Time Allowed : 2 Hours   **M.M. : 100**

Important Instructions :
1. This Test Booklet contains **100** items (questions). Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each item.
2. You have to mark all your responses ONLY on the separate Answer Sheet provided. See directions in the Answer Sheet.
3. **All** items carry equal marks.
4. *Penalty for wrong answers :*
   THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.
   (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third** (0.33) of the marks assigned to that question will be deducted as penalty.
   (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
   (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be no penalty for that question.

Q. 1. If $x - 3$ is the factor of $x^2 + px + 9$ and $x^2 + qx + 27$, then the value of $p^2 + q^2$
(a) 178
(b) 179
(c) 180
(d) 183

Q. 2. If $x + \dfrac{1}{x} = 3$, then the value of $x^5 + \dfrac{1}{x^5}$ will be
(a) 121
(b) 123
(c) 125
(d) 216

Q. 3. A trader gives successive discounts of 30%, 20% and 25% respectively. What is overall discount ?
(a) 75%
(b) 52.5%
(c) 58%
(d) 62.5%

Q. 4. If the cost price of 200 articles is equal to the selling price of 120 articles. What is the profit percentage ?
(a) $62\dfrac{1}{2}\%$
(b) $66\dfrac{2}{3}\%$
(c) 75%
(d) $72\dfrac{1}{2}\%$

Q. 5. What is the square root of $35 + 8\sqrt{6}$?
(a) $2\sqrt{2} + 3\sqrt{3}$
(b) $2\sqrt{3} + 3\sqrt{2}$
(c) $2\sqrt{2} + 2\sqrt{3}$
(d) $3\sqrt{2} + 3\sqrt{3}$

Q. 6. What is the arithmetic mean of first 20 prime numbers ?
(a) 30.25
(b) 30.95
(c) 31.25
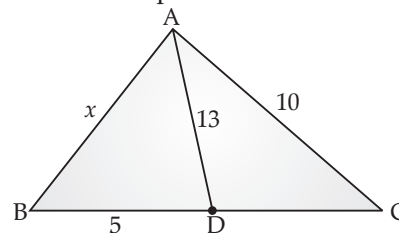(d) 31.95

Q. 7. If $ab + bc + ca = 0$, the value of
$$\dfrac{1}{a^2 + bc} + \dfrac{1}{b^2 + ac} + \dfrac{1}{c^2 + ab} + \dfrac{1}{a + b + c}.$$
(a) $\dfrac{22}{15}$
(b) $\dfrac{23}{15}$
(c) $\dfrac{26}{15}$
(d) $\dfrac{28}{15}$

Q. 8. If $p = 202$, then the value of $p^3 - 6p^2 + 12p + 1$ will be
(a) 8000000
(b) 8000005
(c) 8000008
(d) 8000009

Q. 9. Find the value of x in the given figure where D is the mid point of BC.

(a) $10\sqrt{2}$
(b) $11\sqrt{2}$
(c) $12\sqrt{2}$
(d) $13\sqrt{2}$

Q. 10. If the median of a triangle are 6cm, 8cm and 10 cm respectively, then area of the triangle will be
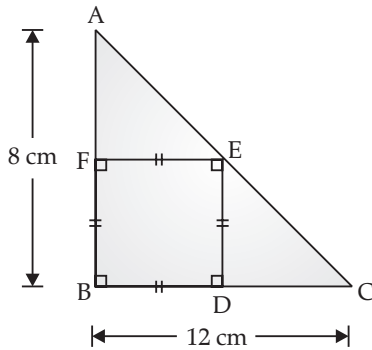(a) 24 cm^2
(b) 28 cm^2
(c) 32 cm^2
(d) 64 cm^2

Q. 11. If $7\cos^2\theta + 3\sin^2\theta = 4$, $0 < \theta < \pi/2$, then the value of $3\tan^2\theta + 4\sin^2\theta - 9$ will be
(a) 1
(b) 2
(c) 3
(d) 4

Q. 12. There are two regular polygons with number of sides equals to $(n − 1)$ and $(n − 2)$. Their exterior angle differ by 6°. Then the value of n will be
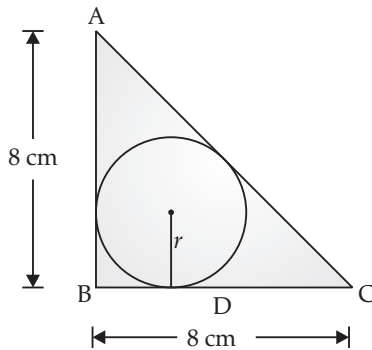
(a) 11   (b) 12

