	56	65	66
E	43	47	54	64	62

If the data related to the production of type D cars is represented by a pie-chart, then the central angle of the sector representing the production of the cars in 2016 will be:

- (1)  $78^\circ$  (2)  $67.2^\circ$   
(3)  $72^\circ$  (4)  $79.2^\circ$

20. If  $a + \frac{1}{a} = 3$ , then  $\left(a^4 + \frac{1}{a^4}\right)$  is equal to:

- (1) 77 (2) 81  
(3) 47 (4) 27

21. The radii of three concentric circles are in the ratio of 4 : 5 : 7. What is the ratio of the area between the two inner circles to that between the two outer circles?

- (1) 3 : 8 (2) 4 : 5  
(3) 4 : 7 (4) 5 : 9

22. In a circle with center O and radius 10 cm, PQ and RS are two parallel chords of lengths x cm and 12 cm, respectively, and both the chords are on the opposite side of O. If the distance between PQ and RS is 14 cm, the value of x is:

- (1) 18 (2) 20  
(3) 15 (4) 16

23. The table shows the production of different types of cars (in thousands).

Year \ Cars	2013	2014	2015	2016	2017
A	48	47	50	61	64
B	47	55	58	54	66
C	52	58	62	66	72
D	60	53	56	65	66
E	43	47	54	64	62

The total production of type B cars during 2013 to 2016 is approximately what percent less than the total production of cars in 2017?

- (1) 40% (2) 38%  
(3) 32% (4) 35%

24. A person borrowed a certain sum at 10% p.a. for three years, interest being compounded annually. At the end of two years, he repaid a sum of ₹6,634 and at the end of the third year, he cleared off the debt by paying ₹13,200. What was the sum borrowed by him?

- (1) 15,400 (2) 316,500  
(3) 16,400 (4) 15,600

25. Some fruits are bought at a rate of 11 for ₹100 and an equal number at a rate of 9 for ₹1100. If all the fruits are sold at a rate of 10 for ₹100, then what is the gain or loss percent in the entire transaction?

- (1) Loss, 5% (2) Loss, 1%  
(3) Gain, 1% (4) Gain, 5%

### Answers

1. (4)	2. (1)	3. (4)	4. (2)	5. (1)
6. (3)	7. (3)	8. (2)	9. (4)	10. (3)
11. (3)	12. (4)	13. (3)	14. (2)	15. (1)
16. (2)	17. (3)	18. (3)	19. (1)	20. (3)
21. (1)	22. (4)	23. (4)	24. (1)	25. (2)

### 7. CGL Tier-I, 2018

Test Time : 10:00 AM - 11:00 AM

Test Date : 07/06/2019

1. AB is a diameter of a circle with centre O. CB is a tangent to the circle at B. AC intersects the circle at G. If the radius of the circle is 6 cm and AG = 8 cm, then the length of BC is:

- (1)  $6\sqrt{5}$  cm (2)  $2\sqrt{5}$  cm  
(3)  $2\sqrt{6}$  cm (4)  $6\sqrt{6}$  cm

2. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	46	48	56	57	64
B	54	61	63	60	70
C	44	45	67	63	76
D	46	49	57	55	72
E	48	55	64	65	68



The total production of type E cars in 2015 and type C cars in 2013 taken together is what percent of the total production of type A cars and type D cars taken together during 2012 to 2016?

- (1) 20% (2) 21.4%  
 (3) 21.8% (4) 22%

3. If  $\cot \theta = \sqrt{7}$ , then the value of  $\frac{\operatorname{cosec}^2 \theta - \sec^2 \theta}{\operatorname{cosec}^2 \theta - \sec^2 \theta}$  is :

- (1)  $\frac{3}{4}$  (2)  $\frac{7}{9}$   
 (3)  $\frac{8}{9}$  (4)  $\frac{2}{3}$

4. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	46	48	56	57	64
B	54	61	63	60	70
C	44	45	67	63	76
D	46	49	57	55	72
E	48	55	64	65	68

The ratio of the total production of type A cars in 2014 and 2016 and type C cars in 2013 taken together to the total production of type B cars and type D cars taken together in 2014 is:

- (1) 4 : 3 (2) 9 : 8  
 (3) 11 : 8 (4) 17 : 12

5. If a 10-digit number  $1330x558y2$  is divisible by 88, then the value of  $(x + y)$  is:

- (1) 9 (2) 7  
 (3) 6 (4) 8

6. The sides of  $\triangle ABC$  are extended to P and Q respectively. If the bisectors of  $\angle PBC$  and  $\angle QCB$  intersect at O, and  $\angle A = 92^\circ$ , then  $\angle BOC$  is equal to:

- (1)  $44^\circ$  (2)  $88^\circ$   
 (3)  $46^\circ$  (4)  $42^\circ$

7. Three numbers are such that if the average of any two of them is added to the third number, the sums obtained are 164, 158 and 132 respectively. What is the average of the original three numbers?

- (1)  $75\frac{2}{3}$  (2)  $75\frac{1}{3}$   
 (3) 76 (4) 74

8. A sum amounts ₹18,600 after 3 years and to ₹27,900 after 6 years, at a certain rate percent p.a. when the interest is compounded annually. The sum is :

- (1) 11,800 (2) 12,400  
 (3) 14,400 (4) 14,600

9. A boat can cover a distance of 7.2 km downstream and 3.2 km upstream in 2 hours. It can also cover 1.5 km downstream and 0.6 km upstream in 24 minutes. What is the speed of the boat when going downstream (in km h)?

- (1) 5 (2)  $4\frac{1}{2}$   
 (3) 6 (4)  $7\frac{1}{2}$

10. If  $x = 2 - p$ , then  $x^3 + 6xp + p^3$  is equal to:

- (1) 4 (2) 6  
 (3) 8 (4) 12

11. The ratio of the efficiencies of A, B and C is 7:5:8. Working together, they can complete a piece of work in 42 days. B and C worked together for 21 days and the remaining work was completed by A alone. The whole work was completed in:

- (1) 102 days (2) 93 days  
 (3) 99 days (4) 96 days

12. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	46	48	56	57	64
B	54	61	63	60	70
C	44	45	67	63	76
D	46	49	57	55	72
E	48	55	64	65	68

The average production of type C cars during 2012 to 2016 is approximately what percent less than the total production of type D cars in 2012 and type E cars in 2014?

- (1) 42.8% (2) 46.4%  
 (3) 48.6% (4) 49.2%

13. If  $(x^3 - 2\sqrt{2}y^3) \div (x - \sqrt{2}y) = (Ax^2 + Bxy + Cy^2)$  then,  $(2A + 4\sqrt{2}B - 4C) = ?$

- (1) 0 (2) 4  
 (3) 2 (4) 1







12. If  $(135\sqrt{5}x^3 - 2\sqrt{2}y^3) \div (3\sqrt{5}x - \sqrt{2}y) =$

$Ax^2 + By^2 + \sqrt{10}Cxy$  then the value of  $(A + B - 9C)$  is:

- (1) 20 (2) 10  
(3) 18 (4) 12

13. The table shows the production of different types of cars (in thousands).

Year \ Cars	2010	2011	2012	2013	2014
A	46	69	61	57	63
B	40	56	52	68	64
C	54	55	45	60	56
D	42	53	44	56	65
E	68	67	61	64	72

What is the ratio of the total production of type B cars in 2011 and type E cars in 2013 taken together to the total production of type C cars in 2014 and type D cars in 2012 taken together?

- (1) 6:5 (2) 8:9  
(3) 16:11 (4) 5:6

14. The total number of students in section A and B of a class is 110. The number of students in section A is 10 more than that of section B. The average score of the students in B, in a test, is 20% more than that of students in A. If the average score of all the students in the class is 72, then what is the average score of the students in A?

- (1) 66 (2) 70  
(3) 63 (4) 68

15. A person sold 25 articles for 2,500 and incurred a loss of 10%. How many articles should he sell for 2,400 to make a profit of 20%?

- (1) 15 (2) 16  
(3) 18 (4) 20

16. ABCD is a quadrilateral whose side AB is the diameter of a circle through A, B, C and D. If  $\angle ADC = 130^\circ$ , then the measure of  $\angle BAC$  is:

- (1)  $40^\circ$  (2)  $50^\circ$   
(3)  $45^\circ$  (4)  $35^\circ$

17. To do a certain work, A and B work on alternate days, with B beginning the work on the first day. A can finish the work alone in 48 days. If the work gets completed in

$11\frac{1}{3}$  days, then B alone can finish 4 times the same work

in:

- (1) 30 days (2) 27 days  
(3) 24 days (4) 32 days

18. If  $\cos^2 \theta - 3\cos \theta + 2 = \sin^2 \theta, 0^\circ < \theta < 90^\circ$ , then the value of  $2 \operatorname{cosec} \theta + 4 \cot \theta$  is:

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

- (3)  $\frac{8\sqrt{3}}{3}$  (4)  $2\sqrt{3}$

19. The area of field in the shape of a triangle with each side  $x$  metres is equal to the area to another triangular field having sides 50 m, 70 m and 80 m. The value of  $x$  is closest to :

- (1) 65.5 (2) 62.4  
(3) 61.8 (4) 63.2

20. A person can row a distance of 4 km upstream in one hour 20 minutes and can row back to the starting point in just 24 minutes. How much time (in hours) will he take to row 13 km in still water?

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

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

21. In a circle of radius 10 cm and O, PQ and PR are two equal chords, each of length 12 cm. What is the length (in cm) of chord QR?

- (1) 20.4 (2) 18.6  
(3) 19.2 (4) 18.4

22. A sum of ₹ $x$  was borrowed and paid back in two equal instalments, each of ₹35,280. If the rate of interest was 5%, compounded annually, then the value of  $x$  is :

- (1) 64,400 (2) 65,400  
(3) 65,600 (4) 64,800

23. In  $\triangle ABC$ ,  $\angle A$  is a right angle. The lengths of AC and BC are 6 cm and 10 cm respectively. Point D is on AB such that  $BD = 4$  cm. What is the length of CD?

- (1)  $3\sqrt{10}$  cm (2)  $2\sqrt{10}$  cm

- (3)  $2\sqrt{13}$  cm (4)  $3\sqrt{13}$  cm

24. The table shows the production of different types of cars (in thousands).

Year \ Cars	2010	2011	2012	2013	2014
A	46	69	61	57	63
B	40	56	52	68	64
C	54	55	45	60	56
D	42	53	44	56	65
E	68	67	61	64	72



The total production of type A cars in 2011, and type C cars and type E cars in 2012 taken together is what percent of the total production of type B cars during 2010 to 2014?

- (1) 62.5% (2) 58.8%  
 (3) 60.4% (4) 54.7%

25. A is 20% less than B while C is 20% more than D. If D is 25% less than A, then which of the following is true?

- (1)  $B=0.675 C$  (2)  $C=0.72 B$   
 (3)  $C=0.675 B$  (4)  $B=0.72 C$

**Answers**

1. (2)	2. (1)	3. (1)	4. (2)	5. (2)
6. (4)	7. (2)	8. (2)	9. (1)	10. (4)
11. (4)	12. (1)	13. (1)	14. (1)	15. (3)
16. (1)	17. (2)	18. (3)	19. (4)	20. (3)
21. (3)	22. (3)	23. (3)	24. (1)	25. (2)

**9. CGL Tier-I, 2018**

**Test Time : 4:00 PM - 5:00 PM**

**Test Date : 07/06/2019**

1. If  $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + k$ , then  $k = \dots\dots\dots$

- (1)  $\tan \theta + \sec \theta$   
 (2)  $\operatorname{cosec} \theta \sec \theta$   
 (3)  $\tan \theta \operatorname{cosec} \theta$   
 (4)  $\cot \theta + \sec \theta$

2. A person sells an article at a profit of 12%. If he had purchased it for 12% less and sold it for ₹9 less, he would have gained 27%. What is the original cost price of the article?

- (1) 4,000 (2) 4,250  
 (3) 4,500 (4) 3,750

3. Surbhi spends 75% of her income. If her income increases by 20% and savings decrease by 1%, then the percentage increase in her expenditure is:

- (1) 2.2 (2) 2.7  
 (3) 27 (4) 22

4. If  $(8x^3 + 27y^3) = (2x + 3y)(Ax^2 + Bxy + Cy^2)$ , then the value of  $(5A + 4B + 3C)$  is:

- (1) 24 (2) 23  
 (3) 27 (4) 26

5. In  $\Delta ABC$ ,  $AM \perp BC$  and  $AN$  is the bisector of  $\angle A$ . What is the measure of  $\angle MAN$ , if  $\angle B = 55^\circ$  and  $\angle C = 35^\circ$ ?

- (1)  $15^\circ$  (2)  $10^\circ$   
 (3)  $12^\circ$  (4)  $5^\circ$

6. The base and altitude of an isosceles triangle are 10 cm and 12 cm respectively. Then the length of each equal side is:

- (1) 13 cm (2) 10 cm  
 (3) 7.5 cm (4) 8.5 cm

7. In a circle with centre O, PQR is a tangent at the point Q on it. AB is a chord in the circle parallel to the tangent such that  $\angle BQR = 70^\circ$ . What is the measure of  $\angle AQB$ ?

