Combined Graduate Level Examination 2020 Tier II

Roll Number	KD Job Updates
Candidate Name	
Venue Name	
Exam Date	03/02/2022
Exam Time	9:00 AM - 11:00 AM
Subject	Paper I Quantitative abilities

Section : **Quantitative abilities**

Q.1 A person saves $33\frac{1}{3}\%$ of his income. If the saving increases by 22% and the expenditure increases by 10%, then the percentage increase in his income is:

Ans ✗ 1. 18%

✓ 2. 14%

✗ 3. 16%

✗ 4. 22%

Question ID : **65497840201**
Status : **Answered**
Chosen Option : **2**

Q.2 P can finish a work in 18 days. When he had worked for 5 days, Q joined him. If both of them together completed the remaining work in $\frac{13}{5}$ days, then in how many days can Q alone finish $66\frac{2}{3}\%$ of the same work?

Ans ✗ 1. 5

✗ 2. 4

✗ 3. 2

✓ 4. 3

Question ID : **65497840229**
Status : **Answered**
Chosen Option : **4**

Q.3 In ΔABC, AB = 20 cm, BC = 7 cm and CA = 15 cm. Side BC is produced to D such that ΔDAB∼ΔDCA. DC is equal to:

Ans ✓ 1. 9 cm

✗ 2. 8 cm

✗ 3. 10 cm

✗ 4. 7 cm

Question ID : **65497840247**
Status : **Marked For Review**
Chosen Option : **1**

Q.4 The areas of three adjacent faces of a cuboidal solid block of wax are 216 cm², 96 cm² and 144 cm². It is melted and 8 cubes of the same size are formed from it. What is the lateral surface area (in cm²) of 3 such cubes?

Ans
✗ 1. 648

✔ 2. 432

✗ 3. 576

✗ 4. 288

Q.5 The ratio of the incomes of A and B in 2020 was 5 : 4. The ratios of their individual incomes in 2020 and 2021 were 4 : 5 and 2 : 3, respectively. If the total income of A and B in 2021 was ₹7,05,600, then what was the income (in ₹) of B in 2021?

Ans
✔ 1. 3,45,600

✗ 2. 2,79,700

✗ 3. 3,60,000

✗ 4. 4,25,900

Q.6 In a medical transaction, 17 times the cost price is equal to 8 times the sum of the cost price and the selling price. What is the gain or loss percentage?

Ans
✗ 1. Loss 15%

✗ 2. Gain 17.5%

✔ 3. Gain 12.5%

✗ 4. Loss 30%

Q.7 In an examination, B obtained 20% more marks than those obtained by A, and A obtained 10% less marks than those obtained by C. D obtained 20% more marks than those obtained by C. By what percentage are the marks obtained by D more than those obtained by A?

Ans
✔ 1. $33\frac{1}{3}\%$

✗ 2. $13\frac{1}{3}\%$

✗ 3. $43\frac{1}{3}\%$

✗ 4. $23\frac{1}{3}\%$

Q.8 The value of $\dfrac{(2.53)^3+(2.47)^3}{25.3\times25.3-624.91+24.7\times24.7}$ is 5×10^k, where the value of k is:

Ans   ✔ 1. -2

   ✘ 2. -1

   ✘ 3. 1

   ✘ 4. 2

Q.9 The driver of a car, which is travelling at a speed of 75 km/h, locates a bus 80 m ahead of him, travelling in the same direction. After 15 seconds, he finds that the bus is 40 m behind the car. What is the speed of the bus (in km/h)?

Ans   ✘ 1. 44.2

   ✘ 2. 42.5

   ✘ 3. 47.5

   ✔ 4. 46.2

Q.10 The value of $17\dfrac{1}{2}\%$ of $3\dfrac{1}{4}\%$ of $33\dfrac{1}{3}\%$ of 7200 is:

Ans   ✘ 1. 7.65
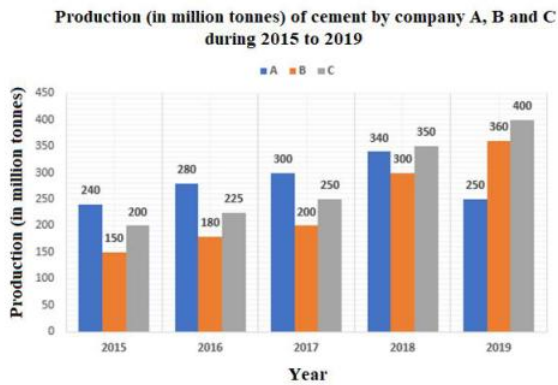
   ✘ 2. 11.68

   ✔ 3. 13.65

   ✘ 4. 9.65

Q.11 A_1 and A_2 are two regular polygons. The sum of all the interior angles of A_1 is $1080°$. Each interior angle of A_2 exceeds its exterior angle by $132°$. The sum of the number of sides A_1 and A_2 is:

Ans   ✘ 1. 21

   ✘ 2. 22

   ✔ 3. 23

   ✘ 4. 24

Q.12 Study the given graph and answer the question that follows.

