

STAFF SELECTION COMMISSION

COMBINED GRADUATE LEVEL EXAM

SSC - CGL (TIER II) PART - 1 MODEL PAPER

No. of Questions: 100

Maximum Marks: 200

Time: 2 Hrs.

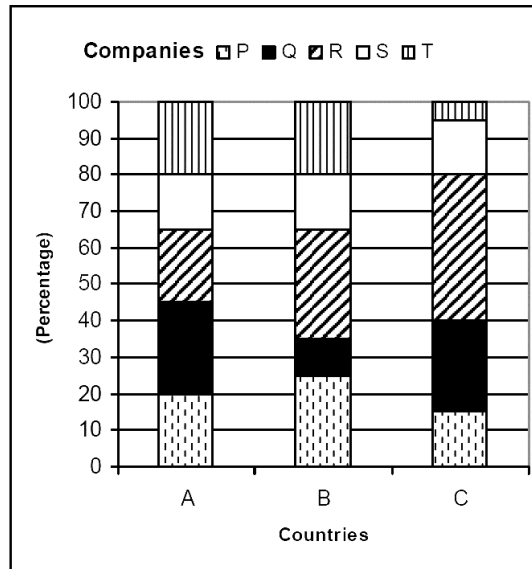
- Four solid spheres of radius 1 cm, 2 cm, 3 cm and 4 cm are melted and moulded to form 20 identical cones of base radius 2 cm each. A cone is further melted and moulded to form a sphere. Find the ratio between the surface area of newly formed sphere and that of the sphere of radius 1 cm.
A) $5^{4/3} : 1$ B) $5^{2/3} : 1$ C) $5^{1/3} : 1$ D) 5 : 1
- A person makes a profit of Rs.25 after selling an article at 10% discount. Find the marked price of the article if he would have made a profit of Rs.50, while selling it at the marked price.
A) Rs.250 B) Rs.375 C) Rs.450 D) Rs.500
- The average monthly savings of a person for the first four months of a year is Rs.2,500, for the next four months it is Rs.5,000 and for the last four months it is Rs.6,000. If the person earns Rs.3,00,000 per year, the average monthly expenditure of the person during the year is
A) Rs.20,500 B) Rs.22,000 C) Rs.21,500 D) Rs.19,000
- The ratio of the time taken by P, Q and R to complete a piece of work, while working alone, is 2 : 3 : 4. Find the time in which P and Q would be able to complete the work, if the time taken by P and R working together, $\frac{20}{3}$ is days.
A) 6 days B) 7.5 days C) $2\frac{1}{4}$ days D) $5\frac{5}{9}$ days
- The value of θ ($0 \leq \theta \leq 90^\circ$) satisfying $2 \cos^2\theta = 3 \sin\theta$ is
A) 45° B) 30° C) 90° D) 60°
- The arithmetic mean of five numbers $a, a + 2b, a + 2b + 3c, a + 2b + 3c + 4d$ and $a + 2b + 3c + 4d + 5e$ is 98. If $a = b = c = d = e$, then the value of a is
A) 11 B) 13 C) 14 D) 12
- Rice costing Rs.24/kg and Rs.32/kg are mixed in a certain ratio. By selling this mixed rice at Rs.31.50/kg, a trader gains 5%. In which ratio two types of rice are mixed respectively?
A) 1 : 3 B) 3 : 2 C) 3 : 1 D) 2 : 3
- If $\frac{2-3x}{2x} + \frac{2-3y}{2y} + \frac{2-3z}{2z} = 0$, then the value of $\frac{1}{3x} + \frac{1}{3y} + \frac{1}{3z}$ is
A) 6 B) 2 C) $\frac{3}{2}$ D) $\frac{5}{2}$
- Radius of a circle is increased by 10%. What is the ratio between the percentage change in the circumference of the circle and that of area of the circle?
A) 1 : 2 B) 10 : 21 C) 2 : 1 D) 21 : 10
- ABCD is a trapezium with AD and BC parallel sides. E is a point on BC in such a way that ABED becomes a parallelogram. The ratio of the area of ABED to that of ABCD is
A) $\frac{\overline{AD} + \overline{BC}}{\overline{AD} + \overline{BE}}$ B) $\frac{\overline{AD} + \overline{BE}}{\overline{AD} + \overline{BC}}$ C) $\frac{\overline{BE}}{\overline{BC}}$ D) $\frac{\overline{BC}}{\overline{BE}}$