- (1)  $35^\circ$  (2)  $60^\circ$   
 (3)  $55^\circ$  (4)  $40^\circ$

8. What is the compound interest on a sum of ₹8,100 for  $1\frac{1}{4}$  years at 8% per annum, if the interest is compounded 5 monthly? (Nearest to ₹1)

- (1) 842 (2) 837  
 (3) 873 (4) 824

9. Four different positive numbers are written in ascending order. One-third of the average of all the four numbers is 19 less than the greatest of these numbers. If the average of the first three numbers is 12, the greatest number among the given numbers is:

- (1) 21 (2) 25  
 (3) 24 (4) 22

10. By how much above the cost price should an article be marked up for sale so that after allowing two successive discounts of 20% and 6.25% on it, a net gain of 20% is made on the cost?

- (1) 50% (2)  $66\frac{2}{3}\%$   
 (3) 60% (4)  $46\frac{1}{4}\%$

11. The value of  $\sin^2 30^\circ \cos^2 45^\circ + 4 \tan^2 30^\circ + \frac{1}{2} \sin^2 90^\circ + 2 \cos 90^\circ$  is:

- (1) 2 (2)  $\frac{47}{24}$   
 (3)  $\frac{15}{8}$  (4)  $\frac{23}{12}$



12. If  $\frac{1}{\operatorname{cosec}\theta - 1} + \frac{1}{\operatorname{cosec}\theta + 1} = 2 \sec \theta$ ,  $0^\circ < \theta < 90^\circ$ , then the value of  $(\cot \theta + \cos \theta)$  is :

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

13. The table shows the production of different types of cars (in thousands).

Year \ Cars	2014	2015	2016	2017	2018
A	42	53	44	66	65
B	46	49	57	64	72
C	54	45	45	50	56
D	48	56	63	65	68
E	46	48	56	57	64

What is the ratio of the total production of type A cars in 2017 and type C cars in 2014 taken together to the total production of type B cars in 2014, type C cars in 2017 and type E cars in 2018 taken together?

- (1) 12:11                      (2) 3:4  
 (3) 2:3                      (4) 5:6

14. A sum of ₹x is divided among A, B and C such that the ratio of shares of A and B is 7 : 12 and that of B and C is 8:5. If the difference in the shares of A and C is ₹214, then the value of x is:

- (1) 11,770                      (2) 11,128  
 (3) 11,556                      (4) 11,342

15. The ratio of the efficiencies of A, B and C is 3 : 5 : 1. Working together, they can complete a piece of work in 5 days. A and B work together for 3 days. The remaining work will be completed by C alone in?

- (1) 21 days                      (2) 18 days  
 (3) 15 days                      (4) 24 days

16. If 10-digit number  $67127y76x2$  is divisible by 88, then the value of  $(7x - 2y)$  is:

- (1) 3                      (2) 10  
 (3) 5                      (4) 7

17. A journey of 96 km takes one hour less by a fast train (A) than by a slow train (B). If the average speed of B is 16 km/h less than that of A, then the average speed (in km/h) of A is:

- (1) 64                      (2) 60  
 (3) 54                      (4) 48

18. If  $\frac{6x}{(2x^2 + 5x - 2)} = 1$ ,  $x > 0$ , then the value of  $x^3 + \frac{1}{x^3}$  is:

- (1)  $\frac{3}{4}\sqrt{17}$                       (2)  $\frac{5\sqrt{17}}{16}$   
 (3)  $\frac{5\sqrt{17}}{8}$                       (4)  $\frac{3}{8}\sqrt{17}$

19. A cylindrical road roller made of metal is one meter long. Its inner radius is 27 cm and the thickness of the metal sheet rolled into it is 9 cm. What is the weight of the roller, if 1 cm of the metal weighs 8 g?

- (1)  $442.4\pi$  kg                      (2)  $441\pi$  kg  
 (3)  $449\pi$  kg                      (4)  $453.6\pi$  kg

20.  $\left(\frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ}\right) =$

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

21. The table shows the production of different types of cars (in thousands).

Year \ Cars	2014	2015	2016	2017	2018
A	42	53	44	66	65
B	46	49	57	64	72
C	54	45	45	50	56
D	48	56	63	65	68
E	46	48	56	57	64

If the data related to the production of type D cars is represented by a pie-chart, then the central angle of the sector representing the production of cars in 2017 will be:

- (1)  $81.6^\circ$                       (2)  $50^\circ$   
 (3)  $75.6^\circ$                       (4)  $78^\circ$

22. The table shows the production of different types of cars (in thousands).

Year \ Cars	2014	2015	2016	2017	2018
A	42	53	44	66	65
B	46	49	57	64	72
C	54	45	45	50	56
D	48	56	63	65	68
E	46	48	56	57	64



The average production of cars in 2018 is approximately what percent less than the total production of type D cars in 2015 and type B cars in 2017 taken together?

- (1) 44.2%
- (2) 43.6%
- (3) 42.4%
- (4) 45.8%

23. Two chords AB and CD of lengths 5 cm and 11 cm respectively are parallel and are on the same side of the centre O of a circle. If the distance between the chords is 3 cm, then what is the diameter of the circle?

- (1)  $\sqrt{146}$  cm
- (2) 37 cm
- (3) 38 cm
- (4)  $\sqrt{142}$  cm

24. The value of  $6 - 6 \div 6 \times 6 + (6 \div 6 \text{ of } 6) \times 6 -$

$\left(3\frac{2}{3} \div \frac{11}{30} \text{ of } \frac{2}{3}\right) \div 5$  is :

- (1) -2
- (2) 2
- (3) 0
- (4) -1

25. The table shows the production of different types of cars (in thousands).

Year \ Cars	2014	2015	2016	2017	2018
A	42	53	44	66	65
B	46	49	57	64	72
C	54	45	45	50	56
D	48	56	63	65	68
E	46	48	56	57	64

The total production of type A cars in 2016 and type E cars in 2014 taken together is what percent of the total production of type C cars during 2014 to 2018?

- (1) 35
- (2) 36
- (3) 40
- (4) 32

**Answers**

1. (2)	2. (4)	3. (3)	4. (2)	5. (2)
6. (1)	7. (4)	8. (2)	9. (3)	10. (3)
11. (2)	12. (4)	13. (2)	14. (1)	15. (1)
16. (4)	17. (4)	18. (3)	19. (4)	20. (3)
21. (4)	22. (4)	23. (1)	24. (1)	25. (2)

**10. CGL Tier-I, 2018**  
**Test Time : 10:00 AM - 11:00 AM**  
**Test Date : 10/06/2019**

1. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	46	53	56	58	67
B	50	65	67	66	72
C	43	54	55	47	51
D	47	52	61	65	74
E	48	58	63	64	67

The average production of type A cars during the five years is what percent of the total production of type C cars during the five years?

- (1) 22.4
- (2) 20.6
- (3) 21.8
- (4) 18.7

2. If  $4x^2 - 6x + 1 = 0$ , then the value of  $8x^3 + (8x^3)^{-1}$  is:

- (1) 36
- (2) 13
- (3) 18
- (4) 11

3. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	46	53	56	58	67
B	50	65	67	66	72
C	43	54	55	47	51
D	47	52	61	65	74
E	48	58	63	64	67

What is the ratio of the total production of type C and D cars in 2012 to the total production of type A cars in 2014 and type E cars in 2015?

- (1) 5:6
- (2) 9:11
- (3) 3:4
- (4) 11:12

4. The average of twelve numbers is 55.5. The average of the first four numbers is 53.4 and that of the next four numbers is 54.6. The 10th number is greater than the 9th number by 3 but lesser than the 11th and 12th numbers by 2 and 3, respectively. What is the average of the 10th and the 12th numbers?

- (1) 59.5
- (2) 58
- (3) 57.5
- (4) 56



5. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	46	53	56	58	67
B	50	65	67	66	72
C	43	54	55	47	51
D	47	52	61	65	74
E	48	58	63	64	67

The total production of type B cars in 2015 and type D cars 2016 is what percent less than the total production of type E cars in five years?

- (1)  $50\frac{1}{3}$  (2)  $52\frac{2}{3}$   
 (3)  $46\frac{2}{3}$  (4)  $53\frac{1}{3}$
6. The speed of train A is 25 km/h more than the speed of train B. A takes 4 hours less time to travel a distance of 300 km than what train B takes to travel 250 km. what is the speed (in km/h) of A?  
 (1) 60 (2) 50  
 (3) 65 (4) 55
7. A circle touches the side PQ of a  $\Delta APQ$  at the point R and sides AP and AQ produced at the points B and C respectively. If the perimeter of  $\Delta APQ = 30$  cm, then the length of AB is:  
 (1) 20 cm (2) 10 cm  
 (3) 12 cm (4) 15 cm
8. The income of A is 40% more than that of B. If A got a 25% rise in his income and B got a 40% rise in his income, then the percentage increase in the combined incomes of A and B is:  
 (1) 31.25 (2) 34.5  
 (3) 28.25 (4) 24.5
9. A sum of ₹12,000 amounts to ₹20,736 in 3 years at a certain rate percent per annum, interest compounded annually. What will amount of the same sum to in 2 years at the same rate on compound interest?  
 (1) 15,640 (2) 17,820  
 (3) 17,280 (4) 14,520
10. The marked price of an article is ₹550. A shopkeeper allows a discount of 20% and still gets a profit of 10% If he sells it for ₹470, his profit percent will be:

- (1) 16.8 (2) 18  
 (3) 17.5 (4) 16

11. The value of  $\frac{3}{4} \times 2\frac{2}{3} \div \frac{5}{9}$  of  $1\frac{1}{5} + \frac{2}{23} \times 3\frac{5}{6} \div \frac{2}{7}$  of  $2\frac{1}{3}$  is:

- (1)  $1\frac{5}{6}$  (2)  $1\frac{2}{3}$   
 (3)  $3\frac{1}{2}$  (4)  $4\frac{5}{6}$

12. In a  $\Delta ABC$  right angled at B,  $AB = 7$  cm and  $(AC - BC) = 1$  cm. The value of  $(\sec C + \cot A)$  is:

- (1)  $\frac{19}{24}$  (2)  $\frac{4}{3}$   
 (3)  $\frac{3}{4}$  (4) 1

13. The curved surface area and the volume of a cylinder are  $264 \text{ cm}^2$  and  $924 \text{ cm}^3$ , respectively. What is the ratio of

its radius to height? (Take  $\pi = \frac{22}{7}$ )

- (1) 4:3 (2) 5:4  
 (3) 7:6 (4) 3:2

14. The ratio of the efficiencies of A, B and C, to do a certain work is 7:3:5. Working together, they can complete the work in 21 days. A and C worked together for 15 days. The remaining work will be completed by B alone in:

- (1) 54 days (2) 45 days  
 (3) 60 days (4) 63 days

15. The table shows the production of different types of cars (in thousands).

Year \ Cars	2012	2013	2014	2015	2016
A	46	53	56	58	67
B	50	65	67	66	72
C	43	54	55	47	51
D	47	52	61	65	74
E	48	58	63	64	67

If the data related to the production of type B cars is represented by a pie chart, then the central angle of the sector representing the production of cars in 2016 is:

- (1)  $56^\circ$  (2)  $81^\circ$   
 (3)  $75^\circ$  (4)  $73^\circ$



16. A bought an article for ₹5,400 and sold it at a loss of 30%. With this amount, he bought another article and sold it at a gain of 60%. What was his overall percentage gain or percentage loss?  
 (1) Gain, 1.29% (2) Gain, 12%  
 (3) Loss, 12% (4) Loss, 1.2%
17. In  $\triangle PQR$ ,  $QT \perp PR$  and  $S$  is a point on  $QR$  such that  $\angle PSQ = p^\circ$ . If  $\angle TQR = 46^\circ$  and  $\angle SPR = 32^\circ$ , then the value of  $p$  is:  
 (1)  $78^\circ$  (2)  $82^\circ$   
 (3)  $76^\circ$  (4)  $72^\circ$
18. If  $\theta \neq 2\cos^2\theta$ ,  $0^\circ < \theta < 90^\circ$ , then the value of  $(\tan^2\theta + \sec^2\theta - \operatorname{cosec}^2\theta)$  is:  
 (1)  $-2$  (2)  $-\frac{7}{3}$   
 (3)  $\frac{7}{3}$  (4)  $2$
19. If  $\frac{\tan\theta + \sin\theta}{\tan\theta - \sin\theta} = \frac{k+1}{k-1}$ , then  $k = ?$   
 (1)  $\operatorname{cosec}\theta$  (2)  $\sec\theta$   
 (3)  $\cos\theta$  (4)  $\sin\theta$
20. If  $x + y + z = 0$ , then the value of  $(x^2 + y^2 + z^2) = (z^2 - xy)$  is:  
 (1)  $1$  (2)  $2$   
 (3)  $-2$  (4)  $-1$
21. What is the ratio of the mean proportional between 4.8 and 10.8 and the third proportional to 0.4 and 2.4?  
 (1)  $2:1$  (2)  $3:2$   
 (3)  $1:2$  (4)  $2:3$
22. In  $\triangle ADC$ ,  $E$  and  $B$  are the points on the sides  $AD$  and  $AC$  respectively such that  $\angle ABE = \angle ADC$ . If  $AE = 6$  cm,  $BC = 2$  cm,  $BE = 3$  cm and  $CD = 5$  cm, then  $(AB + DE)$  is equal to:  
 (1)  $14$  cm (2)  $16$  cm  
 (3)  $\frac{49}{3}$  cm (4)  $\frac{46}{3}$  cm
23. Let  $O$  be the centre of a circle and  $AC$  be its diameter.  $BD$  is a chord intersecting  $AC$  at  $E$ . Point  $A$  is joined to  $B$  and  $D$ . If  $\angle BOC = 50^\circ$  and  $\angle AOD = 110^\circ$ , then  $\angle BEC = ?$   
 (1)  $80^\circ$  (2)  $70^\circ$   
 (3)  $55^\circ$  (4)  $90^\circ$
24. If  $a^2 + b^2 + c^2 + 27 = 6(a+b+c)$ , then what is the value of  $\sqrt[3]{a^3 + b^3 - c^3}$ ?  
 (1)  $3$  (2)  $1$   
 (3)  $9$  (4)  $6$
25. If an 11-digit number  $5y5884805x6$ ,  $x \neq y$ , is divisible by  $72$ , then the value of  $\sqrt{xy}$  is:  
 (1)  $\sqrt{7}$  (2)  $3$   
 (3)  $7$  (4)  $2\sqrt{7}$