Production (in million tonnes) of cement by company A, B and C during 2015 to 2019

In 2020, the production of cement by company C increased by the same percentage as in 2019, over its previous year. The production (in million tonnes) of cement by company C in 2020 (correct to one decimal place) was:

Ans

✗ 1. 454.6

✗ 2. 455.8

✔ 3. 457.1

✗ 4. 452.4

Question ID : **65497840280**
Status : **Answered**
Chosen Option : **3**

Q.13

The value of $\dfrac{3(\text{cosec}^2\, 26° - \tan^2\, 64°) + (\cot^2\, 42° - \sec^2\, 48°)}{\cot(22° - \theta) - \text{cosec}^2(62° + \theta) - \tan(\theta + 68°) + \tan^2(28° - \theta)}$ is:

Ans

✗ 1. 3

✗ 2. 4

✗ 3. −1

✔ 4. −2

Question ID : **65497840275**
Status : **Answered**
Chosen Option : **4**

Q.14 The value of $11.\overline{4} + 22.5\overline{67} - 33.5\overline{9}$ is:

Ans

✗ 1. $40.\overline{12}$

✗ 2. $4.\overline{12}$

✔ 3. $0.4\overline{12}$

✗ 4. $0.04\overline{12}$

Question ID : **65497840189**
Status : **Marked For Review**
Chosen Option : **3**

Q.15 P and Q start a shop with a capital of ₹1,50,000 and ₹4,50,000, respectively. After a year, out of the profit of ₹2,00,000, P gets his share of profit plus some money as his salary that is not a part of the profit. If P gets a total of ₹90,000, what is the amount of salary (in ₹) that he received?

Ans
✗ 1. 20,000

✗ 2. 25,000

✗ 3. 50,000

✔ 4. 40,000

Q.16 If 91% of A is 39% of B, and B is x% of A, then the value of x is:

Ans
✗ 1. $\dfrac{200}{3}$

✔ 2. $\dfrac{700}{3}$

✗ 3. $\dfrac{400}{3}$

✗ 4. $\dfrac{500}{3}$

Q.17 The average of n numbers is 45. If 60% of the numbers are increased by 5 each and the remaining numbers are decreased by 10 each, then what is the average of the numbers so obtained?

Ans
✗ 1. 42

✗ 2. 43

✗ 3. 46

✔ 4. 44

Q.18 ABCD is a cyclic quadrilateral. Sides AB and DC, when produced, meet at E and sides AD and BC when produced, meet at F. If ∠ADC = 76° and ∠AED = 55°, then ∠AFB is equal to:

Ans
✗ 1. 34°

✗ 2. 26°

✗ 3. 29°

✔ 4. 27°

Q.19 If $\cos \theta = \frac{12}{13}$, then the value of $\frac{\sin \theta (1-\tan \theta)}{\tan \theta (1+cosec\, \theta)}$ is:

Ans

✗ 1. $\frac{25}{78}$

✔ 2. $\frac{35}{234}$

✗ 3. $\frac{35}{108}$

✗ 4. $\frac{25}{156}$

Q.20 If $x^2 - 3x + 1 = 0$, then the value of $\frac{(x^4+\frac{1}{x^2})}{(x^2+5x+1)}$ is:

Ans

✔ 1. $\frac{9}{4}$

✗ 2. $\frac{27}{8}$

✗ 3. $\frac{5}{2}$

✗ 4. 2

Q.21 A shopkeeper marks an article at such a price that after giving a discount of $12\frac{1}{2}$% on the marked price, he still earns a profit of 15%. If the cost price of the article is ₹385, then the sum of the marked price and the selling price (in ₹) of the article is:

Ans

✔ 1. 948.75

✗ 2. 849.50

✗ 3. 984.75

✗ 4. 954.75

Q.22 A and B worked together and received a total of ₹18,000 for 15 days. A's efficiency in the work was 5 times that of B's. The daily wage of A (in ₹) was:

Ans   ✗ 1. 800

   ✗ 2. 600

   ✗ 3. 1,200

   ✔ 4. 1,000

Q.23 If x = 32.5 , y = 34.6 and z = 30.9 , then the value of $x^3 + y^3 + z^3 - 3xyz$ is 0.98k , where k is equal to:

Ans   ✔ 1. 1033

   ✗ 2. 933

   ✗ 3. 1026

   ✗ 4. 921

Q.24 If $\frac{sec\,\theta - tan\,\theta}{sec\,\theta + tan\,\theta} = \frac{1}{7}$, θ lies in first quadrant, then the value of $\frac{cosec\,\theta + cot^2\theta}{cosec\,\theta - cot^2\theta}$ is:

Ans   ✔ 1. $\dfrac{19}{5}$

   ✗ 2. $\dfrac{22}{3}$

   ✗ 3. $\dfrac{37}{12}$

   ✗ 4. $\dfrac{37}{19}$

Q.25 A sum of money at simple interest amounts to ₹6,000 in 4 years and to ₹6,750 in 7 years at the same rate per cent p.a. of interest. The sum (in ₹) is:

Ans   ✗ 1. 5,100

   ✗ 2. 4,800

   ✗ 3. 4,000

   ✔ 4. 5,000

Q.26 The sum of the digits of the least number which when divided by 36, 72, 80 and 88 leaves the remainders 16, 52, 60 and 68, respectively, is:

Ans

✗ 1. 17

✗ 2. 11

✗ 3. 14

✔ 4. 16

Q.27 The expression $(tan\ \theta + cot\ \theta)(sec\ \theta + tan\ \theta)(1 - sin\ \theta)$, $0° < \theta < 90°$, is equal to:

Ans

✗ 1. $sec\ \theta$

✔ 2. $cosec\ \theta$

✗ 3. $cot\ \theta$

✗ 4. $sin\ \theta$

Q.28 A sum of ₹8,400 amounts to ₹11,046 at 8.75% p.a. simple interest in a certain time. What will be the simple interest (in ₹) on a sum of ₹10,800 at the same rate for the same time?