11. Mr. K and Mr. L each bought the same cake using a 15% off coupon. Mr. K's cashier took 15% off the price and then added 12.5% sales tax whereas Mr. L's cashier first added the sales tax and then took 15% off the total price. The amount Mr. K paid is
- A) Greater than that of what Mr. L paid
 B) Less than that of what Mr. L paid
 C) Equal to that of what Mr. L paid
 D) Cannot be determined
12. If $a + b + c = 0$, then the value of $\frac{a^2 + b^2 - ab}{ab} + \frac{b^2 + c^2 - bc}{bc} + \frac{c^2 + a^2 - ca}{ca}$ is
- A) 1 B) 0 C) -3 D) -6
13. Incomes of A and B are in the ratio of 1 : 2. Similarly, that of B and C are in the ratio of 3 : 4, C and D are in the ratio of 5 : 6. If the income of A is doubled, then by how much percentage income of A is less than that of D?
- A) $16\frac{2}{3}\%$ B) $33\frac{1}{3}\%$ C) $66\frac{2}{3}\%$ D) $37\frac{1}{2}\%$
14. By selling an article on the marked price the trader makes a profit of 20%. Find the profit made by him if he would sold it at 10% discount.
- A) 10% B) 12.5% C) 16% D) 8%
15. If $3 \sin x + 4 \cos x = 5$, then what is the value of $3 \cos x - 4 \sin x$?
- A) 0 B) -3 C) 3 D) 2
16. The sides of a triangle are of length a, b, c and medians of that triangle are of length x, y and z. Which one of the following is true?
- A) $3(a^2 + b^2 + c^2) = 4(x^2 + y^2 + z^2)$
 B) $4(a^2 + b^2 + c^2) = 5(x^2 + y^2 + z^2)$
 C) $2(a^2 + b^2 + c^2) = 3(x^2 + y^2 + z^2)$
 D) $3(a^2 + b^2 + c^2) = 5(x^2 + y^2 + z^2)$
17. The radii of two concentric circles are 10 cm and 17 cm. A straight line MNOP intersects the larger circle at the points M and P and intersects the smaller circle at the points N and O. If $MP = 30$ cm, then the length (in cm) of NO is
- A) 12 B) 15 C) 20 D) 24
18. A distance of 70 km is covered by a car in 2 hours, that 120 km in next 3 hours and 180 km in next 4 hours and it further repeats the same pattern. The distance covered by the car in 25 hours is
- A) 1020 km B) 1110 km C) 930 km D) 1000 km
19. A man borrows a certain sum of money at 5% per annum simple interest payable quarterly and lend it immediately at 10% per annum compound interest. What is the ratio between the interest paid by him and interest paid to him at the end of a year?
- A) 2 : 1 B) 1 : 2 C) 4 : 1 D) 1 : 4
20. A salesman sells two products P_1 and P_2 . The marked price of P_1 is 60% more than its cost price. The salesman allows a discount of 25% and 12.5% on products P_1 and P_2 respectively. By how much should the marked price of P_2 be more than its cost price so that percentage profit on P_2 gets double to that of P_1 ?
- A) 40% B) 50% C) 60% D) 80%