### Answers

1. (1)	2. (3)	3. (3)	4. (1)	5. (4)
6. (2)	7. (4)	8. (1)	9. (3)	10. (3)
11. (3)	12. (2)	13. (3)	14. (2)	15. (2)
16. (2)	17. (2)	18. (2)	19. (2)	20. (2)
21. (3)	22. (3)	23. (1)	24. (1)	25. (3)

### 11. CGL Tier-I, 2018

Test Time : 1:00 PM - 2:00 PM

Test Date : 10/06/2019

1. The radius of a sphere is reduced by 40%. By what percent will its volume decrease?  
 (1) 64% (2) 78.4%  
 (3) 72.5% (4) 60%
2. The difference between the compound interest and simple interest on ₹ $x$  at 8% per annum for 2 years is ₹19.20. What is the value of  $x$ ?  
 (1) 3,200  
 (2) 3,000  
 (3) 2,800  
 (4) 2,500
3. A is 40% more efficient than B and C is 20% less efficient than B. Working together, they can finish a work in 5 days. In how many days will A alone complete 70% of that work?  
 (1) 8 (2) 10  
 (3) 9 (4) 7
4. In a circle with centre  $O$ ,  $AB$  is the diameter and  $CD$  is a chord such that  $ABCD$  is a trapezium. If  $\angle BAC = 40^\circ$ , then  $\angle CAD$  is equal to:  
 (1)  $10^\circ$  (2)  $15^\circ$   
 (3)  $50^\circ$  (4)  $20^\circ$



5. If  $\sqrt{x} - \frac{1}{\sqrt{x}} = 4$ , then  $x^2 + \frac{1}{x^2}$  is equal to:

- (1) 256 (2) 326  
(3) 322 (4) 192

6. Two articles are sold for ₹9,720 each. On one, the seller gains 8% and on the other, he loses 10%. What is his overall gain or loss?

- (1) 360 loss (2) 360 gain  
(3) 380 gain (4) 380 loss

7. An article is sold for ₹528 after successive discounts of 20% and 12%. What is the marked price of the article?

- (1) 760 (2) 780  
(3) 740 (4) 750

8. The average marks of 40 students was found to be 68. If the marks of two students were incorrectly entered as 48 and 64 instead of 84 and 46 respectively, then what is the correct average?

- (1) 68.45 (2) 68.35  
(3) 68.25 (4) 68.15

9. The table below shows the number of students enrolled in five colleges over the five years (2010 to 2014).

Colleges	A	B	C	D	E
Year					
2010	400	270	350	430	470
2011	430	300	330	450	490
2012	370	250	360	470	410
2013	410	310	370	420	430
2014	420	290	340	480	480

The number of students studying in college E in the year 2013 is approximately what percent of the number of students studying in colleges B, C and D taken together in the year 2013 (nearest to one decimal place)?

- (1) 38.2% (2) 38.6%  
(3) 39.4% (4) 39.1%

10. The value of  $\sin^2 38^\circ + \sin^2 52^\circ + \sin^2 30^\circ - \tan^2 45^\circ$  is equal to:

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

11. If  $x + \frac{1}{x} = 3$ , then  $x^3 + \frac{1}{x^3}$  is equal to:

- (1) 18 (2) 24  
(3) 36 (4) 27

12.  $\Delta ABC \sim \Delta RQP$  and  $AB = 4$  cm,  $BC = 6$  and  $AC = 5$  cm. If  $\text{ar}(\Delta ABC) : \text{ar}(\Delta PQR) = 9 : 4$ , then  $PQ$  is equal to:

- (1)  $\frac{10}{3}$  cm (2)  $\frac{8}{3}$  cm  
(3) 4 cm (4)  $\frac{20}{9}$  cm

13. In  $\Delta ABC$ ,  $AD$  is the median and  $G$  is a point on  $AD$  such that  $AG : GD = 2 : 1$ . Then  $\text{ar}(\Delta BDG) : \text{ar}(\Delta ABC)$  is equal to:

- (1) 1:6 (2) 1:4  
(3) 1:9 (4) 1:3

14. If  $a : b = 3 : 2$ , then  $(5a + 2b) : (3a + 4b)$  is equal to:

- (1) 19:17 (2) 8:7  
(3) 16:15 (4) 17:14

15. The table below shows the number of students enrolled in five colleges over the five years (2010 to 2014).

Colleges	A	B	C	D	E
Year					
2010	400	270	350	430	470
2011	430	300	330	450	490
2012	370	250	360	470	410
2013	410	310	370	420	430
2014	420	290	340	480	480

In the year 2014, what percent of students were enrolled in college C (correct to one decimal place)?

- (1) 17.1% (2) 17.3%  
(3) 16.9% (4) 16.79%

16. If the six digit number  $15x1y2$  is divisible by 44, then  $(x + y)$  is equal to:

- (1) 9 (2) 8  
(3) 6 (4) 7

17. The table below shows the number of students enrolled in five colleges over the five years (2010 to 2014).

Colleges	A	B	C	D	E
Year					
2010	400	270	350	430	470
2011	430	300	330	450	490
2012	370	250	360	470	410
2013	410	310	370	420	430
2014	420	290	340	480	480

What is the ratio of the total students enrolled in colleges A and B in the year 2012 to the total students enrolled in colleges D and E in the year 2013?

- (1) 62 : 85 (2) 58 : 63  
(3) 63 : 86 (4) 62 : 88

18. The price of sugar is increased by 20%. A person wants to increase his expenditure by 8% only. By what percent should he decrease his consumption?

- (1) 11% (2) 9%  
(3) 10% (4) 12%



19. If  $a+b+c=13$  and  $ab+bc+ca=54$ , then  $a^3+b^3+c^3-3abc$  is equal to:

- (1) 793 (2) 182  
(3) 273 (4) 91

20. The value of  $4.5 - (3.2 \div 0.8 \times 5) + 3 \times 4 \div 6$  is :

- (1) 4.2 (2) 5.7  
(3) -13.5 (4) -8.5

21. From a point P outside a circle, PAB is a secant and PT is a tangent to the circle, where, A, B and T are points on the circle. If  $PT = 5$  cm,  $PA = 4$  cm and  $AB = x$  cm, then  $x$  is equal to:

- (1) 2.25 cm (2) 1.75 cm  
(3) 2.75 cm (4) 2.45 cm

22. If  $\sec 4\theta = \operatorname{cosec}(\theta + 20^\circ)$ , then  $\theta$  is equal to:

- (1)  $22^\circ$  (2)  $18^\circ$   
(3)  $20^\circ$  (4)  $14^\circ$

23. A train without stoppage travels with an average speed of 50 km/h, and with stoppage, it travels with an average speed of 40 km/h. For how many minutes does the train stop on an average per hour?

- (1) 15 (2) 14  
(3) 12 (4) 13

24. The table below shows the number of students enrolled in five colleges over the five years (2010 to 2014).

Colleges Year	A	B	C	D	E
2010	400	270	350	430	470
2011	430	300	330	450	490
2012	370	250	360	470	410
2013	410	310	370	420	430
2014	420	290	340	480	480

What is the average number of students studying in college D over the given years?

- (1) 430 (2) 440  
(3) 420 (4) 450

25. If  $\tan \theta = \frac{2}{3}$ , then  $\frac{3 \sin \theta - 4 \cos \theta}{3 \sin \theta + 4 \cos \theta}$  is equal to :

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

### Answers

1. (2)	2. (2)	3. (1)	4. (1)	5. (3)
6. (1)	7. (4)	8. (1)	9. (4)	10. (4)
11. (1)	12. (3)	13. (1)	14. (1)	15. (3)
16. (4)	17. (1)	18. (3)	19. (4)	20. (3)
21. (1)	22. (4)	23. (3)	24. (4)	25. (3)

## 12. CGL Tier-I, 2018

Test Time : 4:00 PM - 5:00 PM

Test Date : 10/06/2019

1. If  $a : b = 4 : 5$ , then  $(2a + 3b) : (3a + 2b)$  is equal to:

- (1) 23:22 (2) 10:9  
(3) 9:10 (4) 22:23

2. The difference between the compound interest and simple interest on ₹x at 9% per annum for 2 years is ₹20.25. What is the value of x?

- (1) 2,500 (2) 2,200  
(3) 2,400 (4) 2,800

3. In a circle with centre O. AB is a diameter and CD is a chord such that ABCD is a trapezium. If  $\angle BAC = 15^\circ$ , then  $\angle CAD$  is equal to:

- (1)  $60^\circ$  (2)  $45^\circ$   
(3)  $30^\circ$  (4)  $75^\circ$

4. The radius of a sphere is increased by 140%. By what percent will its volume increase?

- (1) 1382.4% (2) 274.4%  
(3) 174.4% (4) 1282.4%

5. In  $\triangle ABC$ , AD is median and G is the point on AD such that  $AG : GD = 2 : 1$ . Then  $\operatorname{ar}(\triangle ABG) : \operatorname{ar}(\triangle ABC)$  is equal to:

- (1) 1:3 (2) 1:6  
(3) 1:4 (4) 1:5

6. An article is sold for ₹642.60 after successive discounts of 15% and 10%. What is the marked price of the article?

- (1) 800 (2) 840  
(3) 820 (4) 880

7. If the six digit number  $6x2904$  is divisible by 88, then the value of x is:

- (1) 8 (2) 7  
(3) 6 (4) 5

8. A train without stoppage travels with an average speed of 70 km/h, and with stoppage, it travels with the average speed of 56 km/h. How many minutes, does the train stop on an average per hour?

- (1) 14 (2) 15  
(3) 16 (4) 12

9. If  $a+b+c=11$  and  $ab+bc+ca=38$ , then  $a^3+b^3+c^3-3abc$  is equal to:

- (1) 55 (2) 66  
(3) 77 (4) 44



10. If  $x + \frac{1}{x} = \sqrt{5}$ , then  $x^3 + \frac{1}{x^3}$  is equal to:

- (1)  $4\sqrt{5}$  (2)  $3\sqrt{5}$   
 (3)  $5\sqrt{5}$  (4)  $2\sqrt{5}$

11. Two articles are sold for ₹10,384 each. On one, the seller gains 18% and on the other, he loses 12%. What is his overall gain or loss?

- (1) 168 gain  
 (2) 178 loss  
 (3) 168 loss  
 (4) 178 gain

12. The table below shows the percentage of students and the ratio of boys and girls in different colleges. Total students = 1800

College	%Student	Boys : Girls
A	20	4 : 5
B	18	1 : 2
C	14	4 : 3
D	22	6 : 5
E	10	2 : 3
F	16	9 : 7

What is the percentage of girls in colleges D, E and F taken together, (nearest to one decimal place)?

- (1) 48.5% (2) 48.1%  
 (3) 47.9% (4) 48.3%

13. The table below shows the percentage of students and the ratio of boys and girls in different colleges. Total students = 1800

College	%Student	Boys : Girls
A	20	4 : 5
B	18	1 : 2
C	14	4 : 3
D	22	6 : 5
E	10	2 : 3
F	16	9 : 7

In which college is the percentage difference between the number of boys and girls minimum?

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

14. When  $2 \sin^2 \theta = 3 \cos \theta$ , and  $0 \leq \theta \leq 90^\circ$ , then  $\theta = ?$

- (1)  $90^\circ$  (2)  $60^\circ$   
 (3)  $45^\circ$  (4)  $30^\circ$

15. The table below shows the percentage of students and the ratio of boys and girls in different colleges. Total students = 1800

College	%Student	Boys : Girls
A	20	4 : 5
B	18	1 : 2
C	14	4 : 3
D	22	6 : 5
E	10	2 : 3
F	16	9 : 7

What is the ratio of boys and girls in the colleges A and B taken together?

- (1) 43 : 67 (2) 45 : 71  
 (3) 37 : 52 (4) 67 : 104

16.  $(3x - 1)^3 + (4x - 3)^3 + (2x + 1)^3 = 3(3x - 1)(4x - 3)(2x + 1)$  and  $x \neq \frac{1}{3}$ , then  $x = ?$

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

17. The value of  $\sin^2 60^\circ - \cos^2 45^\circ + \sec 60^\circ + \cos^2 40^\circ + \cos^2 50^\circ$  is equal to:

- (1)  $\frac{13}{4}$  (2)  $\frac{11}{4}$   
 (3)  $\frac{9}{14}$  (4)  $\frac{7}{2}$

18. If  $\tan \theta = \frac{3}{4}$ , then  $\frac{4 \sin \theta - \cos \theta}{4 \sin \theta + \cos \theta}$  is equal to:

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

19.  $\Delta ABC \sim \Delta EDF$  and  $AB = 5$  cm,  $BC = 8$  cm and  $AC = 10$  cm. If  $\text{ar}(\Delta ABC) : \text{ar}(\Delta DEF) = 9 : 4$ , then  $DF$  is equal to:

- (1)  $\frac{20}{3}$  cm (2)  $\frac{16}{3}$  cm  
 (3)  $\frac{10}{3}$  cm (4)  $\frac{32}{9}$  cm



20. The price of sugar is increased by 18%. A person wants to increase the expenditure by 12% only. By what percent, correct to one decimal place, should he decrease his consumption?