(c) 13   (d) 14

Q. 13. In the given figure, AB = 8 cm, BC = 12 cm, then the length of the square BDEF will be

(a) 4.8 cm   (b) 5 cm

(c) 5.4 cm   (d) 5.5 cm

Q. 14. In the given figure, AB = 15 cm, BC = 8 cm, $\angle ABC = 90°$, then in-radius of the circle will be

(a) 2.5 cm   (b) 3 cm

(c) 3.5 cm   (d) 4.5 cm

Q. 15. Product of maximum and minimum value of $y = 2 \cos 2\theta + 7 \sin^2\theta + 1$ will be

(a) 12   (b) 15

(c) 18   (d) 21

Q. 16. In a $\triangle ABC$, AB + BC = 31 cm, AB + CA = 23 cm and BC − CA = 8 cm, then the perimeter of the triangle is

(a) 31 cm   (b) 25 cm

(c) 46 cm   (d) None of these

Q. 17. If $2x − \dfrac{1}{3x} = 4$, then the value of $27x^3 − \dfrac{1}{8x^3}$ will be

(a) 287   (b) 239

(c) 241   (d) 243

Q. 18. A box has 200 blue balls, 50 red balls, 150 black balls. 50% of blue balls and 50% of red balls are taken away, then the percentage of black balls of present is

(a) $52\dfrac{6}{11}\%$ (b) $54\dfrac{6}{11}\%$

(c) $45\dfrac{5}{11}\%$ (d) $45\dfrac{6}{11}\%$

Q. 19. If p and q are the H.C.F and L.C.M of two numbers $3k$ and $4k$. Also $p + q = 7k$, then the value of the $p^3 + q^3$ will be

(a) $71 k^3$ (b) $81 k^3$

(c) $91 k^3$ (d) $101 k^3$

Q. 20. The value of

$$\frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72} + \frac{1}{90} + \frac{1}{110} \text{ will be}$$

(a) $\dfrac{3}{22}$ (b) $\dfrac{7}{22}$

(c) $\dfrac{3}{44}$ (d) $\dfrac{7}{44}$

Q. 21. How many number are there from 400 to 800, which are divisible by 4

(a) 100   (b) 101

(c) 102   (d) 99.

Q. 22. 3 men and 4 women can do a piece of work in 20 days while 5 men and 3 women can do a piece of work in 16 days. If a women gets ₹200 per day. What a man get per day ?

(a) ₹160   (b) ₹240

(c) ₹280   (d) ₹320

Q. 23. If $x^2 + 2(k − 4)x + 2k = 0$ has real and equal roots, then the value of k will be

(a) 2, 6   (b) 3, 6

(c) 2, 8   (d) 3, 8

Q. 24. L.C.M of two number is 120 and H.C.F is 10. The sum of the two numbers can be

(a) 70, 120   (b) 70, 130

(c) 70, 80   (d) 70, 140

Q. 25. The volume of a right circular cone of height 9 cm is 48π cm³. It's lateral height will be

(a) $\sqrt{51}$ cm   (b) $\sqrt{63}$ cm

(c) $\sqrt{77}$ cm   (d) $\sqrt{97}$ cm

Q. 26. A, B and C can do a piece of work in 16, 32 and 48 days respectively. They all start working together. A work continuously till the end of the work, B leaves the work 1 day before the completion of work and C leaves the work 2

days before the completion of the work. In how many days work will finish?

(a) $8\dfrac{8}{11}$ days   (b) $9\dfrac{4}{11}$ days

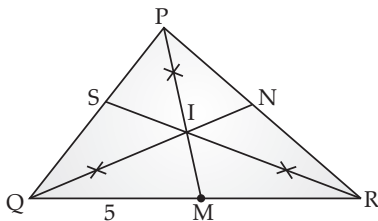(c) $8\dfrac{4}{11}$ days   (d) $9\dfrac{8}{11}$ days.