21. A manufacturer offers a discount of 10% on the marked price of a machine and yet makes a profit of 10%. If he gains Rs.40.50 per machine, what is the marked price of each machine?
 A) Rs.495 B) Rs.475 C) Rs.450 D) Rs.405
22. Assume that a drop of water is spherical and its diameter is one-tenth of a cm. A conical glass has a height equal to the diameter of its rim. If 256000 drops of water fill the glass completely, then the height of the glass (in cm) is
 A) 4 B) 6 C) 8 D) 12
23. If $\frac{a}{\sqrt{3}-\sqrt{2}} = \frac{1}{b(\sqrt{3}-\sqrt{2})} = \frac{1}{\sqrt{3}+\sqrt{2}}$, then $\frac{a^2}{b} + \frac{b^2}{a}$ is
 A) 970 B) 1030 C) 930 D) 900
24. The ratio of the number of days taken to complete a work by A, B and C is 6 : 3 : 2. They working together complete the work in 20 days. If B left the work before 2 days and C left before 4 days of the completion of the work. Now in how many days would the work be completed?
 A) $22\frac{2}{3}$ days B) $21\frac{1}{3}$ days C) $22\frac{1}{3}$ days D) $21\frac{2}{3}$ days
25. If $\frac{3p}{p^2-2p+1} = \frac{2}{3}$, then the value of $\left(p + \frac{1}{p}\right)$ is
 A) $\frac{13}{2}$ B) 6 C) $\frac{15}{2}$ D) 5
26. 20 litres of a mixture contains water and alcohol in the ratio of 1 : 4. 25% of mixture is taken out and replaced by pure water. This process is done two times. What is the final quantity of alcohol in this mixture?
 A) 6 L B) 8 L C) 9 L D) 12 L
27. Maximum value of $\sin \theta + \cos \theta$ is
 A) $\sqrt{2}$ B) 1 C) $\frac{3}{2}$ D) 2
28. From 2002 – 2006, the population of a country increased by 15%. From 2006 – 2010, the population of the country increased by 15%. From 2010 – 2014, the population of the country increased by 15%. Then the overall increase in population (in percentage) of the country from 2002 – 2014 was
 A) 52.08% B) 60% C) 72.8% D) 62.8%
29. A certain sum of money becomes double in a certain time. It is given that time (no. of years) is equal to the rate of interest. How much compound interest would be paid on Rs.10,000 for 3 years at the same rate of interest?
 A) Rs.331 B) Rs.1,331
 C) Rs.1,310 D) Rs.3,310
30. If $x \sec^2 30^\circ \times \sin^2 45^\circ = \frac{\operatorname{cosec}^2 45^\circ \times \cos^2 30^\circ}{\tan^2 60^\circ}$, then the value of x is
 A) $\frac{3}{2}$ B) $\frac{3}{4}$ C) $\frac{1}{2}$ D) $\frac{1}{4}$
31. A can construct a wall in 10 days while B can demolish it in 15 days. Find the time in which the wall can be constructed if both of them work on alternate days.
 A) 45 days B) 60 days
 C) 50 days D) 55 days

32. If $0 \leq \theta \leq 90^\circ$ and $4 \sec^2 \theta - 4\sqrt{3} \sin(\theta + 15^\circ) - 2 = 0$, then the value of θ is
 A) 30° B) 45° C) 60° D) 75°
33. A train 300 m long is running with a speed of 54 km/hr. In what time will it cross a 150 m long platform completely?
 A) 20 sec B) 10 sec C) 30 sec D) 40 sec

(Directions for questions 34 to 38): The bar graph given below shows the percentage distribution of the sales of five different automobiles manufacturing companies P, Q, R, S and T in three different countries A, B and C in a year. The total sales in A, B and C was 50000 units, 70000 units and 80000 units respectively.