- (1) 5.1% (2) 5.6%  
(3) 5.3% (4) 6%

21. If  $x - 5\sqrt{x} - 1 = 0$ , then  $x^2 + \frac{1}{x^2}$  is equal to:

- (1) 731 (2) 625  
(3) 727 (4) 729

22. The table below shows the percentage of students and the ratio of boys and girls in different colleges. Total students = 1800

College	%Student	Boys : Girls
A	20	4 : 5
B	18	1 : 2
C	14	4 : 3
D	22	6 : 5
E	10	2 : 3
F	16	9 : 7

If 10% of the girls from college A are transferred to college E, then what is the increase in the percentage of girls in college E?

- (1) 4.4% (2) 4.6%  
(3) 4% (4) 4.29%

23. The value of  $3.8 - (4.2 \div 0.7 \times 3) + 5 \times 2 \div 0.5$  is :

- (1) 18.4 (2) 15.6  
(3) 5.8 (4) 21.8

24. In a  $\Delta ABC$ , the sides are  $AB = 16$  cm,  $AC = 63$  cm,  $BC = 65$  cm. From A, a straight line AM is drawn up to the midpoint M of side BC. Then the length of AM is equal to:

- (1) 23.5 cm (2) 31.5 cm  
(3) 24.5 cm (4) 32.5 cm

25. The average marks of 50 students in a class was found to be 64. If the marks of two students were incorrectly entered as 38 and 42 instead of 83 and 24, respectively, then what is the correct average?

- (1) 61.86 (2) 64.54  
(3) 62.32 (4) 61.24

**Answers**

1. (1)	2. (1)	3. (1)	4. (4)	5. (1)
6. (2)	7. (3)	8. (4)	9. (3)	10. (4)
11. (1)	12. (3)	13. (1)	14. (2)	15. (4)
16. (4)	17. (1)	18. (3)	19. (2)	20. (1)
21. (3)	22. (3)	23. (3)	24. (4)	25. (2)

**13. CGL Tier-I, 2018**  
**Test Time : 10:00 AM - 11:00 AM**  
**Test Date : 11/06/2019**

1. The value of  $\sec^2 28^\circ - \cot^2 62^\circ + \sin^2 60^\circ + \operatorname{cosec}^2 30^\circ$  is equal to:

- (1)  $\frac{7}{2}$  (2)  $\frac{19}{4}$   
(3)  $\frac{23}{4}$  (4) 3

2. The following table indicates the number of students studying in three disciplines in five colleges:

Disciplines	Colleges				
	A	B	C	D	E
Science	300	350	275	400	275
Commerce	240	400	325	275	250
Economics	400	450	250	300	500

What percentage of total students are studying in the commerce stream in all five colleges together?

- (1) 33% (2) 32  
(3) 30% (4) 28%

3. A is 40% more efficient than B and C is 20% less efficient than B. Working together, they can finish a task in 15 days. In how many days, will B alone complete 75% of the task?

- (1) 36 (2) 44  
(3) 32 (4) 48

4. The radii of two circular faces of the frustum of a cone of height 21 cm are 3 cm and 2 cm respectively. What is

the volume of the frustum of the cone in  $\text{cm}^3$   $\left(\pi = \frac{22}{7}\right)$ ?

- (1) 345 (2) 286  
(3) 418 (4) 154

5. Two articles are sold for ₹ 10,005 each. On one, the seller gains 15% and on the other, he loses 13%. What is his overall gain or loss percent, correct to two decimal places?

- (1) 0.94% loss (2) 1.42% loss  
(3) 0.94% gain (4) 1.42% gain

6. A train without stoppage travels with an average speed of 65 km/h and with stoppage, it travels with an average speed of 52 km/h. For how many minutes does the train stop on an average per hour?

- (1) 12 (2) 13  
(3) 15 (4) 14



7. Chords AB and CD of a circle, when produced meet at a point P outside the circle. If  $AB = 6$  cm,  $CD = 3$  cm and  $PD = 5$  cm, then PB is equal to:
- (1) 6 cm (2) 6.25 cm  
(3) 4 cm (4) 5 cm
8. In  $\triangle ABC$ , AD is a median and P is a point on AD such that  $AP : PD = 3 : 4$ . Then  $\text{ar}(\triangle APB) : \text{ar}(\triangle ABC)$  is equal to:
- (1) 3:7 (2) 2:7  
(3) 3:14 (4) 3:4
9. The following table indicates the number of students studying in three disciplines in five colleges:
- | Disciplines | Colleges |     |     |     |     |
|-------------|----------|-----|-----|-----|-----|
|             | A        | B   | C   | D   | E   |
| Science     | 300      | 350 | 275 | 400 | 275 |
| Commerce    | 240      | 400 | 325 | 275 | 250 |
| Economics   | 400      | 450 | 250 | 300 | 500 |
- What percentage of students in college B is studying in the science stream, (correct to one decimal place)?
- (1) 29.2% (2) 29.4%  
(3) 29.8% (4) 29.6%
10. If  $a+b=5$  and  $ab=3$ , then  $(a^3 + b^3)$  is equal to:
- (1) 65 (2) 80  
(3) 75 (4) 70
11. An article is sold for ₹657.90 after successive discounts of 15% and 10%. What is the marked price of the article?
- (1) ₹920 (2) ₹860  
(3) ₹880 (4) ₹900
12. If  $\cot \theta = \frac{3}{4}$ , then  $\sin \theta + \cos \theta - \tan \theta$  is equal to:
- (1)  $\frac{2}{15}$  (2)  $-\frac{1}{20}$   
(3)  $\frac{1}{15}$  (4)  $\frac{1}{20}$
13. In a circle with centre O, AB is the diameter and CD is a chord such that ABCD is a trapezium. If  $\angle BAC = 25^\circ$ , then  $\angle CAD$  is equal to:
- (1)  $65^\circ$  (2)  $40^\circ$   
(3)  $45^\circ$  (4)  $25^\circ$
14.  $\triangle ABC \sim \triangle QRP$  and  $PQ = 6$  cm,  $QR = 8$  cm and  $PR = 10$  cm. If  $\text{ar}(\triangle ABC) : \text{ar}(\triangle PQR) = 1:4$ , then AB is equal to:
- (1) 4 cm (2) 3 cm  
(3) 5 cm (4) 2 cm
15. What is the least value of  $x$  such that  $517x324$  is divisible by 12?
- (1) 1 (2) 2  
(3) 3 (4) 0
16. If  $a:b = 5:3$ , then  $(8a - 5b) : (8a + 5b)$  is equal to:
- (1) 3:11 (2) 3:13  
(3) 5:11 (4) 2:5
17. The price of sugar is increased by 22%. A person wants to increase his expenditure by 12% only. By what percent should he decrease his consumption, nearest to one decimal place?
- (1) 8.6% (2) 8.2%  
(3) 10% (4) 7.8%
18. The following table indicates the number of students studying in three disciplines in five colleges:
- | Disciplines | Colleges |     |     |     |     |
|-------------|----------|-----|-----|-----|-----|
|             | A        | B   | C   | D   | E   |
| Science     | 300      | 350 | 275 | 400 | 275 |
| Commerce    | 240      | 400 | 325 | 275 | 250 |
| Economics   | 400      | 450 | 250 | 300 | 500 |
- If a pie-chart is drawn representing the number of students in all five colleges, what is the central angle (correct to the nearest whole number) of the sector representing the students of college B?
- (1)  $82^\circ$  (2)  $84^\circ$   
(3)  $80^\circ$  (4)  $86^\circ$
19. If  $a + b + c = 8$  and  $ab + bc + ca = 12$ , then  $a^3 + b^3 + c^3 - 3abc$  is equal to:
- (1) 192 (2) 144  
(3) 224 (4) 400
20. The average marks of 45 students was found to be 66. If the marks of two students were incorrectly entered as 28 and 64 instead of 82 and 46 respectively, then what is the correct average?
- (1) 66.8 (2) 66.4  
(3) 67.2 (4) 66.6
21. If  $\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{6}$ , then  $x^2 + \frac{1}{x^2}$  is equal to:
- (1) 14 (2) 62  
(3) 16 (4) 36



22. The difference between the compound interest and simple interest on ₹x at 8.5% per annum for 2 years is ₹28.90. The value of x is:

- (1) 4000 (2) 3500  
(3) 3800 (4) 4500

23. The following table indicates the number of students studying in three disciplines in five colleges:

Disciplines	Colleges				
	A	B	C	D	E
Science	300	350	275	400	275
Commerce	240	400	325	275	250
Economics	400	450	250	300	500

What is the ratio of the total number of students studying in the science stream to that of studying in commerce stream in all five colleges taken together?

- (1) 19:15 (2) 14:15  
(3) 16:19 (4) 16:15

24. If  $\tan 4\theta = \cot(2\theta + 30^\circ)$ , then  $\theta$  is equal to:

- (1)  $15^\circ$  (2)  $20^\circ$   
(3)  $10^\circ$  (4)  $25^\circ$

25. The value of:

$$2.8 + (5.2 - 1.3 \times 2) - 6 \times 3 \div 8 + 2$$

- (1) 6.45 (2) 8.45  
(3) 4.55 (4) 10.55

**Answers**

1. (3)	2. (3)	3. (1)	4. (3)	5. (1)
6. (1)	7. (3)	8. (3)	9. (1)	10. (2)
11. (2)	12. (3)	13. (2)	14. (1)	15. (2)
16. (3)	17. (2)	18. (4)	19. (3)	20. (1)
21. (1)	22. (1)	23. (4)	24. (3)	25. (4)

**14. CGL Tier-I, 2018**

**Test Time : 1:00 PM - 2:00 PM**

**Test Date : 11/06/2019**

1. The table below indicates the percentage of students and the ratio of boys and girls in the various streams of a college. (Total students = 2600)

Stream	CE	CS	IT	ME	EC
%Students	20%	18%	21%	22%	19%
Boys : Girls	3 : 2	4 : 5	3 : 4	6 : 5	9 : 10

If the data about the number of girls enrolled in the various streams is represented by a pie-chart, what is the central angle of the sector representing the number of girls in the ME stream, to the nearest whole degree?

- (1)  $74^\circ$  (2)  $68^\circ$   
(3)  $72^\circ$  (4)  $70^\circ$

2. The value of:

$$7.2 + (8.4 \div 0.12 \times 0.2) - 5 \times 3 \div 0.05 + 3.$$

- (1) 21.2 (2) -175.8  
(3) -275.8 (4) -75.8

3. The table below indicates the percentage of students and the ratio of boys and girls in the various streams of a college. (Total students = 2600)

Stream	CE	CS	IT	ME	EC
%Students	20%	18%	21%	22%	19%
Boys : Girls	3 : 2	4 : 5	3 : 4	6 : 5	9 : 10

In which stream, is the difference in the percentage of boys and girls minimum?

- (1) EC (2) ME  
(3) CS (4) IT

4. An article is sold for ₹1,680 after two successive discounts of 20% and 16%. What is the marked price of the article?

- (1) ₹2,400 (2) ₹2,500  
(3) ₹2,200 (4) ₹2,300

5. If  $(a + b) = 6$  and  $ab = \frac{16}{3}$ , then  $(a^3 + b^3)$  is equal to:

- (1) 190 (2) 220  
(3) 120 (4) 150

6. If  $\sin \theta = \cos(50^\circ + \theta)$ , then  $\theta$  is equal to:

- (1)  $25^\circ$  (2)  $30^\circ$   
(3)  $35^\circ$  (4)  $20^\circ$

7. The table below indicates the percentage of students and the ratio of boys and girls in the various streams of a college. (Total students = 2600)

Stream	CE	CS	IT	ME	EC
%Students	20%	18%	21%	22%	19%
Boys : Girls	3 : 2	4 : 5	3 : 4	6 : 5	9 : 10

What is the ratio of students studying in CS and IT?

