

**SSC CGL 2019 EXAM PAPER : Held on 05-March-2020
Shift-1 (Mathematics)**

Q1. If $5 \sin \theta = 4$, then the value of $\sec\theta + 4\cot\theta / 4\tan\theta - 5\cos\theta$ is:

- (a) $3/2$
- (b) 2
- (c) 1
- (d) $5/4$

Correct Answer : 2

Q2. The given table represents the exports (in ` crores) of four items A, B, C and D over a period of six years. Study the table and answer the question that follows.

Year	Item =>	A	B	C	D
2010		240	128	180	214
2011		250	134	244	282

2012		225	138	230	247
2013		370	169	340	224
2014		425	182	300	309
2015		400	209	306	275

What is the ratio of the total exports of item A in 2014 and 2015 to the total exports of item C in 2011 and 2015?

- (a) 4 : 3
- (b) 3 : 2
- (c) 7 : 5
- (d) 5 : 4

Correct Answer : 3 : 2

Q3. The value of $\sec^6 \theta - \tan^6 \theta - 3\sec^2 \theta \tan^2 \theta + 1 / \cos^4 \theta - \sin^4 \theta + 2\sin^2 \theta + 2$ is:

- (a) 2/3
- (b) 1
- (c) 3/4
- (d) 1/2

Correct Answer : 2/3

Q4. Two chords AB and CD of a circle with centre O intersect each other at P. If $\angle APC = 95^\circ$ and $\angle AOD = 110^\circ$, then $\angle BOC$ is :

- (a) 55°
- (b) 70°
- (c) 60°
- (d) 65°

Correct Answer : 60°

Q5. The compound interest on a certain sum at $50/3\%$ p.a. for 3 years is 6,350. What will be the simple interest on the same sum at the same rate for $17/3$ years?

- (a) ` 11,400
 (b) ` 7,620
 (c) ` 9,600
 (d) ` 10,200

Correct Answer : ` 10,200

Q6. The given table represents the exports (in Rs. crores) of four items A, B, C and D over a period of six years. Study the table and answer the question that follows.

Year	Item =>	A	B	C	D
2010		240	128	180	214
2011		250	134	244	282
2012		225	138	230	247
2013		370	169	340	224
2014		425	182	300	309
2015		400	209	306	275

The total exports of item A from 2012 to 2014 is what percentage less than the total exports of all the four items in 2015? (correct to one decimal place)

- (a) 15.2%
 (b) 14.3%
 (c) 16.7%
 (d) 13.8%

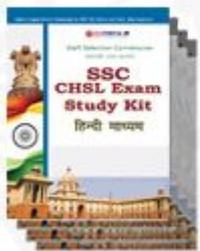
Correct Answer : 14.3%

Q7. If $12\cos^2 \theta - 2\sin^2 \theta + 3\cos\theta = 3$, $0^\circ < \theta < 90^\circ$, then what is the value of $\operatorname{cosec}\theta + \sec\theta / \tan\theta + \cot\theta$?

- (a) $1 + \sqrt{3}/2$
 (b) $2 + \sqrt{3}/4$
 (c) $4 + \sqrt{3}/4$
 (d) $1 + 2\sqrt{2}/2$

Correct Answer : $1 + \sqrt{3}/2$

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Q8. If $x^2 - 2\sqrt{5}x + 1 = 0$, then what is the value of $x^5 + 1/x^5$?

- (a) $610\sqrt{5}$
- (b) $406\sqrt{5}$
- (c) $612\sqrt{5}$
- (d) $408\sqrt{5}$

Correct Answer : $610\sqrt{5}$

Q9.Q9. The given table represents the exports (in Rs. crores) of four items A, B, C and D over a period of six years. Study the table and answer the question that follows.

Year	Item =>	A	B	C	D
2010		240	128	180	214
2011		250	134	244	282
2012		225	138	230	247
2013		370	169	340	224
2014		425	182	300	309
2015		400	209	306	275

The total exports of item D in 2010, 2012 and 2014 is what percentage of the total exports of all the four items in 2011 and 2012?