34. What was the sum of the units sold by P in country A and that by R in country C?
 A) 32000 B) 42000 C) 52000 D) 62000
35. Among the pairs given below, sales of which pair has ratio as 4 : 7?
 A) P in country A and B
 B) R in country A and C
 C) S in country B and C
 D) T in country B and C
36. If in the next year P and Q register an increase of 21% and 17% respectively in the sales in country A, then the difference between their sales (in units) will be
 A) 2500 B) 2525 C) 2570 D) 2580
37. Which of the following alternatives gives the second highest value of sales, when all the alternatives are arranged in decreasing order of sales?
 A) P in country B B) S in country C
 C) T in country A D) R in country B
38. If the sales of P in country A is increased by 100%, then the resultant sales will be equal to which of the following companies in the country C?
 A) P B) Q C) R D) S
39. The triangular base of a prism has in radius of length 5 cm and area of the base is 60 cm^2 . Find the total surface area of the prism. It is given that height of the prism is 10 cm.
 A) 330 cm^2 B) 300 cm^2 C) 360 cm^2 D) 390 cm^2

40. If the length of each of two equal sides of an isosceles triangle is 14 cm, and the adjacent angle is 60° , then the area of the triangle is
- A) $24\sqrt{3}$ cm² B) $28\sqrt{3}$ cm² C) $49\sqrt{3}$ cm² D) $56\sqrt{3}$ cm²
41. A trader sells an article, 'p' for Rs.1,020 and he gains 20% profit. Another article, 'Q' is sold for Rs.640 due to which he loses 20%. By how much percent cost price of article, 'p' is more than that of article, 'Q'?
- A) 7.28% B) 6.67% C) 10% D) 6.25%
42. If $2s = a + b + c$, then the value of $\frac{s(s-a)}{3} + \frac{s(s-b)(s-c)}{3}$ is
- A) $\frac{a+b+c}{3}$ B) $\frac{bc}{3}$ C) $\frac{ab}{3}$ D) $\frac{abc}{3}$
43. The sum of all multiples of 7 between 20 and 100 is
- A) 698 B) 706 C) 714 D) 722
44. The difference between simple interest and compound interest accrued on Rs.3,000 for 2 years is Rs.43.20. Find the rate of interest.
- A) 10% B) 12% C) 15% D) 30%
45. If $x = 441$ and $y = 225$, then the value of $\left(\sqrt{\sqrt{x} + \sqrt{y}} - \sqrt{\sqrt{x} - \sqrt{y} + 3}\right)^{\frac{1}{3}}$ is
- A) $-\frac{1}{3}$ B) $\frac{1}{3}$ C) 3 D) 6
46. A man is standing at the centre of an field and observes that the angle of elevation of the top of a clock tower is 60° . He moves 45 m and finds that the angle of elevation of the top of the clock tower is still 60° . Find the height of the tower.
- A) 22.50 m B) $3\sqrt{5}$ m C) 38.97 m D) 45 m
47. The sum and difference of the square of two numbers are 25 and 7 respectively. The square root of the sum of the reciprocal of the square of the two numbers is
- A) $\frac{5}{12}$ B) $\frac{5}{9}$ C) $\frac{9}{5}$ D) $\frac{12}{5}$
48. A, B and C enter into a partnership. A initially invests Rs.15 lakh and adds another Rs.10 lakh after one year. B initially invests Rs.25 lakh and withdraws Rs.5 lakh after 2 years and C invests Rs.20 lakh. In what ratio should the profit be divided at the end of 3 years?
- A) 12 : 14 : 13 B) 13 : 14 : 12
C) 12 : 13 : 14 D) 14 : 13 : 12
49. The in - radius of a triangle is 3 cm, and the sum of the lengths of its sides is 75 cm. If one of the sides of the triangle is 25 cm, then what is the height of the triangle (in cm) corresponding to that side?
- A) 10 B) 9 C) 12 D) 13
50. 5 men can complete a piece of work in 4 days while 6 boys can complete it in 5 days. Which among the following cannot be the number of boys involved with man / men if the work is completed in 3 days?
- A) 1 B) 4 C) 8 D) 7