Q. 27. If α and β are the roots of the equation $x^2 + 4x + 1 = 0$, then the value of $\gamma^3 + \beta^3$ will be

(a) -52 (b) -62

(c) -72 (d) -82

Q. 28. If the radius of a sphere is increased by 5%, By what percent it's surface increase
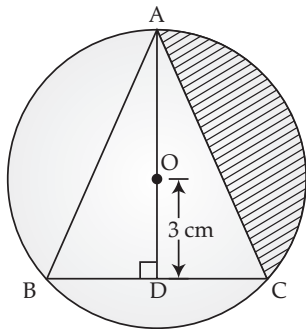
(a) 10.25%   (b) 9.25%

(c) 11.25%   (d) 8.25%

Q. 29. PM, QN and RS are the angle bisector of $\angle P$, $\angle Q$ and $\angle R$ respectively. If $\angle P = 58°$ $\angle Q = 66°$, then the value of $\angle QIR + \angle PIR$ will be

(a) 236°   (b) 242°

(c) 214°   (d) 304°

Q. 30. *ABC* is an equilateral triangle and OD = 3 cm the area of the shaded region will be

(a) $\left(12\pi - 9\sqrt{3}\right)\text{cm}^2$ (b) $\left(12\pi + 9\sqrt{3}\right)\text{cm}^2$

(c) $\left(\dfrac{6\pi}{4} - 18\sqrt{3}\right)\text{cm}^2$ (d) $\left(\dfrac{6\pi}{4} + 18\sqrt{3}\right)\text{cm}^2$

Q. 31. A spherical balloon whose radius is r subtends an angle α at the eye of an observor on the ground. The centre of the balloon makes an angle β at the same point on ground. Then the height of the centre of balloon will be

(a) $r\sin\alpha.\sin\dfrac{\beta}{\alpha}$ (b) $r\sin\beta.\sin\dfrac{\alpha}{2}$

(c) $r\sin\alpha.\operatorname{cosec}\dfrac{\beta}{\alpha}$ (d) $r\sin\beta.\operatorname{cosec}\dfrac{\alpha}{2}$

Q. 32. Two numbers, when divided by 17 leaves remainder 13 and 11 respectively. If the sum of these number is divided by 17, then the remainder will be

(a) 2   (b) 3

(c) 5   (d) 7

Q. 33. If $x + \dfrac{1}{x} = 3$, the value of $x^5 + \dfrac{1}{x^5}$ will be

(a) 243   (b) 183

(c) 153   (d) 123

Q. 34. If $x = \sin^2 5° + \sin^2 6° + \sin^2 7° + ... + \sin^2 85°$ then the value of $x + \dfrac{3}{2}$ will be.

(a) 41   (b) $41\dfrac{1}{2}$

(c) 42   (d) $42\dfrac{1}{2}$

Q. 35. If the six-digit number 363*pqr* is exactly divisible by 7, 11 and 13, then what is the value of $\dfrac{p^2 + q^2}{r^2}$?

(a) 5   (b) 10

(c) 12   (d) 36

Q. 36. The average of 9 numbers is 30. If the average of first 5 number is 25 and the average of last 3 number is 35. Then the 6th number will be

(a) 50   (b) 45

(c) 42   (d) 40

Q. 37. $\dfrac{1}{1 + \sqrt{2} + \sqrt{3}} + \dfrac{1}{1 - \sqrt{2} + \sqrt{3}}$ will be equals to

(a) 0   (b) 1

(c) $\sqrt{2}$ (d) $\dfrac{1}{\sqrt{2}}$

Q. 38. If $a : b = 2 : 3$, $b : c = 4 : 5$, then the value of $a^2 : abc : 8c^2$ will be

(a) 8 : 180 : 225   (b) 4 : 90 : 225

(c) 16 : 135 : 225   (d) 9 : 16 : 225

Q. 39. The value of $3^{3-2}\log 3^{2-22} + \log 2^2 \log^2 2$ will be

(a) $-\dfrac{1}{4}$ (b) $-\dfrac{3}{4}$

(c) $-\dfrac{5}{4}$ (d) $-\dfrac{7}{4}$

Q. 40. The average marks obtained by 120 students in an examination is 30. If the average marks of passed students is 40 and that of failed students is 10, the ratio of 30% passed students to 70% failed students