- (a) 44%
- (b) 46.2%
- (c) 44.8%
- (d) 45%

Correct Answer : 44%

Q10. A shopkeeper bought 80 kg of rice at a discount of 10%. Besides 1 kg rice was offered free to him on the purchase of every 20kg rice. If he sells the rice at the marked price, his profit percentage will be:

- (a) 50.3%
- (b) 100/7%
- (c) 108/7%
- (d) 46/3%

Correct Answer : 50.3%

Q11. In an examination in which the full marks were 500. A scored 25% more marks than B, B scored 60% more marks than C and C scored 20% less marks than D. If A scored 80% marks, then the percentage of marks obtained by D is :

- (a) 54%
- (b) 50%
- (c) 60%
- (d) 65%

Correct Answer : 50%

Q12. The diagonal of a square A is $(a + b)$ units. What is the area (in square units) of the square drawn on the diagonal of square B whose area is twice the area of A?

- (a) $2(a + b)^2$
- (b) $8(a + b)^2$
- (c) $(a + b)^2$
- (d) $4(a + b)^2$

Correct Answer : $2(a + b)^2$

Q13. If $16a^4 + 36a^2b^2 + 81b^4 = 91$ and $4a^2 + 9b^2 - 6ab = 13$, then what is the value of $3ab$?

- (a) $-3/2$
- (b) 5
- (c) $3/2$
- (d) -3

Correct Answer : $-3/2$

Q14. Pipes A and B can fill a tank in 10 hours and 40 hours, respectively. C is an outlet pipe attached to the tank. If all the three pipes are opened simultaneously, it takes 80 minutes more time than what A together take to fill the tank. A and B are kept opened for 7 hours and then closed and C was opened, C will now empty the tank in:

- (a) 49 hours
- (b) 45.5 hours
- (c) 42 hours
- (d) 38.5 hours

Correct Answer : 49 hours

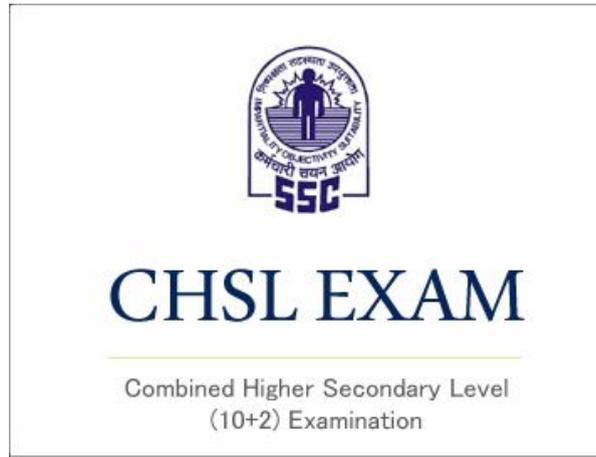
Q15. The given table represents the exports (in Rs. crores) of four items A, B, C and D over a period of six years. Study the table and answer the question that follows.

Year	Item =>	A	B	C	D
2010		240	128	180	214
2011		250	134	244	282
2012		225	138	230	247
2013		370	169	340	224
2014		425	182	300	309
2015		400	209	306	275

In which year, the exports of item D were 1.4 times the average exports of item B during six years?

- (a) 2011
- (b) 2013
- (c) 2012
- (d) 2014

Correct Answer : 2013



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Q16. If the nine-digit number $708x6y8z9$ is divisible by 99, then what is the value of $x + y + z$?

- (a) 9
- (b) 27
- (c) 5
- (d) 16

Correct Answer : 16

Q17. A train takes $5/2$ hours less for a journey of 300 km, if its speed is increased by 20 km/h from its usual speed. How much time will it take to cover a distance of 192 km at its usual speed?