Ans

✔ 1. 3,402

✗ 2. 3,204

✗ 3. 3,024

✗ 4. 3,420

Q.29 The circumference of the base of a cylindrical vessel is 264 cm and its height is 50 cm. The capacity (in litres) of the vessel is:

(Take $\pi = \frac{22}{7}$)

Ans

✔ 1. 277.2

✗ 2. 278.4

✗ 3. 280.6

✗ 4. 267.4

Q.30 The value of $9 \div \left\{ \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{6} \div \left(\frac{3}{4} - \frac{1}{3} \right) \text{ of } \frac{2}{9} \right\}$ is:

Ans

✓ 1. $\dfrac{540}{173}$

✗ 2. $\dfrac{340}{173}$

✗ 3. $\dfrac{480}{173}$

✗ 4. $\dfrac{2540}{173}$

Q.31 A well with inner radius 3 m, is dug 6 m deep. The soil taken out of it has been spread evenly all around it to a width of 2 m to form an embankment. The height (in m) of the embankment is:

Ans

✗ 1. $4\dfrac{1}{2}$

✗ 2. $4\dfrac{1}{4}$

✗ 3. $3\dfrac{1}{4}$

✓ 4. $3\dfrac{3}{8}$

Q.32 The expression $\dfrac{\tan^6 \theta - \sec^6 \theta + 3 \sec^2 \theta \tan^2 \theta}{\tan^2 \theta + \cot^2 \theta + 2}$, $0° < \theta < 90°$, is equal to:

Ans

✗ 1. $\sec^2 \theta \; cosec^2 \theta$

✗ 2. $-\sec^2 \theta \; cosec^2 \theta$

✗ 3. $\cos^2 \theta \sin^2 \theta$

✓ 4. $-\cos^2 \theta \sin^2 \theta$

Q.33 A trader bought 640 kg of rice. He sold a part of the rice at 20% profit and the rest at 5% loss. He earned a profit of 15% in the entire transaction. What is the ratio of the quantity of rice that he sold at a loss of 5% to that of the quantity that he sold at a profit of 20%?

Ans
✗ 1. $1 : 3$
✗ 2. $4 : 1$
✔ 3. $1 : 4$
✗ 4. $3 : 1$

Q.34 $5^{71} + 5^{72} + 5^{73} + 5^{74} + 5^{75}$ is divisible by which of the following number?

Ans
✔ 1. 71
✗ 2. 69
✗ 3. 89
✗ 4. 73

Q.35 Let x, y, z be fractions such that $x < y < z$. If z is divided by x, the result is $\frac{5}{2}$, which exceeds y by $\frac{7}{4}$. If $x + y + z = 1\frac{11}{12}$, then the ratio of $(z - x):(y - x)$ is:

Ans
✔ 1. $6 : 5$
✗ 2. $9 : 5$
✗ 3. $5 : 6$
✗ 4. $5 : 9$

Q.36 In $\triangle ABC$, D and E are points on the sides BC and AB, respectively, such that $\angle ACB = \angle DEB$. If $AB = 12\ cm, BE = 5\ cm$ and $BD : CD = 1 : 2$, then BC is equal to:

Ans
✗ 1. $8\sqrt{3}\ cm$
✗ 2. $5\sqrt{5}\ cm$
✔ 3. $6\sqrt{5}\ cm$
✗ 4. $6\sqrt{3}\ cm$

Q.37 An athlete runs 8 times around a circular field of radius 7 m in 3 minutes 40 seconds. His speed (in km/h) is:

(Take $\pi = \frac{22}{7}$)

Ans

✗ 1. $\dfrac{72}{25}$

✗ 2. $\dfrac{118}{25}$

✓ 3. $\dfrac{144}{25}$

✗ 4. $\dfrac{108}{25}$

Question ID : **65497840223**
Status : **Answered**
Chosen Option : **3**

Q.38 Three numbers are in the ratio $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$. If the difference between the greatest number and the smallest number is 33, then HCF of the three numbers is:
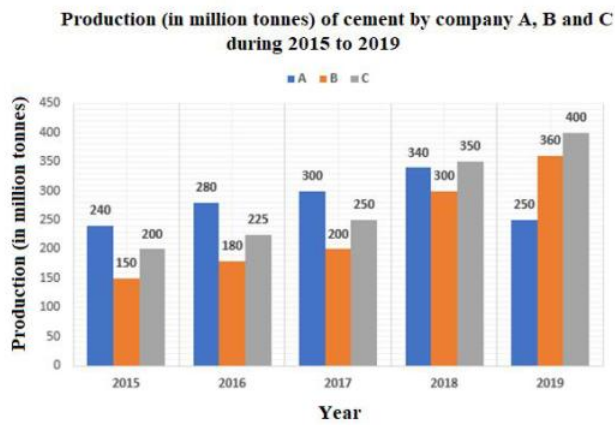
Ans

✗ 1. 9

✗ 2. 5

✗ 3. 13

✓ 4. 11

Question ID : **65497840204**
Status : **Answered**
Chosen Option : **4**

Q.39 Study the given graph and answer the question that follows.