(a) 6 : 7   (b) 4 : 7

(c) 3 : 7   (d) 2 : 7

Q. 41. If $(a - 5)^2 + (b - 7)^2 + (c - 9)^2 + (d + 4)^2 = 0$ then $a^2 - b^2 + c^2 - d^2$ will be
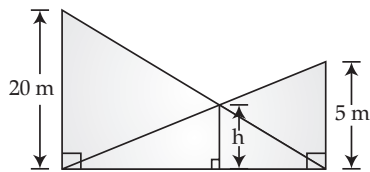
(a) 41   (b) 141

(c) 47   (d) 147

Q. 42. A boat covers 70 km Downstream in 2hr while 60 km Upstream in 4 hr. the speed of the stream will be

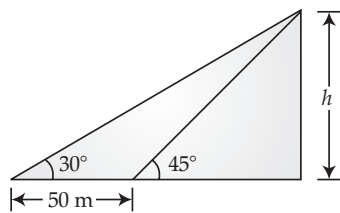(a) 10 km/hr   (b) 6 km/hr

(c) 4 km/hr   (d) 7.5 km/hr

Q. 43. In the given figure, the value of h will be

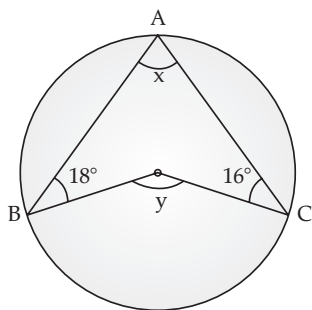(a) 2.5 m   (b) 3 m

(c) 3.5 m   (d) 4m

Q. 44. In the given figure, the value of h will be

(a) $50(\sqrt{3} + 1)\,\text{m}$ (b) $50(\sqrt{3} - 1)\,\text{m}$

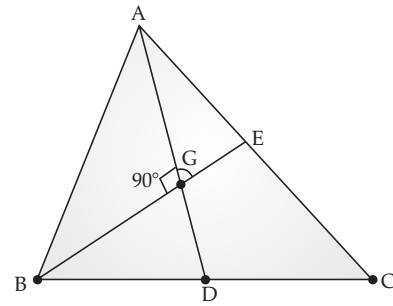(c) $25(\sqrt{3} + 1)\,\text{m}$ (d) $25(\sqrt{3} - 1)\,\text{m}$

Q. 45. In the given figure O is the centre of the circle. If $\angle ABO = 18°$ $\angle ACO = 16°$, then the value of $y - x$ will be
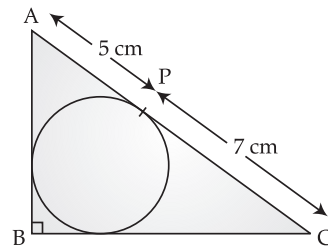
(a) 34°   (b) 36°

(c) 32°   (d) 68°

Q. 46. AD and BE are the median of triangle and G is the Centroid of the triangle. If two median cuts each other at right angle in such a away that GD = 6 cm and GE = 2 cm, then the length of AB will be

Q. 47. In the given figure P is the point of contact of circle and side of right angled triangle. If AP = 5cm, PC = 7 cm, then Area of $\triangle ABC$ will be

(a) 35 cm^2 (b) 12 cm^2

(c) $\dfrac{35}{2}$ cm^2 (d) 144 cm^2

Q. 48. Least value of $6 \tan^2\theta + 54 \cot^2\theta + 18$ will be

(a) 78   (b) 24

(c) 54   (d) 60

Q. 49. The value of $\dfrac{\cot 54°}{\tan 36°} + \dfrac{\tan 20°}{\cot 70°}$ will be

(a) 1   (b) 2

(c) 3   (d) None of these

Q. 50. If $\dfrac{2 + 3\sqrt{2}}{3 - 2\sqrt{2}} = a + b\sqrt{2}$, then the value of $a^2 + b^2$ will be

(a) 431   (b) 457

(c) 479   (d) 493

Q. 51. If G.M of and A.M of two numbers are 45 and 75. Then what is the value of H.M : 6?

(a) 2 : 9   (b) 5 : 9

(c) 9 : 2   (d) 9 : 5

Q. 52. Three sides of a triangle are $(x + 5)$, $(2x + 2)$ and $(3x - 1)$. If the perimeter of the triangle is $(7x - 1)$, then ratio of smallest side to the longest side will be

(a) 3 : 7   (b) 4 : 5

(c) 3 : 4   (d) 3 : 5

Q. 53. If $\sin 5A = \cos(A + 54°)$, then the value of A will be

Figure for Q. 46 (top right):