51. The height of a right pyramid with square base is 10 m. Perimeter of base of the pyramid is 84 m. Find the total surface area of the pyramid?
 A) 1050 m² B) 2100 m² C) 1150 m² D) 1100 m²
52. A ball of lead 8 cm in diameter is covered with rubber. If the volume of the rubber and lead are equal, then the thickness of rubber is approximately.
 [Given $\sqrt[3]{2} = 1.259$]
 A) 1.136 cm B) 1.306 cm C) 1.036 cm D) 1.016 cm
53. if $\left(x^2 + \frac{1}{x^2}\right) = 10\frac{1}{4}$ for $x > 0$, then $\left(x^3 + \frac{1}{x^3}\right) =$
 A) $\frac{259}{8}$ B) $\frac{269}{8}$ C) $\frac{279}{8}$ D) $\frac{289}{8}$
54. AC and BD are the diagonals of a rhombus that intersect at O. Find the value of
 $\frac{3}{4} (\cos^2 \angle AOB + 3) - 0.25 \sin \angle BOC$.
 A) 1 B) 2 C) 0 D) $\frac{9}{4}$
55. The average weight of 9 girls in a group is 35 kg. The weight of their warden is 45 kg more than the average weight of all the ten females put together. What is the weight of the warden?
 A) 75 kg B) 70 kg C) 85 kg D) 80 kg
56. The value of $\frac{(c-a)^2}{(a-b)(b-c)} + \frac{(a-b)^2}{(b-c)(c-a)} + \frac{(b-c)^2}{(c-a)(a-b)}$ is
 A) $(a-b)(b-c)(c-a)$ B) 1
 C) 3 D) $3(a-b)(b-c)(c-a)$
57. On a certain principal, the compound interest for the second year at 8% per annum compounded annually is Rs.432. What is the principal?
 A) Rs.5,500 B) Rs.5,000 C) Rs.4,600 D) Rs.5,200
58. What is the least number which when divided by 12, 15, 24 and 32 leaves 4 as remainder in each case?
 A) 380 B) 964 C) 476 D) 484
59. The area of the parallelogram whose length is 40 cm and width is 30 cm and one diagonal is 50 cm is
 A) 1200 cm² B) 2400 cm² C) 1500 cm² D) 1000 cm²
60. A motor boat covers 54 km upstream and 72 km downstream taking 9 hours each time. What is the speed of the current?
 A) 1.5 km/hr B) 2 km/hr C) 1 km/hr D) 7 km/hr
61. In a quadrilateral ABCD a circle is inscribed in such a way that it touches side AB at Q. If BC = 38 cm, QB = 27 cm, DC = 25 cm and AD is perpendicular to DC. What is the radius of the circle?
 A) 11 cm B) 14 cm C) 15 cm D) 16 cm
62. If $x : y = \frac{1}{3} : \frac{2}{5}$, $y : z = 3 : 2$, then $(x + z) : (y - z)$ is equal to
 A) 2 : 9 B) 9 : 4 C) 4 : 9 D) 9 : 2