Production (in million tonnes) of cement by company A, B and C during 2015 to 2019

■A ■B ■C

The ratio of the total production of cement by company A in 2016 and company C in 2018 to the total production of cement by company B in 2017 and 2019 is:

Ans
✔ 1. $9 : 8$

✘ 2. $7 : 6$

✘ 3. $8 : 7$

✘ 4. $10 : 9$

Question ID : **65497840278**
Status : **Answered**
Chosen Option : **1**

Q.40 The number of students in a class is 45, out of which $33\frac{1}{3}\%$ are boys and the rest are girls. The average score of girls in Science is $66\frac{2}{3}\%$ more than that of boys. If the average score of all the students is 78, then the average score of girls is:

Ans
✘ 1. 78

✘ 2. 54

✔ 3. 90

✘ 4. 65

Question ID : **65497840203**
Status : **Answered**
Chosen Option : **3**

Q.41 In a square ABCD, diagonals AC and BD intersect at O. The angle bisector of ∠CAB meets BD and BC at F and G, respectively. OF : CG is equal to:

Ans
✘ 1. $1 : 2$

✘ 2. $1 : 3$

✔ 3. $1 : \sqrt{2}$

✘ 4. $1 : \sqrt{3}$

Question ID : **65497840252**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.42 A sum of ₹5,000 is divided into two parts such that the simple interest on the first part for $4\frac{1}{5}$ years at $6\frac{2}{3}$% p.a. is double the simple interest on the second part for $2\frac{3}{4}$ years at 4% p.a. The ratio of the second part to the first part is:

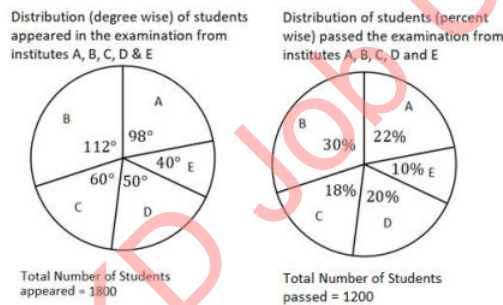**Ans** ✗ 1. $11 : 14$

✗ 2. $11 : 13$

✔ 3. $14 : 11$

✗ 4. $13 : 11$

Q.43 The distance between two places A and B is 140 km. Two cars x and y start simultaneously from A and B, respectively. If they move in the same direction, they meet after 7 hours. If they move towards each other, they meet after one hour. What is the speed (in km/h) of car y if its speed is more than that of car x?

Ans ✗ 1. 60

✗ 2. 100

✔ 3. 80

✗ 4. 90

Q.44 Study the given pie charts and answer the question that follows.

Distribution (degree wise) of students appeared in the examination from institutes A, B, C, D & E

Distribution of students (percent wise) passed the examination from institutes A, B, C, D and E

Total Number of Students appeared = 1800

Total Number of Students passed = 1200

If the ratio of the number of boys to that of the girls who passed from institute A is 5 : 6, and 40% of the students who passed from institute D are boys, then the ratio of the number of boys who passed from institute A to that of boys who passed from institute D is:

Ans ✗ 1. $25 : 24$

✗ 2. $4 : 3$

✔ 3. $5 : 4$

✗ 4. $3 : 2$

Q.45 The value of $\dfrac{3}{70} + \dfrac{1}{42} + \dfrac{1}{66} + \dfrac{3}{286} + \dfrac{1}{130} + \dfrac{1}{170}$ is:

Ans

✗ 1. $\dfrac{7}{85}$

✗ 2. $\dfrac{11}{85}$

✔ 3. $\dfrac{9}{85}$

✗ 4. $\dfrac{3}{85}$

Q.46 The monthly salary of a person was ₹1,60,000. He used to spend on three heads — Personal and family expenses (P), Taxes (T) and Education loan (E). The rest were his savings. P was 50% of the income, E was 20% of P, and T was 15% of E. When his salary got raised by 30%, he maintained the percentage level of P, but E became 30% of P and T became 20% of E. The sum of the two savings (in ₹) is:

Ans

✗ 1. 2,11,680

✔ 2. 1,28,160

✗ 3. 1,18,620

✗ 4. 1,62,810

Q.47 The radius of a spherical balloon is inflated from 7 cm to 10.5 cm. The percentage increase in its surface area is:

Ans

✗ 1. 150%

✔ 2. 125%

✗ 3. 120%

✗ 4. 135%

Q.48 The volume of a cylinder is 4312 cm^3. Its curved surface area is one-third of its total surface area. Its curved surface area (in cm^2) is:

(Take $\pi = \frac{22}{7}$)

Ans
✗ 1. 572
✗ 2. 528
✗ 3. 660
✔ 4. 616

Q.49 The graphs of the equations $7x + 11y = 3$ and $8x + y = 15$ intersect at the point P, which also lies on the graph of the equation:

Ans
✗ 1. $2x + y = 2$
✗ 2. $2x - y = 1$
✔ 3. $3x + 5y = 1$
✗ 4. $3x + 2y = 3$

Q.50 A dealer gains 20% by selling an article at 25% discount on its marked price. If the cost price of the article is decreased by 15%, how much discount percentage should he now give on the same marked price so as to earn the same percentage of profit as before?
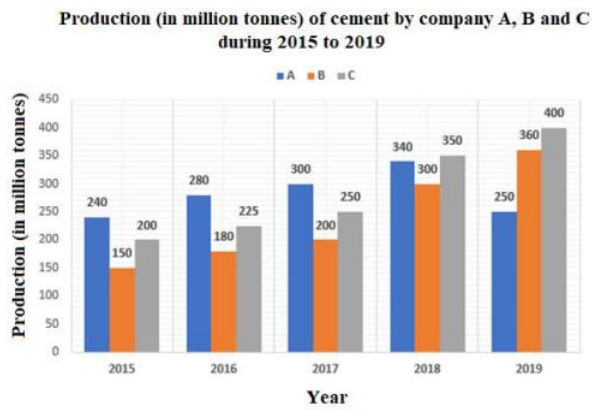
Ans
✗ 1. 32.50%
✗ 2. 35%
✔ 3. 36.25%
✗ 4. 37.75%

Q.51 Study the given graph and answer the question that follows.