(a) $\sqrt{40}$ (b) $\sqrt{80}$

(c) $\sqrt{160}$ (d) $\sqrt{200}$

(a) 3° (b) 6°
(c) 9° (d) 12°

Q. 54. If $\sin\theta + \csc\theta = k$, then the value of $\cos^2\theta - \cot^2\theta$ will be
(a) $1 - k^2$ (b) $2 - k^2$
(c) $3 - k^2$ (d) $4 - k^2$

Q. 55. If $\sin\theta.\cos\theta = 4$, then the value of $\sin^6\theta + \cos^6\theta + \sin^4\theta + \cos^4\theta$ will be
(a) -42 (b) -53
(c) -66 (d) -78

Q. 56. In a triangle ABC, $\frac{1}{4}\angle A + \frac{1}{5}\angle B + \frac{1}{4}\angle C = 43°$, then the value of $\angle B$ will be
(a) 40° (b) 45°
(c) 50° (d) 55°

Q. 57. What is the ten's place digit of the number $(30)^{3030}$?
(a) 1 (b) 3
(c) 7 (d) 9

Q. 58. A square is drawn inside a semicircle of radius 10cm. If the square has maximum area, then area will be
(a) 50 cm² (b) 60 cm²
(c) 70 cm² (d) 80 cm².

Q. 59. If a number is successively divided by 7, 4 and 3, it leaves remainder 5, 3 and 2 respectively. If the order of divisor is reversed, then the news remainders will be
(a) 1, 3, 4 (b) 1, 3, 5
(c) 1, 3, 6 (d) 1, 3, 7

Q. 60. If $x = 665$, $y = 666$ and $z = 669$ then the value of $x^3 + y^3 + z^3 - 3xyz$ will be
(a) 20,000 (b) 22500
(c) 25000 (d) 27500

Q. 61. A train P start from Dehradun at 5pm and reaches Haridwar at 6:00 pm. Another train Q start from Haridwar at 5:00 p.m and reaches Dehradun at 6:30p.m. At what time both train meet each other?
(a) 5 : 24 pm (b) 5 : 36 pm
(c) 5 : 48 pm (d) 5 : 55 pm

Q. 62. The height of a triangle is increased by 40% and base is increased by 10%, then the area of the triangle will increase by
(a) 50% (b) 52%
(c) 54% (d) 55%

Q. 63. Four circles of diameter 10 cm each are bound together by a rubber band; as shown in the figure. If it is stretched on the circumference of the circles as shown, then the length of the band will be
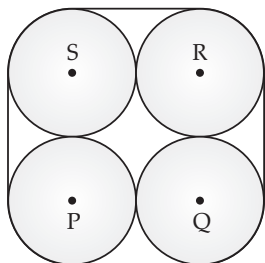
(a) $(40 + 10\pi)$ cm (b) $(40 + 4\pi)$ cm
(c) $(40 + \pi)$ cm (d) 40π cm.

Q. 64. If $x^2 + 1 = 2x$, then the value of $\dfrac{x^4 + \frac{1}{x^2}}{x^2 - 3x + 1}$ will be
(a) -2 (b) -1
(c) 0 (d) 1

Q. 65. The least number which when divided by 16, 18, 20 and 25 leaves 4 as a remainder in each case but when divided by 7 leaves no remainder is
(a) 17002 (b) 17004
(c) 18002 (d) 18004

Q. 66. The value of $\left(0.\overline{62} + 0.\overline{74}\right)$ will be
(a) $1.\overline{37}$ (b) $1.\overline{36}$
(c) $1.\overline{35}$ (d) $1.\overline{34}$

Q. 67. If $\tan 8A = \cot 2A$ and $\tan 2B = \cot 4B$ where $0 < A, B < 90°$, then the value of $\tan 5A + \cot 3B$ will be
(a) $\dfrac{1}{2}$ (b) 0
(c) 1 (d) 2

Q. 68. The value of $\tan 3°$, $\tan 13°$, $\tan 23°$, $\tan 30°$, $\tan 67°$, $\tan 77°$, $\tan 87°$ will be
(a) 0 (b) 1
(c) $\dfrac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

Q. 69. If $2a + \dfrac{1}{3a} = 4$, then the value of $9a^2 - \dfrac{1}{4a^2}$ will be
(a) $3\sqrt{30}$ (b) $4\sqrt{30}$
(c) $5\sqrt{30}$ (d) $6\sqrt{30}$

Q. 70. If $(x - a)(x - b) = 1$ and $a - b + 10 = 0$, then the value of $(x - a)^3 - \dfrac{1}{(x - a)^3}$ will be
(a) 970 (b) 1000
(c) 1030 (d) 1060

Q. 71. The value of

$\sqrt{\sin^4 x + 4\cos^2 x} - \sqrt{\cos^4 x + 4\sin^2 x}$ will be

(a) $\cos 2x$ (b) $\sin 2x$
(c) 0 (d) $\tan 2x$.