- (1) 6 : 7 (2) 9 : 11  
(3) 12 : 13 (4) 11 : 13

8.  $\Delta ABC \sim \Delta PRQ$  and  $PQ = 4$  cm,  $QR = 7$  cm and  $PR = 8$  cm. If  $\text{ar}(\Delta ABC) : \text{ar}(\Delta PRQ) = 1 : 4$ , then AC is equal to:

- (1) 3.7 cm (2) 2 cm  
(3) 4 cm (4) 1 cm



9. A train without stoppage travels with an average speed of 72 km/h and with stoppage, it travels with an average speed of 60 km/h. For how many minutes does the train stop on an average per hour?
- (1) 8 (2) 12  
(3) 10 (4) 6
10. If  $\operatorname{cosec} \theta = \frac{13}{12}$ , then  $\sin \theta + \cos \theta - \tan \theta$  is equal to:
- (1)  $\frac{139}{65}$  (2)  $-\frac{71}{65}$   
(3)  $\frac{91}{65}$  (4)  $\frac{71}{65}$
11. If the six digit number  $4x573y$  is divisible by 72 then the value of  $(x + y)$  is:
- (1) 9 (2) 4  
(3) 8 (4) 6
12. Two articles are sold for ₹5,104 each. On one, the seller gains 16% and on the other, he loses 12%. What is his overall gain percent, nearest to two decimal places?
- (1) 0.12% (2) 0.10%  
(3) 0.14% (4) 0.08%
13. The value of  $\cot^2 62^\circ - \sec^2 28^\circ + \operatorname{cosec}^2 30^\circ + \tan^2 60^\circ$  is equal to:
- (1) 8 (2)  $\frac{10}{3}$   
(3) 6 (4)  $\frac{16}{3}$
14. The table below indicates the percentage of students and the ratio of boys and girls in the various streams of a college. (Total students = 2600)
- | Stream       | CE    | CS    | IT    | ME    | EC     |
|--------------|-------|-------|-------|-------|--------|
| %Students    | 20%   | 18%   | 21%   | 22%   | 19%    |
| Boys : Girls | 3 : 2 | 4 : 5 | 3 : 4 | 6 : 5 | 9 : 10 |
- What is the ratio of boys and girls in the college?
- (1) 1:1 (2) 5:6  
(3) 6:7 (4) 7:8
15. A is 40% more efficient than B and C is 20% less efficient than B. Working together, they can complete a task in 20 hours. In how many hours will A alone complete 35% of that task?
- (1) 15 (2) 14  
(3) 16 (4) 13
16. If  $\sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{6}$ , then  $x^2 + \frac{1}{x^2}$  is equal to:
- (1) 66 (2) 62  
(3) 40 (4) 54
17. If  $a + b + c$  and  $ab + bc + ca = 4$ , then  $a^3 + b^3 + c^3 - 3abc$  is equal to:
- (1) 148 (2) 154  
(3) 160 (4) 144
18. In  $\triangle ABC$ , AD is a median and P is a point on AD such that  $AP : PD = 3 : 4$ . Then  $\operatorname{ar}(\triangle BPD) : \operatorname{ar}(\triangle ABC)$  is equal to:
- (1) 4 : 7 (2) 2 : 5  
(3) 2 : 7 (4) 1 : 3
19. In a circle with centre O, AB is the diameter and CD is a chord such that ABCD is a trapezium. If  $\angle BAC = 18^\circ$ , then  $\angle CAD$  is equal to:
- (1)  $54^\circ$  (2)  $72^\circ$   
(3)  $18^\circ$  (4)  $36^\circ$
20. The price of sugar is increased by 17%. A person wants to increase his expenditure by 8% only. By what percent should he decrease his consumption, nearest to one decimal place?
- (1) 8.1% (2) 7.7%  
(3) 7.9% (4) 8.3%
21. The radii of the two circular faces of the frustum of a cone are 5 cm and 4 cm. If the height of the frustum is 21 cm, what is its volume in  $\text{cm}^3$ ? ( $\pi = \frac{22}{7}$ )
- (1) 1056 (2) 1342  
(3) 638 (4) 902
22. Two chords AB and CD of a circle when produced, meet at a point P outside the circle. If  $AB = 6$  cm,  $PB = 5$  cm,  $PD = 4$  cm, then CD is equal to:
- (1) 9.75 cm (2) 7.5 cm  
(3) 8.25 cm (4) 7.75 cm
23. In a class of 40 students, 45% are girls and the remaining are boys. If the average of the girls' marks is 54 and that of the boys is 46, what is the average of the whole class?
- (1) 49.8 (2) 49.6  
(3) 49.7 (4) 49.5



24. The difference between the compound interest and simple interest on ₹x at 7.5% per annum for 2 years is ₹45. What is the value of x?
- (1) 7,000 (2) 10,000  
(3) 8,000 (4) 9,000
25. If  $a : b = 2 : 3$  and  $c : b = 5 : 6$ , then  $a : b : c$  is equal to:
- (1) 4 : 6 : 5 (2) 10 : 15 : 18  
(3) 6 : 9 : 16 (4) 6 : 9 : 12

**Answers**

1. (3)	2. (3)	3. (1)	4. (2)	5. (3)
6. (4)	7. (1)	8. (2)	9. (3)	10. (2)
11. (3)	12. (4)	13. (3)	14. (1)	15. (3)
16. (2)	17. (4)	18. (3)	19. (1)	20. (2)
21. (2)	22. (1)	23. (2)	24. (3)	25. (1)

**15. CGL Tier-I, 2018**

**Test Time : 4:00 PM - 5:00 PM**

**Test Date : 11/06/2019**

1. If  $\sec \theta = \frac{13}{5}$ , then  $\tan \theta - \sin \theta + \cos \theta$  is equal to:

(1)  $\frac{118}{65}$  (2)  $\frac{121}{65}$

(3)  $\frac{23}{13}$  (4)  $\frac{124}{65}$

2. This table shows the number of students studying in various streams in different colleges.

Streams	Colleges				
	A	B	C	D	E
Arts	580	460	320	470	370
Science	620	680	540	360	400
Commerce	480	520	350	520	330

The number of students in the science stream of college C is approximately what percentage of students studying in that college?

- (1) 45% (2) 43%  
(3) 44% (4) 42%

3. If  $\sqrt{x} + \frac{1}{\sqrt{x}} = \sqrt{7}$ , then  $x^3 + \frac{1}{x^3}$  is equal to:

- (1) 110 (2) 140  
(3) 130 (4) 120

4. The value of  $\sin^2 48^\circ + \sin^2 42^\circ - \sec^2 30^\circ + \tan^2 60^\circ$  is equal to:

(1)  $\frac{5}{3}$  (2)  $\frac{7}{3}$

(3) 2 (4)  $\frac{8}{3}$

5. The value of:

$5.8 + (7.4 \div 3.7 \times 5) - 6 \times 2 \div 2.5$

- (1) 11 (2) 9  
(3) 12 (4) 10

6. If  $a + b = 8$  and  $ab = \frac{32}{3}$ , then  $(a^3 + b^3)$  is equal to:

- (1) 320 (2) 128  
(3) 384 (4) 256

7. A train without stoppage travels with an average speed of 80 km/h and with stoppage, it travels with all average speed of 73 km/h. For how many minutes does the train stop on an average per hour?

- (1) 6 (2) 9  
(3) 7 (4) 8

8. This table shows the number of students studying in various streams in different colleges.

Streams	Colleges				
	A	B	C	D	E
Arts	580	460	320	470	370
Science	620	680	540	360	400
Commerce	480	520	350	520	330

What is the ratio of the number of students studying science in colleges A and B together to the number of students studying commerce in colleges D and E together?

- (1) 26 : 17 (2) 21 : 17  
(3) 23 : 15 (4) 13 : 8

9. A is 50% more efficient than B and C is 40% less efficient than B. Working together, they can complete a task in 10 days. In how many days will A alone complete 150% of that task?

- (1) 33 (2) 35  
(3) 28 (4) 31

10. Two chords AB and CD of a circle intersect at a point P inside the circle. If  $AB = 7$  cm,  $PC = 2$  cm and  $AP = 4$  cm, then CD is equal to:

- (1) 6 cm (2) 4 cm  
(3) 5 cm (4) 8 cm



11. Two articles are sold for ₹2508 each. On one, there is a gain of 14% and on the other, there is a loss of 12%. What is the overall gain or loss percent to nearest one decimal place?

- (1) 0.5% loss (2) 0.5% gain  
(3) 0.7% loss (4) 0.7% gain

12.  $\Delta ABC \sim \Delta QPR$  and  $AB = 8$  cm,  $BC = 12$  cm and  $AC = 6$  cm. If  $ar(\Delta ABC) : ar(\Delta PQR) = 16 : 25$ , then  $RQ$  is equal to:

- (1) 7.5 cm (2) 15 cm  
(3) 12.5 cm (4) 10 cm

13. If  $a : b = 5 : 8$  and  $c : b = 4 : 3$ , then  $a : b : c$  is equal to:

- (1) 15 : 24 : 32 (2) 5 : 8 : 6  
(3) 15 : 24 : 28 (4) 5 : 6 : 8

14. For what value of  $x$  is the seven digit number  $46393x8$  divisible by 11?

- (1) 7 (2) 3  
(3) 5 (4) 2

15. This table shows the number of students studying in various streams in different colleges.

Streams	Colleges				
	A	B	C	D	E
Arts	580	460	320	470	370
Science	620	680	540	360	400
Commerce	480	520	350	520	330

If the data about students of the commerce stream in all colleges is represented by a pie-chart, what is the central angle of the sector representing college D, to the nearest degree?

- (1)  $82^\circ$  (2)  $85^\circ$   
(3)  $80^\circ$  (4)  $88^\circ$

16. The radii of the two circular faces of the frustum of a cone of height 14 cm are 5 cm and 2 cm. What is its

volume in  $cm^3$ ?  $\left(\pi = \frac{22}{7}\right)$

- (1) 540 (2) 520  
(3) 572 (4) 560

17. If  $\sin 5\theta = \cos(50^\circ - 3\theta)$ , then  $\theta$  is equal to:

- (1)  $20^\circ$  (2)  $25^\circ$   
(3)  $15^\circ$  (4)  $30^\circ$

18. An article is sold for ₹535.50 after two successive discounts of 25% and 15%. What is the marked price of the article?

- (1) ₹800 (2) ₹840  
(3) ₹820 (4) ₹830

19. In a circle with centre O. AB is the diameter and CD is a chord such that ABCD is a trapezium. If  $\angle BAC = 24^\circ$ , then  $\angle CAD$  is equal to:

- (1) 42 (2) 24  
(3) 36 (4) 48

20. In a class of 50 students, 46% are girls and the remaining are boys. The average of the boys' marks is 58 and that of the girls is 62. What are the average marks of the whole class?

- (1) 60.65 (2) 60.12  
(3) 60.38 (4) 59.84

21. If  $a + b + c = 4$  and  $ab + bc + ca = 2$ , then  $a^3 + b^3 + c^3 - 3abc$  is equal to :

- (1) 32 (2) 36  
(3) 40 (4) 48

22. The price of sugar is increased by 21%. A person wants to increase his expenditure by 12% only. By what percent, correct to one decimal place, should he reduce his consumption?

- (1) 7.8% (2) 7.2%  
(3) 7.4% (4) 7.6%

23. The difference between the compound interest and simple interest on ₹ $x$  at 12% per annum for 2 years is ₹18. What is the value of  $x$ ?

- (1) 1,300 (2) 1,250  
(3) 1,340 (4) 1,280

24. In  $\Delta ABC$ , P is a point on BC such that  $BP : PC = 1 : 2$  and Q is the mid point of BP. Then,  $ar(\Delta ABQ) : ar(\Delta ABC)$  is equal to :

- (1) 1 : 4 (2) 1 : 5  
(3) 1 : 3 (4) 1 : 6

25. This table shows the number of students studying in various streams in different colleges.

Streams	Colleges				
	A	B	C	D	E
Arts	580	460	320	470	370
Science	620	680	540	360	400
Commerce	480	520	350	520	330

What is the average of the number of students in the arts stream in all the colleges taken together?

- (1) 450 (2) 460  
(3) 440 (4) 470

### Answers

1. (2)	2. (1)	3. (1)	4. (4)	5. (1)
6. (3)	7. (1)	8. (1)	9. (4)	10. (4)
11. (3)	12. (1)	13. (1)	14. (2)	15. (2)
16. (3)	17. (1)	18. (2)	19. (1)	20. (4)
21. (3)	22. (3)	23. (2)	24. (4)	25. (3)



**16. CGL Tier-I, 2018**

**Test Time : 10:00 AM - 11:00 AM**

**Test Date : 12/06/2019**

- What is the value of  $x$  so that the seven digit number  $91876x2$  is divisible by 72?
  - 7
  - 5
  - 2
  - 3
- The radii of the two circular faces of the frustum of a cone of height 21 cm are 5 cm and 3 cm. What is its volume in  $\text{cm}^3$ ? ( $\pi = \frac{22}{7}$ )
  - 1058
  - 1025
  - 1020
  - 1078
- A train without stoppage travels with an average speed of 80 km/h and with stoppage, it travels with an average speed of 64 km/h. For how many minutes does the train stop on an average per hour?
  - 14
  - 8
  - 12
  - 10
- In  $\triangle ABC$ , P is a point on BC such that  $BP : PC = 2 : 3$  and Q is the midpoint of BP. Then  $\text{ar}(\triangle ABQ) : \text{ar}(\triangle ABC)$  is equal to :
  - 2 : 3
  - 2 : 5
  - 1 : 5
  - 1 : 4
- If  $\cos \theta = \frac{4}{5}$ , then  $\sin^2 \theta \cos \theta + \cos^2 \theta \sin \theta$  is equal to :
  - $\frac{82}{125}$
  - $\frac{15}{25}$
  - $\frac{84}{125}$
  - $\frac{16}{25}$
- In a circle with centre O, AB is a diameter and CD is a chord such that ABCD is a trapezium. If  $\angle BAC = 28^\circ$ , then  $\angle CAD$  is equal to :
  - $28^\circ$
  - $34^\circ$
  - $32^\circ$
  - $62^\circ$
- The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

What is the percentage of students from the discipline of Mathematics for colleges A and C taken together, (nearest to one decimal place)?