Production (in million tonnes) of cement by company A, B and C during 2015 to 2019

The average production of cement by company B in 2015, 2016 and 2018 is what percentage less than the average production of cement by company C in 2015 and 2017?

Ans

✘ 1. $7\frac{3}{7}\%$

✘ 2. $7\frac{1}{7}\%$

✘ 3. $5\frac{1}{3}\%$

✔ 4. $6\frac{2}{3}\%$

Q.52 The total surface area of a solid hemisphere is 942 cm². Its volume (in cm³) is closest to:

(Take $\pi = 3.14$)

Ans

✘ 1. 2089

✔ 2. 2093

✘ 3. 2037

✘ 4. 2097

Q.53 Two pipes A and B can fill a tank in 12 minutes and 24 minutes, respectively, while a third pipe C can empty the full tank in 32 minutes. All the three pipes are opened simultaneously. However, pipe C is closed 2 minutes before the tank is filled. In how much time (in minutes) will the tank be full?

Ans

✘ 1. 9

✔ 2. 10

✘ 3. 12

✘ 4. 8

Q.54 AB is a chord in the minor segment of a circle with centre O. C is a point on the minor arc (between A and B). The tangents to the circle at A and B meet at a point P. If $\angle ACB = 108°$, then $\angle APB$ is equal to:

Ans ✔ 1. $36°$

✘ 2. $54°$

✘ 3. $27°$

✘ 4. $18°$

Question ID : **65497840250**
Status : **Answered**
Chosen Option : **1**

Q.55 A solid metallic sphere of radius 4 cm is melted and recast into spheres of 2 cm each. What is the ratio of the surface area of the original sphere to the sum of surface areas of the spheres, so formed?

Ans ✘ 1. $2 : 1$

✘ 2. $2 : 3$

✔ 3. $1 : 2$

✘ 4. $1 : 4$

Question ID : **65497840260**
Status : **Answered**
Chosen Option : **3**

Q.56 Two circles of radius 13 cm and 15 cm intersect each other at points A and B. If the length of the common chord is 24 cm, then what is the distance between their centres?

Ans ✘ 1. 12 cm

✘ 2. 16 cm

✔ 3. 14 cm

✘ 4. 18 cm

Question ID : **65497840249**
Status : **Answered**
Chosen Option : **3**

Q.57 The value of $15 \div 8 - \dfrac{5}{4}$ of $\left(\dfrac{8}{3} \times \dfrac{9}{16} \right) + \left(\dfrac{9}{8} \times \dfrac{3}{4} \right) - \left(\dfrac{5}{32} \div \dfrac{5}{7} \right) + \dfrac{3}{8}$ is:

Ans ✘ 1. 0

✔ 2. 1

✘ 3. 2

✘ 4. 3

Question ID : **65497840187**
Status : **Answered**
Chosen Option : **2**

Q.58 By selling an article for ₹2,200, a profit of 10% is earned. If the same article is sold for ₹2,600, then what will be the gain percentage?

Ans ✗ 1. 20%

✗ 2. 15%

✗ 3. 37%

✔ 4. 30%

Question ID : **65497840214**

Status : **Answered**

Chosen Option : **4**

Q.59

If $\sqrt{1 + \frac{\sqrt{3}}{2}} - \sqrt{1 - \frac{\sqrt{3}}{2}} = c$, then the value of c is:

Ans ✔ 1. 1

✗ 2. 4

✗ 3. 3

✗ 4. 2

Question ID : **65497840196**

Status : **Not Answered**

Chosen Option : **--**

Q.60 A dealer offers a cash discount of 20% and still makes a profit of 20%. If he further sells 8 articles at a rate of 6 articles, then how much percentage above the cost price does he mark on each article?

Ans ✗ 1. 77.5%

✔ 2. 100%

✗ 3. 112.5%

✗ 4. 87.5%

Question ID : **65497840216**

Status : **Not Attempted and Marked For Review**

Chosen Option : **--**

Q.61 Let p, q, r and s be positive natural numbers having three exact factors including 1 and the number itself. If $q > p$ and both are two-digit numbers, and $r > s$ and both are one-digit numbers, then the value of the expression $\frac{p-q-1}{r-s}$ is:

Ans ✔ 1. $-s - 1$

✗ 2. $s - 1$

✗ 3. $1 - s$

✗ 4. $s + 1$

Question ID : **65497840186**

Status : **Not Attempted and Marked For Review**

Chosen Option : **--**

Q.62 A sum of ₹50,250 is divided into two parts such that the simple interest on the first part for $7\frac{1}{2}$ years at $8\frac{1}{3}\%$ p.a. is $\frac{5}{2}$ times the simple interest on the second part for $5\frac{1}{4}$ years at 8% p.a. What is the difference (in ₹) between the two parts?