Q. 72. The value of $\log_{b^{1/7}} a \times \log_{c^{7/3}} b \times \log_{a^{10/3}} c$ will be ?

(a) 1

(b) $\dfrac{9}{10}$

(c) $\dfrac{10}{9}$

(d) $10.\log abc$

Q. 73. If $\dfrac{x^2 - x + 1}{x^2 + x + 1} = \dfrac{5}{7}$, then the value of $x + \dfrac{1}{x}$ will be

(a) 6

(b) $6\dfrac{1}{2}$

(c) $6\dfrac{3}{7}$

(d) $6\dfrac{5}{7}$

Q. 74. If $\dfrac{\sin A}{\sin B} = \dfrac{\sqrt{3}}{2}$ and $\dfrac{\cos A}{\cos B} = \dfrac{\sqrt{5}}{2}$ where $0° < A, B < 90°$, then the value of tan A + tan B will be

(a) $\dfrac{\sqrt{3} + \sqrt{5}}{\sqrt{5}}$

(b) $\dfrac{\sqrt{3} + \sqrt{5}}{\sqrt{3}}$

(c) $\dfrac{\sqrt{3} - \sqrt{5}}{\sqrt{5}}$

(d) $\dfrac{\sqrt{3} - \sqrt{5}}{\sqrt{3}}$

Q. 75. If $\tan\theta + \cot\theta = \sqrt{2}$, then the value of $\sin\theta + \cos\theta$ will be ?

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

(b) $\sqrt{1 + \sqrt{2}}$

(c) $\sqrt{1 + 2\sqrt{2}}$

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

Q. 76. If $x^2 - 6x + 1 = 0$, then the value of $\dfrac{x^8 + x^6 + x^4 + x^2}{x^7 + x^3}$ will be

(a) 1

(b) 3

(c) 6

(d) 9

Direction (Q.No. 77 - 80) : study the table carefully and answer the question given below.

Subject Student	Mathematics (150)	Physics (100)	English (100)	Hindi (50)
A	75	60	85	35
B	135	75	70	30
C	90	70	80	35
D	120	65	80	30

Marks obtained by A, B, C, D in four subject.

Q. 77. What is percentage of marks of B?

(a) 75%

(b) 77.5%

(c) 80%

(d) 82.5%

Q. 78. What is the ratio of marks obtained by B in mathematics to the marks obtained by D in english?

(a) 27 : 16

(b) 27 : 14

(c) 27 : 17

(d) None of these

Q. 79. Who has secured highest percentage of marks ?

(a) D

(b) C

(c) B

(d) A

Q. 80. B's percentage is how much more than the A's percentage.
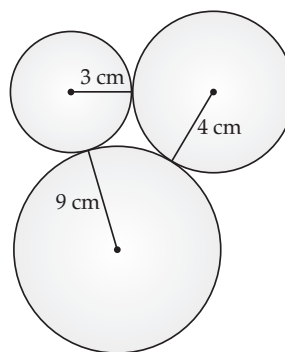
(a) 21%

(b) 21.5%

(c) 22%

(d) 22.5%

Q. 81. If $\dfrac{1}{\sqrt[3]{4} + \sqrt[3]{2} + 1} = a\sqrt[3]{4} + b\sqrt[3]{2} + c$, then the value of $2a + 3b + 4c$ will be

(a) -4

(b) -3

(c) -2

(d) -1

Q. 82. If $8p^3 + 36p^2 + 54p - 316 = 0$, then the value of $p^4 + 3p^3 + 5p^2$ will be

(a) 60

(b) 45

(c) 15

(d) 105

Q. 83. Three circles of radius 3 cm, 4 cm and 9 cm touch each other externally, then the area of the triangle formed by joining the centres will be