- 36.9
  - 37.2
  - 36.7
  - 37.5
- $\triangle ABC \sim \triangle RQP$  and  $PQ = 10$  cm,  $QR = 12$  cm and  $RP = 16$  cm. If  $\text{ar}(\triangle PQR) : \text{ar}(\triangle ABC) = \frac{9}{4}$ , then BC is equal to :
    - $\frac{32}{3}$  cm
    - 8 cm
    - 6 cm
    - $\frac{20}{3}$  cm
  - If  $a : b = 2 : 3$ , then  $(5a - 2b) : (5a + 2b)$  is equal to :
    - 2 : 7
    - 1 : 3
    - 3 : 7
    - 1 : 4
  - Two articles are sold for ₹4,956 each. On one, the seller gains 18% and on the other he loses 16%. What is his overall gain or loss percent to nearest one decimal place?
    - 1.9% gain
    - 2.1% loss
    - 2.1% gain
    - 1.9% loss
  - The value of  $\frac{\sin 44^\circ}{\cos 46^\circ} + \sin^2 60^\circ - \cos^2 45^\circ + \sec 60^\circ$  is equal to :
    - $\frac{11}{4}$
    - $\frac{7}{4}$
    - $\frac{13}{4}$
    - $\frac{11}{3}$
  - If  $a + b + c = 6$  and  $ab + bc + ca = 5$ , then  $a^3 + b^3 + c^3 - 3abc$  is equal to :
    - 98
    - 126
    - 116
    - 108
  - In a class of 60 students, 40% are girls. The average weight of the boys is 62kg and that of the girls is 55kg. What is the average weight of the whole class?
    - 58.8kg
    - 58.6kg
    - 59.2kg
    - 59kg
  - The price of sugar is increased by 17%. A person wants to increase his expenditure by 7% only. By what percentage, correct to one decimal place, should he reduce his consumption?
    - 8.3%
    - 8.5%
    - 8.7%
    - 8.1%



15. The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

If the data of the total students' college wise, is represented by a pie-chart, what is the central angle of the sector representing college E (to nearest whole number)?

- (1)  $75^\circ$  (2)  $73^\circ$   
 (3)  $78^\circ$  (4)  $79^\circ$
16. If  $\tan 4\theta = \cot(40^\circ - 2\theta)$ , then  $\theta$  is equal to :  
 (1)  $35^\circ$  (2)  $30^\circ$   
 (3)  $25^\circ$  (4)  $20^\circ$
17. The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

The number of students from the discipline of Economics from college B is approximately what percentage of the number of students from the discipline of Science from the college C?

- (1) 58 (2) 61  
 (3) 59 (4) 56
18. A is 50% more efficient than B and C is 40% less efficient than B. Working together, they can complete a task in 20 days. In how many days will C alone complete 30% of that task?  
 (1) 31 (2) 33  
 (3) 35 (4) 29
19. An article is sold for ₹547.40 after successive discounts of 30% and 15%. What is the marked price of the article?  
 (1) ₹920 (2) ₹960  
 (3) ₹900 (4) ₹940

20. If  $\sqrt{x} + \frac{1}{\sqrt{x}} = 2\sqrt{2}$ , then  $x^2 + \frac{1}{x^2}$  is equal to :

- (1) 32 (2) 34  
 (3) 36 (4) 64

21. The following table shows the percentage distribution of students in various disciplines from five different colleges.

Disciplines	Colleges				
	A	B	C	D	E
Science	25	35	45	28	35
Economics	35	40	20	42	25
Mathematics	40	25	35	30	40
Total Students	8,000	10,000	15,000	9,000	11,000

What is the average number of students from the science discipline of all the colleges taken together?

- (1) 3724 (2) 3748  
 (3) 3762 (4) 3642
22. Chords AB and CD of a circle intersect at a point P inside the circle. If  $AB = 10$  cm,  $AP = 4$  cm and  $PC = 5$  cm, then CD is equal to :

- (1) 7.8 cm (2) 9.8 cm  
 (3) 6.8 cm (4) 4.8 cm

23. The difference between the compound interest and simple interest on ₹x at 12% per annum for 2 years is ₹43.20. What is the value of x?

- (1) 3,000  
 (2) 2,500  
 (3) 2,400  
 (4) 2,800

24. The value of :

$$3.8 + (8.2 \div 4.1 \times 2) - 4 \times 3 \div 1.2$$

- (1) 2.2 (2) -2.2  
 (3) 1.2 (4) -1.2

25. If  $(a + b) = 6$  and  $ab = 8$ , then  $(a^3 + b^3)$  is equal to :

- (1) 216 (2) 72  
 (3) 108 (4) 144

#### Answers

1. (4)	2. (4)	3. (3)	4. (3)	5. (3)
6. (2)	7. (3)	8. (4)	9. (4)	10. (4)
11. (3)	12. (2)	13. (3)	14. (2)	15. (1)
16. (3)	17. (3)	18. (1)	19. (1)	20. (2)
21. (1)	22. (2)	23. (1)	24. (2)	25. (2)



**17. CGL Tier-I, 2018**  
**Test Time : 1:00 PM - 2:00 PM**  
**Test Date : 12/06/2019**

- What is the value of  $x$  so that the seven digit number  $6913x08$  is divisible by 88?  
 (1) 2 (2) 4  
 (3) 6 (4) 8
- In a class of 60 students, 40% are girls. The average weight of the whole class is 59.2 kg and the average weight of the girls is 55 kg. What is the average weight of the boys?  
 (1) 63 kg (2) 60 kg  
 (3) 61 kg (4) 62 kg
- If  $a + b + c = 6$  and  $a^3 + b^3 + c^3 - 3abc = 126$ , then  $ab + bc + ca$  is equal to :  
 (1) 8 (2) 12  
 (3) 6 (4) 5
- The efficiencies of A, B and C are in the ratio of 2 : 3 : 5. Working together, they can complete a task in 6 days. In how many days will A alone complete 20% of that task?  
 (1) 6 (2) 5  
 (3) 8 (4) 4
- The value of :  
 $7.5 + (5.4 \div 4.5 \times 2) - 8 \times 4 \div 3.2$   
 (1) -0.1 (2) -0.2  
 (3) 0.1 (4) 0.2
- The radii of two circular faces of the frustum of a cone of height 10.5 cm are 5 cm and 3 cm respectively. What is its volume in  $\text{cm}^3 \left( \pi = \frac{22}{7} \right)$ ?  
 (1) 564 (2) 552  
 (3) 545 (4) 539
- The value of  $\sin^2 20^\circ + \sin^2 70^\circ - \tan^2 45^\circ + \sec 60^\circ$  is equal to :  
 (1) 1 (2) 3  
 (3) 2.5 (4) 2
- $\Delta ABC \sim \Delta RQP$  and  $PQ=10\text{cm}$ ,  $QR=12\text{cm}$  and  $RP=18\text{cm}$ . If  $\text{ar}(\Delta ABC) : \text{ar}(\Delta PQR) = \frac{4}{9}$ , then AB is equal to :

- (1) 8 cm (2)  $\frac{20}{3}$  cm  
 (3) 9 cm (4) 12 cm

9. Table shows the production of rice (in million tonnes) of three states over six years.

Year \ States	2011	2012	2013	2014	2015	2016
A	5.2	5.4	5.8	6.2	6.5	6.9
B	3.8	4.1	4.4	4.8	5.2	5.7
C	4.5	5.2	5.8	6.4	6.7	7.4

What is the percentage increase in the production of rice in B from 2014 to 2016?

- (1) 17.75 (2) 17.25  
 (3) 18.75 (4) 18.25
- The difference between compound interest and simple interest on ₹ $x$  at 8% per annum for 2 years is ₹48. What is the value of  $x$ ?  
 (1) 7400 (2) 7500  
 (3) 7800 (4) 8000
  - The price of sugar is increased by 24%. A person wants to increase his expenditure by 15% only. By what percentage, correct to one decimal place, should he reduce his consumption?  
 (1) 7.5 (2) 7.1  
 (3) 7.3 (4) 6.9
  - In  $\Delta ABC$ , P is a point on BC such that  $BP : PC = 3 : 4$  and Q is the midpoint of BP. Then  $\text{ar}(\Delta ABQ) : \text{ar}(\Delta ABC)$  is equal to :  
 (1) 3 : 14 (2) 3 : 8  
 (3) 1 : 4 (4) 2 : 7
  - In a circle of radius 13cm, a chord is at a distance of 5cm from its centre. What is the length of the chord?  
 (1) 12 cm (2) 24 cm  
 (3) 18 cm (4) 20 cm
  - Two articles are sold for ₹4880, on one, the seller gained 22% and on the other he lost 20%. What is his overall gain or loss percentage, nearest to one decimal place?  
 (1) 3.6% gain (2) 3.6% loss  
 (3) 3.4% gain (4) 3.4% loss



15. Table shows the production of rice (in million tonnes) of three states over six years.

Year \ States	2011	2012	2013	2014	2015	2016
A	5.2	5.4	5.8	6.2	6.5	6.9
B	3.8	4.1	4.4	4.8	5.2	5.7
C	4.5	5.2	5.8	6.4	6.7	7.4

If the total production in three states in all six years is represented by a pie-chart, what is the central angle of the sector representing production in the year 2014, (to nearest whole number)?

- (1)  $61^\circ$  (2)  $63^\circ$   
 (3)  $59^\circ$  (4)  $65^\circ$
16. In a circle with centre O, an arc ABC subtends an angle of  $132^\circ$  at the centre of the circle. Chord AB is produced to point P. Then  $\angle CBP$  is equal to :  
 (1)  $76^\circ$  (2)  $68^\circ$   
 (3)  $48^\circ$  (4)  $66^\circ$
17. Walking at  $\frac{3}{4}$  of his usual speed, a person reaches his office 18 minutes late than the usual time. His usual time in minutes is :  
 (1) 45 (2) 54  
 (3) 60 (4) 72
18. If  $\sqrt{x} - \frac{1}{\sqrt{x}} = 2\sqrt{2}$ , then  $x^2 + \frac{1}{x^2}$  is equal to :  
 (1) 98 (2) 102  
 (3) 100 (4) 104
19. If  $3 \sin \theta = 4 \cos \theta$ , then  $\tan^2 \theta + \sin \theta - \cos \theta$  is equal to:  
 (1) 2 (2)  $\frac{17}{9}$   
 (3)  $\frac{89}{45}$  (4)  $\frac{88}{45}$
20. An article is sold for ₹612 after successive discounts of 25% and 15%. What is the marked price of the article?  
 (1) ₹1000 (2) ₹980  
 (3) ₹960 (4) ₹940
21. Table shows the production of rice (in million tonnes) of three states over six years.

Year \ States	2011	2012	2013	2014	2015	2016
A	5.2	5.4	5.8	6.2	6.5	6.9
B	3.8	4.1	4.4	4.8	5.2	5.7
C	4.5	5.2	5.8	6.4	6.7	7.4

What is the ratio of the production of rice in all three states in the year 2014 to that in 2016?

- (1) 85 : 102  
 (2) 89 : 100  
 (3) 87 : 100  
 (4) 85 : 103
22. If  $\operatorname{cosec} 3\theta = \sec(20^\circ + 2\theta)$ , then  $\theta$  is equal to :  
 (1)  $30^\circ$  (2)  $20^\circ$   
 (3)  $14^\circ$  (4)  $15^\circ$
23. If  $a + b = 5$  and  $ab = 3$ , then  $(a^3 + b^3)$  is equal to :  
 (1) 65 (2) 75  
 (3) 80 (4) 70
24. If  $a : b = 2 : 3$ , then  $(5a + 3b) : (6a - 2b)$  is equal to :  
 (1) 10 : 7 (2) 19 : 6  
 (3) 17 : 5 (4) 3 : 2
25. Table shows the production of rice (in million tonnes) of three states over six years.

Year \ States	2011	2012	2013	2014	2015	2016
A	5.2	5.4	5.8	6.2	6.5	6.9
B	3.8	4.1	4.4	4.8	5.2	5.7
C	4.5	5.2	5.8	6.4	6.7	7.4

What is the average production of rice in state A over the years (in million tonnes)?

- (1) 6.1 (2) 5.8  
 (3) 5.9 (4) 6

### Answers

1. (4)	2. (4)	3. (4)	4. (1)	5. (1)
6. (4)	7. (4)	8. (1)	9. (3)	10. (2)
11. (3)	12. (1)	13. (2)	14. (4)	15. (2)
16. (4)	17. (2)	18. (1)	19. (3)	20. (3)
21. (3)	22. (3)	23. (3)	24. (2)	25. (4)

### 18. CGL Tier-I, 2018

Test Time : 4:00 PM - 5:00 PM

Test Date : 12/06/2019

1. Walking at  $\frac{3}{5}$  of his usual speed, a person reaches his office 20 minutes late than the usual time. His usual time in minutes is :  
 (1) 20 (2) 40  
 (3) 25 (4) 30



2. This table shows the percentage of students passing out of five different colleges over three years. It is given that from each college, 200 students appeared every year.

Colleges \ Year	A	B	C	D	E
2015	68	65	80	92	72
2016	72	68	88	95	75
2017	74	77	92	98	73

If the number of passed out students of all five colleges is represented by a pie chart, what is the central angle (to nearest whole number) of the sector representing the passed out students of college C?