Ans ✗ 1. 10,275

✔ 2. 12,750

✗ 3. 12,570

✗ 4. 15,270

Q.63 If $27x^3 - 64y^3 = (Ax + By)(Cx^2 - Dy^2 + 12xy)$,

then the value of $4A + B + 3C + 2D$ is:

Ans ✗ 1. 5

✔ 2. 3

✗ 3. −3

✗ 4. −4

Q.64 The expression $\frac{cos^4\theta - sin^4\theta + 2sin^2\theta + 3}{(cosec\,\theta + cot\,\theta + 1)(cosec\,\theta - cot\,\theta + 1) - 2}$, $0° < \theta < 90°$, is equal to:

Ans ✗ 1. $\frac{1}{2}sin\,\theta$

✔ 2. $2\,sin\,\theta$

✗ 3. $sec\,\theta$

✗ 4. $2\,cosec\,\theta$

Q.65 The value of $(0.3)^{[\{(200 - 146)/(3 \times 3 \times 3)\} - 3]}$ is:

Ans

✔ 1. $\dfrac{10}{3}$

✘ 2. $\dfrac{5}{3}$

✘ 3. $\dfrac{7}{3}$

✘ 4. $\dfrac{8}{3}$

Question ID : **65497840191**
Status : **Answered**
Chosen Option : **1**

Q.66 The expression $\dfrac{(1 - \sin\theta + \cos\theta)^2 (1 - \cos\theta)\sec^3\theta\,\csc^2\theta}{(\sec\theta - \tan\theta)(\tan\theta + \cot\theta)}, 0° < \theta < 90°$, is equal to:

Ans

✘ 1. $\sin\theta$

✘ 2. $2\cos\theta$

✘ 3. $\cot\theta$

✔ 4. $2\tan\theta$

Question ID : **65497840270**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.67 The value of $\dfrac{(\cos 9° + \sin 81°)(\sec 9° + \csc 81°)}{\csc^2 71° + \cos^2 15° - \tan^2 19° + \cos^2 75°}$ is:

Ans

✘ 1. 1

✘ 2. 4

✘ 3. -3

✔ 4. 2

Question ID : **65497840274**
Status : **Answered**
Chosen Option : **1**

Q.68 In $\triangle ABC$, $\angle A = 50°$, BE and CF are perpendiculars on AC and AB at E and F, respectively. BE and CF intersect at H. The bisectors of $\angle HBC$ and $\angle HCB$ intersect at P. $\angle BPC$ is equal to:

Ans

✔ 1. $155°$

✘ 2. $100°$

✘ 3. $115°$

✘ 4. $120°$

Question ID : **65497840245**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.69 If $\dfrac{\sqrt{26-7\sqrt{3}}}{\sqrt{14+5\sqrt{3}}} = \dfrac{b+a\sqrt{3}}{11}$, $b > 0$, then what is the value of $\sqrt{(b\text{-}a)}$?
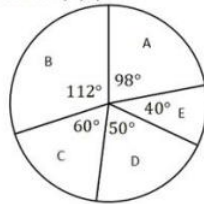
Ans
- ✔ 1. 5
- ✘ 2. 25
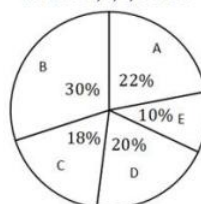- ✘ 3. 12
- ✘ 4. 9

Q.70 Study the given pie charts and answer the question that follows.

Distribution (degree wise) of students appeared in the examination from institutes A, B, C, D & E

Total Number of Students appeared = 1800

Distribution of students (percent wise) passed the examination from institutes A, B, C, D and E

Total Number of Students passed = 1200

The number of students who passed from institute C exceeds the number of students who appeared from institute E is x. The value of x lies between:

Ans
- ✘ 1. 18 and 22
- ✔ 2. 14 and 18
- ✘ 3. 10 and 14
- ✘ 4. 22 and 26

Q.71 If $\dfrac{\sin^2\theta}{\cos^2\theta - 3\cos\theta + 2} = 1$, θ lies in the first quadrant, then the value of $\dfrac{\tan^2\frac{\theta}{2}+\sin^2\frac{\theta}{2}}{\tan\theta+\sin\theta}$ is:

Ans
- ✘ 1. $\dfrac{2\sqrt{3}}{27}$
- ✘ 2. $\dfrac{5\sqrt{3}}{27}$
- ✘ 3. $\dfrac{2\sqrt{3}}{9}$
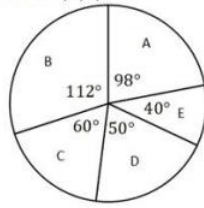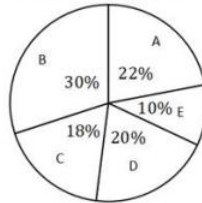- ✔ 4. $\dfrac{7\sqrt{3}}{54}$

Q.72 Study the given pie charts and answer the question that follows.

Distribution (degree wise) of students appeared in the examination from institutes A, B, C, D & E

B 112°, A 98°, 40° E, 60°, 50°, C, D

Total Number of Students appeared = 1800

Distribution of students (percent wise) passed the examination from institutes A, B, C, D and E

B 30%, A 22%, 10% E, 18%, 20%, C, D

Total Number of Students passed = 1200

The number of students who appeared from institute B is what percentage more than the total number of students who passed from institutes A and C?

Ans

✔ 1. $16\frac{2}{3}\%$

✘ 2. $15\frac{1}{3}\%$

✘ 3. $14\frac{1}{7}\%$

✘ 4. $7\frac{2}{7}\%$

Question ID : **65497840282**
Status : **Answered**
Chosen Option : **1**

Q.73 Three sides of a triangle are $\sqrt{a^2 + b^2}$, $\sqrt{(2a)^2 + b^2}$ and $\sqrt{a^2 + (2b)^2}$ units. What is the area (in unit squares) of the triangle?