(a) $6\sqrt{3}$ cm^2

(b) $12\sqrt{3}$ cm^2

(c) $18\sqrt{3}$ cm^2

(d) $24\sqrt{3}$ cm^2

Q. 84. If a right circular cone is separated into solids of volumes V_1, V_2 and V_3 by two planes parallel to base, which trisect the given cone, then the value of $V_1 : V_2 : V_3$ will be

(a) 1 : 2 : 3

(b) 1 : 4 : 9

(c) 1 : 8 : 27

(d) 1 : 7 : 19

Q. 85. If $7\sec\theta - 8\tan\theta = 9$, then the value of $7\tan\theta - 8\sec\theta$ will be

(a) $\sqrt{6}$

(b) $2\sqrt{6}$

(c) $3\sqrt{6}$

(d) $4\sqrt{6}$

Q. 86. $\sin^2 7\frac{1}{2}° + \sin^2 82\frac{1}{2}° + \tan^2 2° + \tan^2 88°$

will be equals to

(a) 1   (b) 2

(c) 0   (d) 3

Q. 87. If x^m is multiple by x^n, product is 1, then the value of $\frac{m}{n}$ is

(a) 0   (b) 1

(c) –1   (d) x

Q. 88. A man increases his speed to $\frac{8}{5}$ times of his original speed and reaches his destination 18 minute before the time. The usual time taken by the car is

(a) 90 minute   (b) 36 minute

(c) 42 minute   (d) 48 minute

Q. 89. the median of the observations

$2, 9, 15, 3, 7, 13, 6, 11, 5, 16$ will be ?

(a) 7.2   (b) 7.6

(c) 7.8   (d) 8

Q. 90. It A, B and C start a business with initial amounts in the ratio of $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ for 7 months, 5 months and x months respectively. If their profit is in the ratio of 21 : 10 : 15. Then the value of x will be

(a) 6   (b) 8

(c) 10   (d) 12.

Q. 91. Mode of an given observation is

(a) most repeated number in the data.

(b) most accurate number of the data.

(c) always lies between mean and median.

(d) always greater than mean and median.

Q. 92. The ratio of incomes of A and B is 2 : 3 and the ratio of their expenditures is 5 : 9. If both A and B Saves ₹4500. Then the sum of income of A to the expenditure of B is

(a) ₹ 25500   (b) ₹ 24500

(c) ₹ 23500   (d) ₹ 22500

Q. 93. Harmonic mean of the observation $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots \frac{1}{15}$ will be ?

(a) $\frac{2}{15}$ (b) $\frac{1}{17}$

(c) $\frac{2}{17}$ (d) $\frac{7}{17}$

Q. 94. The value of $\dfrac{\sin x - \cos x + 1}{\sin x + \cos x - 1}$ will be :

(a) $\sec x + \tan x$ (b) $\sec x + \tan x$

(c) $\csc x + \cot x$ (d) $\csc x - \cot x$

Q. 95. If a polygon has 10 sides, then the total number of diagonal will be

(a) 35   (b) 30

(c) 25   (d) 20

Q. 96. A container contains a mixture of two liquids P and Q in the ratio of 7 : 5. When 9 litre of mixture is drawn off and the container is filled with Q, then the ratio of P and Q becomes 7 : 9, then container P has how many litre initially of P?

(a) 18   (b) 21

(c) 28   (d) 16

Q. 97. A Sum of ₹10,500 is lent out in three parts in such a way interest on one past at 20% for 5 years, on second part at 30% for 4 years and on third part at 25% for 6 years are equal. What is the sum of first and third part ?

(a) ₹5600   (b) ₹6300

(c) ₹7000   (d) ₹7700

Q. 98. A merchant has 1380 kg of sugar he sells one part of it at 4.5% profit and rest part at 27.5% profit. If he gains 25% on whole transaction. The quantity he sold at 4.5% profit is

(a) 100 kg   (b) 125 kg

(c) 150 kg   (d) 175 kg.

Q. 99. A man purchases 12 pen for ₹27 and sells 8 pen for ₹25. Then his profit/loss percentage will be

(a) profit 36.66%   (b) loss 36.66%

(c) profit 38.88%   (d) loss 38.88%

Q. 100. For a sum of ₹500 the difference between the C.I and S.I for 3 year is ₹64. The rate of interest will be

(a) 20%   (b) 15%

(c) 10%   (d) 12.5%