- (1)  $67^\circ$  (2)  $77^\circ$   
 (3)  $69^\circ$  (4)  $79^\circ$
3. If  $\sqrt{x} - \frac{1}{\sqrt{x}} = 3\sqrt{2}$ , then  $x^2 + \frac{1}{x^2}$  is equal to :  
 (1) 324 (2) 326  
 (3) 402 (4) 398
4. If  $a - b = 5$  and  $ab = 2$ , then  $a^3 - b^3$  is equal to :  
 (1) 145 (2) 125  
 (3) 95 (4) 155
5. If  $a : b = 2 : 5$ ,  $c : b = 3 : 4$ , then  $a : b : c$  is equal to :  
 (1)  $2 : 5 : 4$  (2)  $6 : 15 : 20$   
 (3)  $8 : 20 : 15$  (4)  $2 : 5 : 3$
6. In a circle of radius 13 cm, a chord is at a distance of 12 cm from the centre of the circle. What is the length of the chord?  
 (1) 7 cm (2) 9 cm  
 (3) 10 cm (4) 5 cm
7. The efficiencies of A, B and C are in the ratio  $2 : 5 : 3$ . Working together, they can complete a task in 9 days. In how many days will C alone complete 40% of that task?  
 (1) 15 (2) 14  
 (3) 16 (4) 12
8. In  $\triangle ABC$ , P is a point on BC such the  $BP : PC = 4 : 3$  and Q is the midpoint of BP. Then  $\ar(\triangle ABQ) : \ar(\triangle ACB)$  is equal to :  
 (1)  $3 : 7$  (2)  $2 : 7$   
 (3)  $4 : 7$  (4)  $1 : 5$
9. In a circle with centre O, an arc ABC subtends an angle of  $140^\circ$  at the centre of the circle. The chord AB is produced to point P. Then  $\angle CBP$  is equal to :  
 (1)  $80^\circ$  (2)  $50^\circ$   
 (3)  $70^\circ$  (4)  $40^\circ$

10. An article is sold for ₹612 after successive discounts of 25% and  $x\%$ . If the marked price of the article is ₹960, what is the value of  $x$ ?

- (1) 12 (2) 14  
 (3) 10 (4) 15

11. In a class of 40 students, 60% are girls. The average of the girls' marks is 72 and that of the boys is 54. What are the average marks of the whole class?

- (1) 65 (2) 65.2  
 (3) 64.8 (4) 65.4

12. This table shows the percentage of students passing out of five different colleges over three years. It is given that from each college, 200 students appeared every year.

Colleges \ Year	A	B	C	D	E
2015	68	65	80	92	72
2016	72	68	88	95	75
2017	74	77	92	98	73

What is the ratio of the number of students passing to those failing from college E in the year 2015?

- (1)  $9 : 5$  (2)  $4 : 3$   
 (3)  $17 : 7$  (4)  $18 : 7$

13. The difference between the compound interest and simple interest on ₹ $x$  at 7% per annum for 2 years is ₹24.50. What is the value of  $x$ ?

- (1) 4,800 (2) 5,000  
 (3) 5,400 (4) 6,000

14. The value of :

$$108 \div 36 \times 4 + 2.5 \times 4 \div 0.5 - 10$$

- (1) 18 (2) 22  
 (3) 16 (4) 20

15. What is the value of  $x$  so that the seven digit number  $5656x52$  is divisible by 72?

- (1) 4 (2) 5  
 (3) 8 (4) 7

16. If  $a + b + c = 7$  and  $ab + bc + ca = 1$ , then  $a^3 + b^3 + c^3 - 3abc$  is equal to :

- (1) 422 (2) 325  
 (3) 412 (4) 322

17. The price of sugar is increased by 24%. A person wants to increase his expenditure by 18% only. By approximately what percent should he decrease his consumption?

- (1) 4.6% (2) 5.3%  
 (3) 5.1% (4) 4.8%



18. A sphere of radius 4 cm is melted and recast into smaller spheres of radii 2 cm each. How many such spheres can be made?

- (1) 32 (2) 8  
(3) 16 (4) 4

19. This table shows the percentage of students passing out of five different colleges over three years. It is given that from each college, 200 students appeared every year.

Colleges	A	B	C	D	E
Year					
2015	68	65	80	92	72
2016	72	68	88	95	75
2017	74	77	92	98	73

What is the approximate percentage increase in the number of students passing out of college B in the year 2017 as compared to the previous year?

- (1) 12.8% (2) 13.2%  
(3) 13% (4) 13.4%

20. If  $12\sin\theta = 5\cos\theta$ , then  $\sin\theta + \cos\theta - \cot\theta$  is equal to:

- (1)  $\frac{116}{156}$  (2)  $-\frac{16}{65}$   
(3)  $-\frac{71}{65}$  (4)  $\frac{139}{156}$

21.  $\Delta ABC \sim \Delta EDF$  and  $ar(\Delta ABC) : ar(\Delta DEF) = 4 : 9$ . If  $AB = 6$  cm,  $BC = 8$  cm and  $AC = 10$  cm, then  $DF$  is equal to:

- (1) 18 cm (2) 15 cm  
(3) 9 cm (4) 12 cm

22. This table shows the percentage of students passing out of five different colleges over three years. It is given that from each college, 200 students appeared every year.

Colleges	A	B	C	D	E
Year					
2015	68	65	80	92	72
2016	72	68	88	95	75
2017	74	77	92	98	73

In which college the average percentage of passing students over the given three years is the least?

- (1) F (2) A  
(3) E (4) B

23.  $\sec^2 29^\circ - \cot^2 61^\circ + \sin^2 60^\circ + \operatorname{cosec}^2 30^\circ$  is equal to:

- (1)  $\frac{19}{4}$  (2)  $\frac{15}{4}$   
(3)  $\frac{23}{4}$  (4)  $\frac{11}{4}$

24. Two articles are sold for ₹975 each. On one, the seller gains 30% and on the other, he loses 25%. What is the overall gain or loss percentage, correct to one decimal place?

- (1) 5.1% loss  
(2) 5.3% gain  
(3) 4.9% loss  
(4) 4.9% gain

25. If  $\operatorname{cosec} 4\theta = \sec(60^\circ - 2\theta)$ , then  $\theta$  is equal to:

- (1)  $18^\circ$  (2)  $20^\circ$   
(3)  $25^\circ$  (4)  $15^\circ$

**Answers**

1. (4)	2. (4)	3. (4)	4. (4)	5. (3)
6. (3)	7. (4)	8. (2)	9. (3)	10. (4)
11. (3)	12. (4)	13. (2)	14. (2)	15. (4)
16. (4)	17. (4)	18. (2)	19. (2)	20. (3)
21. (4)	22. (4)	23. (4)	24. (3)	25. (4)

**19. CGL Tier-I, 2018**

**Test Time : 10:00 PM - 11:00 PM**

**Test Date : 13/06/2019**

1. The Table shows the number of students from different schools playing different games.

Schools	A	B	C	D
Games				
Cricket	125	250	150	175
Football	175	200	250	125
Hockey	75	125	200	150

What is the average of the number of students who play cricket in all five schools?

- (1) 180 (2) 185  
(3) 200 (4) 190

2. Walking  $\frac{5}{7}$  of his usual speed, a person reaches his office 10 minutes later than the usual time. His usual time in minutes is:

- (1) 30 (2) 35  
(3) 28 (4) 25



3. If  $3 \sin \theta = 2 \cos \theta$ , then  $\frac{4 \sin \theta - \cos \theta}{4 \cos \theta + \sin \theta}$  is equal to :

(1)  $\frac{5}{11}$

(2)  $\frac{5}{14}$

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

(4)  $\frac{5}{8}$

4. In a circle of radius 17 cm, a chord is at a distance of 15 cm from the centre of the circle. What is the length of the chord?

(1) 8 cm

(2) 12 cm

(3) 16 cm

(4) 15 cm

5. What is the value of  $x$  so that the seven digit number  $55350x2$  is divisible by 72?

(1) 1

(2) 3

(3) 7

(4) 8

6. The Table shows the number of students from different schools playing different games.

Schools \ Games	A	B	C	D
Cricket	125	250	150	175
Football	175	200	250	125
Hockey	75	125	200	150

The number of students who play football in school A is approximately what percent of the football playing students from all schools?

(1) 19.9

(2) 19.7

(3) 19.4

(4) 19.1

7. If  $a + b + c = 8$  and  $ab + bc + ca = 20$ , then  $a^3 + b^3 + c^3 - 3abc$  is equal to :

(1) 32

(2) 30

(3) 24

(4) 36

8. The efficiencies of A, B, and C are in the ratio 2 : 5 : 3. Working together, they can complete a task in 12 days. In how many days can A alone complete 30% of that task?

(1) 15

(2) 20

(3) 16

(4) 18

9. The Table shows the number of students from different schools playing different games.

Schools \ Games	A	B	C	D
Cricket	125	250	150	175
Football	175	200	250	125
Hockey	75	125	200	150

What is the ratio of the total students who play cricket in schools A and B together to the total students who play hockey in schools D and E?

(1) 16 : 11

(2) 15 : 13

(3) 15 : 11

(4) 16 : 13

10. If  $\sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{5}$ , then  $x^2 + \frac{1}{x^2}$  is equal to :

(1) 51

(2) 49

(3) 45

(4) 47

11. If  $a : b = 5 : 7$ , then  $(5a - 3b) : (4a - 2b)$  is equal to :

(1) 2 : 3

(2) 5 : 4

(3) 4 : 3

(4) 3 : 2

12. An article is sold for ₹288 after successive discounts of 20% and 25%. What is the marked price of the article?

(1) ₹460

(2) ₹480

(3) ₹520

(4) ₹500

13. The difference between the compound interest and simple interest on ₹ $x$  at 11% per annum for 2 years is ₹60.50. What is the value of  $x$ ?

(1) 4500

(2) 5000

(3) 4000

(4) 4800

14. The price of petrol is increased by 28%. A person wants to increase his expenditure by 22% only. By approximately what percent should he decrease his consumption?

(1) 4.7%

(2) 4.9%

(3) 5.1%

(4) 5.3%

15.  $\Delta ABC \sim \Delta EDF$  and  $ar(\Delta ABC) : ar(\Delta DEF) = 1 : 4$ . If  $AB = 7$  cm,  $BC = 8$  cm and  $CA = 9$  cm, then  $DF$  is equal to :

(1) 18 cm

(2) 14 cm

(3) 8 cm

(4) 16 cm

16. Two articles are sold for ₹4.752 each. On one, the seller gains 32% and on the other he loses 28%. What is his overall gain or loss percentage, correct to one decimal place?

(1) 6.8% loss

(2) 6.8% gain

(3) 7.3% loss

(4) 7.3% gain



17. In a class of 50 students, 60% are boys. The average of marks of the boys is 62, and that of the girls is 68. What is the average marks of the whole class?

- (1) 64.8 (2) 64.4  
(3) 64.6 (4) 65.2

18. In a circle with centre O, an arc ABC subtends an angle of  $136^\circ$  at the centre of the circle. The chord AB is produced to a point P. Then  $\angle CBP$  is equal to :

- (1)  $44^\circ$  (2)  $72^\circ$   
(3)  $68^\circ$  (4)  $66^\circ$

19. If  $\sin 3\theta = \cos(20^\circ - \theta)$ , then  $\theta$  is equal to :

- (1) 30 (2) 28  
(3) 35 (4) 25

20.  $21.6 \div 3.6 \times 2 + 0.25 \times 16 \div 4 - 6$  is equal to :

- (1) 6 (2) 5  
(3) 7 (4) 8

21. If  $(a - b) = 4$  and  $ab = 2$ , then  $(a^3 - b^3)$  is equal to :

- (1) 84 (2) 80  
(3) 92 (4) 88

22. Six cubes, each of edge 2 cm, are joined end to end. What is the total surface area of the resulting cuboid in  $\text{cm}^2$ ?

- (1) 144 (2) 96  
(3) 104 (4) 128

23. In  $\triangle ABC$ , P is a point on BC such that  $BP : PC = 4 : 5$  and Q is the mid point of BP. Then  $\text{ar}(\triangle ABQ) : \text{ar}(\triangle ABC)$  is equal to :

- (1) 2 : 9 (2) 2 : 5  
(3) 1 : 3 (4) 1 : 9

24. The value of  $\sin^2 42^\circ + \sin^2 48^\circ + \tan^2 60^\circ - \text{cosec} 30^\circ$  is equal to :

- (1) 3 (2) 5  
(3) 2 (4) 4

25. The Table shows the number of students from different schools playing different games.

Schools	A	B	C	D
Cricket	125	250	150	175
Football	175	200	250	125
Hockey	75	125	200	150

If the data about the number of students who play hockey from different schools is represented by a pie-chart, what is the central angle of the sector representing students who play hockey from school C to the nearest whole number?

- (1)  $95^\circ$  (2)  $102^\circ$   
(3)  $80^\circ$  (4)  $107^\circ$

### Answers

1. (*)	2. (4)	3. (2)	4. (3)	5. (3)
6. (*)	7. (1)	8. (4)	9. (*)	10. (4)
11. (1)	12. (2)	13. (2)	14. (1)	15. (4)
16. (1)	17. (2)	18. (3)	19. (3)	20. (3)
21. (4)	22. (3)	23. (1)	24. (3)	25. (*)

\* Note : For these questions, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

### 20. CGL Tier-I, 2018

Test Time : 1:00 PM - 2:00 PM

Test Date : 13/06/2019

1. If  $2\sin \theta = 5\cos \theta$ , then  $\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta}$  is equal to :

- (1)  $\frac{2}{3}$  (2)  $\frac{7}{3}$

- (3)  $\frac{9}{5}$  (4)  $\frac{5}{3}$

2. Two articles are sold for ₹962 each. On one, the seller gains 30% and on the other he loses 26%. What is his overall gain or loss percentage, nearest to one decimal place?

- (1) 6.0% gain (2) 5.7% loss  
(3) 5.7% gain (4) 6.0% loss

3. Walking at  $\frac{7}{9}$  of his usual speed, a person reaches his office 10 minutes later than the usual time. His usual time in minutes is :

- (1) 27 (2) 30  
(3) 42 (4) 35

4. The Table shows the number of cars sold by three showrooms over a period of six years.

Year	2011	2012	2013	2014	2015	2016
Showroom						
A	500	480	520	620	650	630
B	450	420	530	480	520	400
C	400	450	460	520	540	430

If the total number of cars sold by all three showrooms over the years is represented as a pie-chart, what is the central angle of the sector representing the total number of cars sold in the year 2013 (to the nearest whole number)?