- (a) 4.8 hours
- (b) 2.4 hours
- (c) 6 hours
- (d) 3 hours

Correct Answer : 4.8 hours

Q18. The ratio of the ages of A and B, 8 years ago, was 2:3. Four years ago, the ratio of their ages was 5:7. What will be the ratio of their ages 8 years from now?

- (a) 7 : 8
- (b) 3 : 4
- (c) 4 : 5
- (d) 5 : 6

Correct Answer : 4 : 5

Q19. In $\triangle ABC$, $\angle C = 90^\circ$, $AC = 5\text{cm}$ and $BC = 12\text{cm}$. The bisector of $\angle A$ meets BC at D . What is the length of AD ?

- (a) $5\sqrt{13} / 3\text{cm}$
- (b) $2\sqrt{13}\text{cm}$
- (c) $4/3 \sqrt{13}\text{cm}$
- (d) $2/3 \sqrt{13}\text{cm}$

Correct Answer : $5\sqrt{13} / 3\text{cm}$

Q20. Sides AB and DC of a cyclic quadrilateral ABCD are produced to meet at E, and sides AD and BC are produced to meet at F. If $\angle ADC = 75^\circ$, and $\angle BEC = 52^\circ$, then the difference between $\angle BAD$ and $\angle AFB$ is:

- (a) 22°
- (b) 31°
- (c) 23°
- (d) 21°

Correct Answer : 31°

Q21. D is the midpoint of side BC of $\triangle ABC$. Point E lies on AC such that $CE = \frac{1}{3} AC$. BE and AD intersect at G. What is AG/GD?

- (a) 8 : 3
- (b) 4 : 1
- (c) 3 : 1
- (d) 5 : 2

Correct Answer : 4 : 1

Q22. The value of $\frac{11}{3} \div \frac{11}{30}$ of $\frac{2}{3} - \frac{1}{4}$ of $\frac{5}{2} \div \frac{3}{5} \times \frac{24}{5} \div \frac{2}{3}$ of $\frac{15}{2} \div \frac{3}{4} - \frac{3}{4} \times \frac{3}{2} \div \frac{9}{4}$ is :

- (a) $\frac{20}{7}$
- (b) $\frac{20}{9}$
- (c) $\frac{10}{21}$
- (d) $\frac{25}{7}$

Correct Answer : $\frac{20}{7}$

Q23. Sudha sold an article to Renu for Rs. 576 at a loss of 20%. Renu spent a sum of Rs.224 on its transportation and sold it to Raghu at a price which would have given Sudha a profit of 24%. The percentage of gain for Renu is:

- (a) 10.5%
- (b) 11.6%
- (c) 13.2%
- (d) 12.9%

Correct Answer : 11.6%

Q24. If $P = \frac{x^2 + y^2}{(x-y)^2} + 3xy$, $Q = \frac{(x+y)^2 - 3xy}{x^2 - y^2}$ and $R = \frac{(x+y)^2 + (x-y)^2}{x^2 - y^2}$, then what is the value of $(P \div Q) \times R$?

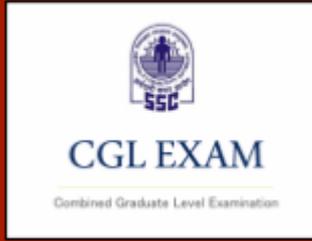
- (a) $2xy$
- (b) $x^2 + y^2$
- (c) $4xy$
- (d) $2(x^2 + y^2)$

Correct Answer : $2(x^2 + y^2)$

Q25. The average of 24 numbers is 56. The average of the first 10 numbers is 71.7 and that of the next 11 numbers is 42. The next three numbers (i.e., 22nd, 23rd, and 24th) are in the ratio $1/2 : 1/3 : 5/12$, What is the average of the 22nd and 24th numbers?

- (a) 55
- (b) 49.5
- (c) 60.5
- (d) 58

Correct Answer : 60.5



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