Ans

✘ 1. $\frac{5}{2}ab$

✘ 2. $3ab$

✘ 3. $4ab$

✔ 4. $\frac{3}{2}ab$

Question ID : **65497840242**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.74 If $\frac{\sqrt{38-5\sqrt{3}}}{\sqrt{26+7\sqrt{3}}} = \frac{a+b\sqrt{3}}{23}$, $b > 0$, then the value of $(b - a)$ is:

Ans ✘ 1. 7

✘ 2. 18

✔ 3. 29

✘ 4. 11

Question ID : **65497840197**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.75 In an examination, the number of students who passed and the number of students who failed were in the ratio 25 : 4. If one more student had appeared and passed and the number of failed students was 3 less than earlier, the ratio of passed students to failed students would have become 22 : 3. What is the difference between the number of students who, initially, passed the examination and the number of students who failed the examination?

Ans
✗ 1. 132
✓ 2. 126
✗ 3. 174
✗ 4. 150

Q.76 What is the area (in unit squares) of the triangle enclosed by the graphs of $2x + 5y = 12$, $x + y = 3$ and the x-axis?

Ans
✗ 1. 2.5
✗ 2. 3.5
✓ 3. 3
✗ 4. 4

Q.77 In ΔPQR, the bisector of $\angle R$ meets side PQ at S, PR = 10 cm, RQ = 14 cm and PQ = 12 cm. What is the length of SQ ?

Ans
✗ 1. 5 cm
✗ 2. 6 cm
✓ 3. 7 cm
✗ 4. 8 cm

Q.78 If $x + \dfrac{1}{x} = 3$, $x \neq 0$, then the value of $x^7 + \dfrac{1}{x^7}$ is:

Ans
✗ 1. 749
✓ 2. 843
✗ 3. 746
✗ 4. 849

Q.79 In equilateral $\triangle ABC$, D and E are points on the sides AB and AC, respectively, such that $AD = CE$. BE and CD intersect at F. The measure (in degrees) of $\angle CFB$ is:

Ans ✔ 1. $120°$

✘ 2. $135°$

✘ 3. $125°$

✘ 4. $105°$

Question ID : **65497840248**

Status : **Not Attempted and Marked For Review**

Chosen Option : **--**

Q.80 The volume of a right circular cone is 308 cm³ and the radius of its base is 7 cm. What is the curved surface area (in cm²) of the cone? (Take $\pi = \frac{22}{7}$)

Ans ✘ 1. $22\sqrt{21}$

✘ 2. $44\sqrt{21}$

✔ 3. $22\sqrt{85}$

✘ 4. $11\sqrt{85}$

Question ID : **65497840256**

Status : **Answered**

Chosen Option : **3**

Q.81 In $\triangle ABC$, D is a point on BC such that $\angle ADB = 2\angle DAC$, $\angle BAC = 70°$ and $\angle B = 56°$. What is the measure of $\angle ADC$?

Ans ✔ 1. $72°$

✘ 2. $54°$

✘ 3. $74°$

✘ 4. $81°$

Question ID : **65497840240**

Status : **Answered**

Chosen Option : **1**

Q.82 The ratio of the investments of A and B in a business is 7 : 5, and the ratio of their profits at the end of a year is 2 : 5. If A invested the money for 6 months, then for how much time (in months) has B invested his money?

Ans ✘ 1. 12

✔ 2. 21

✘ 3. 24

✘ 4. 18

Question ID : **65497840219**

Status : **Answered**

Chosen Option : **2**

Q.83 A cylindrical tube, open at both ends, is made of a metal sheet which is 0.5 cm thick. Its outer radius is 4 cm and length is 2 m. How much metal (in cm^3) has been used in making the tube?

Ans ✗ 1. $800\,\pi$

✗ 2. $450\,\pi$

✔ 3. $750\,\pi$

✗ 4. $550\,\pi$

Q.84 A vessel contained a solution of acid and water, in which water was 64%. Four litres of the solution was taken out of the vessel and the same quantity of water was added. If the resulting solution contains 30% acid, the quantity (in litres) of the water in the solution, at the beginning in the vessel, was:

Ans ✗ 1. 11.36

✔ 2. 15.36

✗ 3. 8.64

✗ 4. 12.64

Q.85 If $x^4 + y^4 + x^2y^2 = 17\frac{1}{16}$ and $x^2 - xy + y^2 = 5\frac{1}{4}$, then one of the values of $(x - y)$ is:

Ans ✔ 1. $\dfrac{5}{2}$

✗ 2. $\dfrac{3}{4}$

✗ 3. $\dfrac{5}{4}$

✗ 4. $\dfrac{3}{2}$

Q.86 The base of a right pyramid is a square of side $8\sqrt{2}$ cm and each of its slant edge is of length 10 cm. What is the volume (in cm^3) of the pyramid?

Ans ✔ 1. 256

✗ 2. 224

✗ 3. $426\frac{2}{3}$

✗ 4. $96\sqrt{2}$

Q.87 The base of a right prism is a triangle whose sides are 8 cm, 15 cm and 17 cm, and its lateral surface area is 480 cm^2. What is the volume (in cm^3) of the prism?

Ans
- ✗ 1. 540
- ✗ 2. 600
- ✓ 3. 720
- ✗ 4. 640

Q.88 X and Y travel a distance of 90 km each such that the speed of Y is greater than that of X. The sum of their speeds is 100 km/h and the total time taken by both is 3 hours 45 minutes. The ratio of the speed of X to that of Y is:

Ans
- ✓ 1. 2 : 3
- ✗ 2. 1 : 3
- ✗ 3. 2 : 4
- ✗ 4. 1 : 4

Q.89 Pipes A, B and C can fill a tank in 20, 30 and 60 hours, respectively. Pipes A, B and C are opened at 7 a.m., 8 a.m., and 9 a.m., respectively, on the same day. When will the tank be full?