- (1)  $60^\circ$  (2)  $58^\circ$   
(3)  $56^\circ$  (4)  $62^\circ$



5. The value of  $\sin^2 32^\circ + \sin^2 58^\circ - \sin 30^\circ + \sec^2 60^\circ$  is equal to :

- (1) 4 (2) 5.5  
(3) 3.5 (4) 4.5

6. Five cubes, each of edge 3 cm are joined end to end. What is the total surface area of the resulting cuboid, in  $\text{cm}^2$ ?

- (1) 270 (2) 280  
(3) 198 (4) 244

7. If  $(5a - 3b) : (4a - 2b) = 2 : 3$ , then  $a : b$  is equal to :

- (1) 3 : 4 (2) 5 : 8  
(3) 2 : 3 (4) 5 : 7

8. If  $\sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{6}$ , then  $x^2 + \frac{1}{x^2}$  is equal to :

- (1) 12 (2) 14  
(3) 16 (4) 18

9. In a class of 50 students, 40% are girls. The average marks of the whole class are 64.4 and the average of the boys' marks is 62. What is the average marks of the girls?

- (1) 67 (2) 68  
(3) 66.8 (4) 66.4

10. The Table shows the number of cars sold by three showrooms over a period of six years.

Year \ Showroom	2011	2012	2013	2014	2015	2016
A	500	480	520	620	650	630
B	450	420	530	480	520	400
C	400	450	460	520	540	430

What is the ratio of the total cars sold by showroom B during the years 2014 and 2016 and the total cars sold by showroom C during 2015 and 2016?

- (1) 88 : 97 (2) 86 : 97  
(3) 88 : 95 (4) 85 : 97

11.  $\triangle ABC \sim \triangle NLM$  and  $\text{ar}(\triangle LMN) = 4 : 9$ . If  $AB = 6$  cm,  $BC = 8$  cm and  $AC = 12$  cm, then  $ML$  is equal to :

- (1) 18 cm (2) 6 cm  
(3) 12 cm (4) 9 cm

12. If  $a - b = 5$  and  $ab = 6$ , then  $(a^3 - b^3)$  is equal to :

- (1) 155 (2) 215  
(3) 90 (4) 225

13. In  $\triangle ABC$ , P is a point on BC such that  $BP : PC = 4 : 11$ . If Q is the midpoint of BP, then  $\text{ar}(\triangle ABQ) : \text{ar}(\triangle ABC)$  is equal to:

- (1) 2 : 15 (2) 2 : 13  
(3) 3 : 13 (4) 2 : 11

14. If  $\text{cosec} 2\theta = \sec(3\theta - 15^\circ)$ , then  $\theta$  is equal to :

- (1)  $22^\circ$  (2)  $25^\circ$   
(3)  $20^\circ$  (4)  $21^\circ$

15. The price of sugar is increased by 17%. A person wants to increase his expenditure by 5% only. By approximately what percent should he decrease his consumption?

- (1) 9.9 (2) 10.3  
(3) 10.9 (4) 10.7

16. In a circle with centre O, an arc ABC subtends an angle of  $110^\circ$  at the centre of the circle. The chord AB is produced to a point P. Then  $\angle CBP$  is equal to :

- (1)  $70^\circ$  (2)  $55^\circ$   
(3)  $60^\circ$  (4)  $65^\circ$

17. An article is sold for ₹288 after successive discounts of 25% and  $x\%$ . If the marked price of the article is ₹480, what is the value of  $x$ ?

- (1) 20 (2) 16  
(3) 18 (4) 15

18. What is the value of  $x$  so that the seven digit number  $8439x53$  is divisible by 99?

- (1) 3 (2) 4  
(3) 6 (4) 9

19. The value of  $15.2 + 5.8 \div 2.9 \times 2 - 3.5 \times 2 \div 0.5$  is equal to :

- (1) 4.8 (2) 5.2  
(3) 5.4 (4) 3.2

20. The efficiencies of A, B and C are in the ratio of 5 : 3 : 2. Working together, they can complete a task in 21 hours. In how many hours will B alone complete 40% of the task?

- (1) 21 (2) 35  
(3) 24 (4) 28

21. The difference between compound interest and simple interest on ₹ $x$  at 15% per annum for 2 years is ₹9. What is the value of  $x$ ?

- (1) 500 (2) 400  
(3) 600 (4) 450

22. In a circle of radius 17 cm, a chord is at a distance of 8 cm from the centre of the circle. What is the length of the chord?

- (1) 20 cm (2) 30 cm  
(3) 25 cm (4) 15 cm



23. The Table shows the number of cars sold by three showrooms over a period of six years.

Year \ Showroom	2011	2012	2013	2014	2015	2016
A	500	480	520	620	650	630
B	450	420	530	480	520	400
C	400	450	460	520	540	430

What is the average number of cars sold by showroom A over the given six years (nearest to one decimal place)?

- (1) 566.7 (2) 586.7  
(3) 592.7 (4) 594.7
24. The Table shows the number of cars sold by three showrooms over a period of six years.

Year \ Showroom	2011	2012	2013	2014	2015	2016
A	500	480	520	620	650	630
B	450	420	530	480	520	400
C	400	450	460	520	540	430

By what percent did the total number of cars sold by all three showrooms decrease during the year 2016, as compared to that in the year 2015 (nearest to one decimal place)?

- (1) 14.8% (2) 14.4%  
(3) 14.6% (4) 14.9%
25. If  $a+b+c=10$  and  $ab+bc+ca=32$  then  $a^3+b^3+c^3-3abc$  is equal to :
- (1) 60 (2) 50  
(3) 40 (4) 70

### Answers

1. (2)	2. (3)	3. (4)	4. (1)	5. (4)
6. (3)	7. (4)	8. (2)	9. (2)	10. (1)
11. (3)	12. (2)	13. (1)	14. (4)	15. (2)
16. (2)	17. (1)	18. (2)	19. (2)	20. (4)
21. (2)	22. (2)	23. (1)	24. (3)	25. (3)

### 21. CGL Tier-I, 2018

Test Time : 4:00 PM - 5:00 PM

Test Date : 12/06/2019

1. If a sum amounts to ₹2,190 in four years and ₹2,409 in five years at compound interest, when the interest is compounded yearly, then the annual rate of interest is :
- (1) 11% (2) 8%  
(3) 9% (4) 10%

2.  $9\frac{3}{4} \div \left[ 2\frac{1}{6} \div \left\{ 4\frac{1}{3} - \left( 2\frac{1}{2} + \frac{3}{4} \right) \right\} \right]$  is equal to :

- (1) 3 (2)  $\frac{15}{4}$   
(3) 4 (4)  $\frac{39}{8}$
3. A starts walking at 4 kmph and after 4 hours, B starts cycling from the same point as that of A, in the same direction at 10 kmph. After how much distance from the starting point will B catch up with A (Correct to two decimal places)?
- (1) 26.67 km (2) 24.67 km  
(3) 25.67 km (4) 23.67 km
4. The average of 27 numbers is zero. Out of them, how many may be greater than zero, at the most?
- (1) 26 (2) 15  
(3) 0 (4) 20
5. PA and PB are tangents to a circle with centre O, from a point P outside the circle, and A and B are points on the circle. If  $\angle APB = 40^\circ$ , then  $\angle OAB$  is equal to :
- (1)  $20^\circ$  (2)  $40^\circ$   
(3)  $25^\circ$  (4)  $50^\circ$
6. What is the difference between a single discount of 30% and a single discount equivalent to two successive discounts of 25% and 5%, being given on shopping of ₹2,000?
- (1) ₹25 (2) ₹20  
(3) No difference (4) ₹15
7. In  $\triangle ABC$ ,  $\angle A = 50^\circ$ . Its sides AB and AC are produced to the point D and E. If the bisectors of the  $\angle CBD$  and  $\angle BCE$  meet at the point O, then  $\angle BOC$  will be equal to:
- (1)  $65^\circ$  (2)  $75^\circ$   
(3)  $40^\circ$  (4)  $55^\circ$
8. Table shows the sales of books (in thousands) from six branches of a publishing company during 2000 and 2001.

Branches \ Year	81	82	83	84	85	86
2000	80	75	95	85	75	70
2001	105	65	110	95	95	80

What is the total sales of books from branches B1, B3 and B6 together for both the years (in thousands)?

- (1) 650 (2) 240  
(3) 540 (4) 310



9. Table shows the percentage distribution of the expenditure incurred on different items for publishing a book

Item of expenditure	Percentage of expenditure
Paper	25
Printing	20
Binding	20
Royalty	15
Promotion	10
Transportation	10

Expenditure on Royalty is less than that on Printing by :

- (1) 20% (2) 15%  
(3) 25% (4) 10%

10. Table shows the annual Expenditure of a Company (in Lakh Rupees) over the years.

Item of Expenditure	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
Year					
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

What is the average amount of Interest on loans (in Lakh rupees) which the company paid during the period 1998 to 2002?

- (1) 36.66 (2) 32.43  
(3) 34.18 (4) 33.72

11. A sphere of radius 6 cm is melted and recast into spheres of radius 2 cm each. How many such spheres can be made?

- (1) 24 (2) 25  
(3) 27 (4) 36

12. If 85% of a number is added to 75, then the result is the number itself. The number is :

- (1) 500 (2) 100  
(3) 300 (4) 200

13. ABCD is a cyclic quadrilateral such that AB is the diameter of the circle circumscribing it and  $\angle ADC = 129^\circ$ .

Then,  $\angle BAC$  is equal to :

- (1)  $39^\circ$  (2)  $51^\circ$   
(3)  $61^\circ$  (4)  $49^\circ$

14. When an integer  $n$  is divided by 8, the remainder is 3. What will be the remainder if  $6n-1$  is divided by 8?

- (1) 4 (2) 0  
(3) 2 (4) 1

15. 3 men, 4 women and 6 boys together can complete a work in 6 days. A woman does triple the work a man does and a boy does half the work a man does. How many women alone will be able to complete this work in 4 days?

- (1) 6 (2) 9  
(3) 7 (4) 8

16. Table shows the percentage of marks obtained by seven students in six different subjects in an examination. The numbers in the brackets are the maximum marks in each subject.

Student	Subject (Max. Marks)					
	Maths (150)	Chem. (130)	Physics (120)	Geog. (100)	History (60)	Com. Sci. (40)
A	90	50	90	60	70	80
B	100	80	80	40	80	70
C	90	60	70	70	90	70
D	80	65	80	80	60	60
E	80	65	85	95	50	90
F	70	75	65	85	40	60
G	65	35	50	77	80	80

What are the average marks obtained by all the seven students in Physics? (Correct to two decimal places)

- (1) 91.16 (2) 77.26  
(3) 93.14 (4) 89.14

17. If the radius of the circumcircle of an equilateral triangle is 8 cm, then the measure of radius of its incircle is :

- (1) 16 cm (2) 4 cm  
(3) 8 cm (4) 12 cm

18. If  $(x-5)^3 + (x-6)^3 + (x-7)^3 = 3(x-5)(x-6)(x-7)$ , then what is the value of  $x$ ?

- (1) 5 (2) 18  
(3) 6 (4)

19. If  $\tan x = \cot(45^\circ + 2x)$ , then what is value of  $x$ ?

- (1)  $20^\circ$  (2)  $\frac{45^\circ}{2}$   
(3)  $15^\circ$  (4)  $45^\circ$

20. A earns ₹ 180 per hour and works for 7 hours per day. B earns ₹ 160 per hour and works for 5 hours per day. What is the ratio of per day wages of A and B?

- (1) 63 : 40 (2) 20 : 30  
(3) 33 : 20 (4) 40 : 61



21. The value of  $\left[ \frac{\sin^2 24^\circ + \sin^2 66^\circ}{\cos^2 24^\circ + \cos^2 66^\circ} + \sin^2 61^\circ + \cos 61^\circ \sin 29^\circ \right]$  is :
- (1) 2 (2) 0  
(3) 3 (4) 1
22. If  $a^3 - b^3 = 208$  and  $a - b = 4$ , then  $(a + b)^2 - ab$  is equal to :
- (1) 42 (2) 38  
(3) 52 (4) 32
23. If  $3\cos^2 A + 7\sin^2 A = 4$ , then what is the value of  $\cot A$ , given that A is an acute angle?
- (1) 1 (2)  $\frac{1}{\sqrt{3}}$   
(3)  $\sqrt{3}$  (4)  $\frac{\sqrt{3}}{2}$
24. The selling price of 40 articles is equal to the cost price of 50 articles, then the percentage loss or gain is :
- (1) 25% gain (2) 20% gain  
(3) 20% loss (4) 25% loss
25. If  $x + \frac{1}{x} = 5$ , then  $x^3 + \frac{1}{x^3}$  is equal to :
- (1) 130 (2) 145  
(3) 110 (4) 125

**Answers**

1. (4)	2. (4)	3. (1)	4. (1)	5. (1)
6. (1)	7. (1)	8. (3)	9. (3)	10. (1)
11. (3)	12. (1)	13. (1)	14. (4)	15. (2)
16. (4)	17. (2)	18. (3)	19. (3)	20. (1)
21. (1)	22. (3)	23. (3)	24. (1)	25. (3)

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