Ans
- ✗ 1. 4:40 p.m.
- ✓ 2. 5:40 p.m.
- ✗ 3. 6:20 p.m.
- ✗ 4. 7:20 p.m.

Q.90 If a nine-digit number $789x6378y$ is divisible by 72, then the value of xy is:

Ans
- ✗ 1. 10
- ✗ 2. 12
- ✓ 3. 8
- ✗ 4. 15

Q.91 The curved surface area of a right circular cone is 2310 cm² and its radius is 21 cm. If its radius is increased by 100% and height is reduced by 50%, then its capacity (in litres) will be (correct to one decimal place):

(Take $\pi = \frac{22}{7}$)

Ans

✗ 1. 27.8

✗ 2. 28.2

✗ 3. 26.7

✔ 4. 25.9

Q.92 Two pillars A and B of the same height are on opposite sides of a road which is 40 m wide. The angles of elevation of the tops of the pillars A and B are 30° and 45°, respectively, at a point on the road between the pillars. What is the distance (in m) of the point from the foot of pillar A?

Ans

✗ 1. $40(\sqrt{3} - 1)$

✗ 2. $20(2 - \sqrt{3})$

✔ 3. $20(3 - \sqrt{3})$

✗ 4. $39\sqrt{3}$

Q.93 A lady sold an article for ₹960 at some profit. Had she sold it for ₹800, then there would have been a loss equal to $\frac{1}{3}$ of the initial profit. What was the profit percentage of the article?

Ans

✗ 1. $\dfrac{150}{7}\%$

✗ 2. $\dfrac{50}{7}\%$
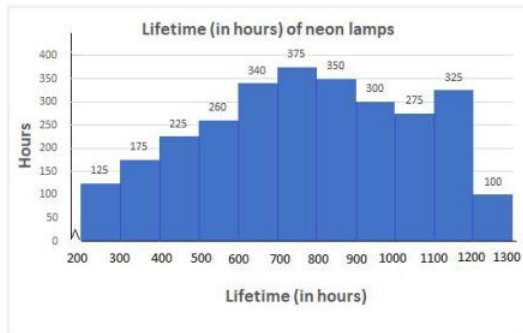
✗ 3. $\dfrac{10}{7}\%$

✔ 4. $\dfrac{100}{7}\%$

Q.94 In ΔABC, AB = 48 cm, BC = 55 cm and AC = 73 cm. If O is the centroid of the triangle, then the length (in cm) of BO (correct to one decimal place) is:

Ans ✗ 1. 25.6

  ✔ 2. 24.3

  ✗ 3. 20.4

  ✗ 4. 18.3

Q.95 Study the given histogram and answer the question that follows.

The total number of neon lamps having lifetime of 800 or more hours is approximately what percentage more than the total number of neon lamps having lifetime of 400 or more hours but less than 800 hours?

Ans ✗ 1. 22.7%

  ✔ 2. 12.5%

  ✗ 3. 32.2%

  ✗ 4. 31.8%

Q.96 In ΔPQR, PQ = PR and S is a point on QR such that ∠PSQ = 96° + ∠QPS and ∠QPR = 132°. What is the measure of ∠PSR?

Ans ✗ 1. 45°

  ✗ 2. 56°

  ✔ 3. 54°

  ✗ 4. 52°

Q.97 The sum of three fractions A, B and C, $A > B > C$, is $\frac{121}{60}$. When C is divided by B, the resulting fraction is $\frac{9}{10}$, which exceeds A by $\frac{3}{20}$. What is the difference between B and C?

Ans

✓ 1. $\dfrac{1}{15}$

✗ 2. $\dfrac{1}{10}$

✗ 3. $\dfrac{3}{10}$

✗ 4. $\dfrac{7}{15}$

Question ID : **65497840198**

Status : **Not Attempted and Marked For Review**

Chosen Option : **--**

Q.98 Mixture A contains chocolate and milk in the ratio 4 : 3 and mixture B contains chocolate and milk in the ratio 5 : 2. A and B are taken in the ratio 5 : 6 and mixed to form a new mixture. The percentage of chocolate in the new mixture is closest to:

Ans

✗ 1. 35%

✗ 2. 69%

✗ 3. 31%

✓ 4. 65%

Question ID : **65497840221**

Status : **Answered**

Chosen Option : **4**

Q.99 The expression $\dfrac{(1-2\sin^2\theta\,\cos^2\theta)(\cot\theta+1)\,\cos\theta}{(\sin^4\theta+\cos^4\theta)(1+\tan\theta)\,cosec\,\theta} - 1, 0° < \theta < 90°$, equals:

Ans

✗ 1. $\cos^2\theta$

✓ 2. $-\sin^2\theta$

✗ 3. $\sec^2\theta$

✗ 4. $-\sec^2\theta$

Question ID : **65497840269**

Status : **Not Answered**

Chosen Option : **--**

Q.100 The average of 25 numbers is 64. The averages of the first 13 numbers and that of the last 13 numbers are 62.8 and 72.2, respectively. If the 12th number is 61, and if the 12th and 13th numbers are excluded, then what is the average of the remaining numbers (correct to one decimal place)?

Ans ✗ 1. 59.2

✗ 2. 62.2

✔ 3. 60.2

✗ 4. 61.5