63. In a ΔABC , $\angle C = \frac{\pi}{3}$, $\angle B = \frac{\pi}{4}$ and D divides BC internally in the ratio of 1 : 4 then $\frac{\sin \angle CAD}{\sin \angle BAD}$ is equal to
- A) $\frac{1}{\sqrt{6}}$ B) $\sqrt{6}$ C) $\frac{1}{2\sqrt{6}}$ D) $2\sqrt{6}$
64. A spherical ball of radius 2 cm is dropped into a conical vessel of radius 6 cm and slant height 12 cm. The volume of water (in cm^3), that can just immerse the ball, is
- A) $\frac{10\pi}{3}$ B) $\frac{40\pi}{3}$ C) $\frac{20\pi}{3}$ D) $\frac{70\pi}{3}$
65. Find the value of the expression $x^7 + 12x^6 + 27x^5 - 39x^4 + 130x^3 + 85x^2 + 65x + 84$ at $x = -7$.
- A) 0 B) 11 C) 21 D) 31
66. If $a^3 + b^3 + c^3 = a + b + c$ where a, b and $c \neq 0$, then the value of $ab + bc + ca$ is
- A) 3 B) -1
C) -3 D) 3 and -1 both
67. Sreya wants to sell a chair at a profit of 25%. She bought it at 20% less and sold it at Rs.58 less, but still she gained 25%. The cost price of the chair is
- A) Rs.328 B) Rs.254 C) Rs.232 D) Rs.172
68. The ratio of the cost price to selling price is 5 : 6. What can be the marked price be if a discount of 20% is offered?
- A) Rs.130 B) Rs.140 C) Rs.150 D) Rs.135
69. A, B and C enter into a partnership such that three times of A's investment is equal to twice of B's investment or five times of C's investment. At the end of a year, total profit is Rs.4,650. What is the amount of profit that 'A' gets?
- A) Rs.1,200 B) Rs.1,250
C) Rs.1,400 D) Rs.1,500
70. If $\sin x - \cos x = \sqrt{3} \cos x$, then find the value of $\sec^2 x$.
- A) $5 - 2\sqrt{3}$ B) $3 - 2\sqrt{3}$ C) $5 + 2\sqrt{3}$ D) $3 + 2\sqrt{3}$
71. In an isosceles triangle PQR, PQ = PR and side QP is produced to S, such that PQ = PS. If $\angle PQR = 30^\circ$, then $\angle QRS = ?$
- A) 45° B) 90° C) 30° D) 60°
72. The frequency distribution data is given below. If the average age is n^2 years, the value of n is
- | | | | | |
|----------------|----|-----------|----|------------|
| Age (in years) | 12 | $n^2 - 3$ | 18 | $n^2 + 15$ |
| No.of people | 6 | 4 | 3 | 2 |
- A) 4 B) 5 C) 6 D) 8
73. In what ratio should two types of raisins costing Rs.160 per kg and Rs.260 per kg be mixed so that the mixture so obtained when sold at Rs.300 per kg earns a profit of 20%?
- A) 1 : 9 B) 1 : 19 C) 9 : 10 D) 10 : 19
74. Find the value of $\cos^2 \theta \sec^2 \theta - \sin^2 \theta \tan^2 \theta - \cos^2 \theta \tan^2 \theta + \sin^2 \theta \sec^2 \theta - 1$.
- A) 1 B) 2 C) 0 D) -1

75. If the height of the cylinder is 3.5 times the circumference of its base, the volume of the cylinder in terms of its circumference 'c' is
 A) $2\pi c^3$ B) $\frac{2c^3}{\pi}$ C) $\frac{7c^3}{8\pi}$ D) $4\pi c^3$
76. Find the value of $\frac{1}{\sqrt{8} - \sqrt{7}} - \frac{1}{\sqrt{7} + \sqrt{6}} + \frac{1}{\sqrt{6} + \sqrt{5}} - \frac{1}{\sqrt{5} - \sqrt{4}} - 2\sqrt{2}$
 A) 2 B) -2 C) 1 D) 0
77. A cone is made by using a quadrant of a circle of radius $\sqrt{15}$ m. Find the height of the cone.
 A) 3.25 m B) 3.75 m C) 3.50 m D) 4.25 m
78. The ratio between the number of diagonals and the number of sides of a regular polygon may be
 A) $\frac{5}{6}$ B) $\frac{5}{8}$ C) $\frac{3}{2}$ D) $\frac{3}{4}$
79. If a person marks a product 30% above the cost price but allows 20% discount, then the percentage of profit is
 A) 3.5% B) 4.5% C) 3% D) 4%
80. What is the smallest number by which 3840 must be divided so that the quotient is a square of a natural number?
 A) 5 B) 10 C) 15 D) 4
81. A piece of wire bent to form a circle having a radius of 21 cm. If the same wire is bent to form an equilateral triangle, the length of the side of the triangle is
 A) 22 cm B) 11 cm C) 25 cm D) 44 cm
82. The number which can be written in the form of $(n + 1)(n - 1)(n + 2)$, where n is a natural number, is
 A) 24 B) 40 C) 36 D) 52
83. The greatest number which will exactly divide 216 and 408 is
 A) 12 B) 24 C) 8 D) 36
84. A cone of radius 'r' cm and height 'h' cm is divided into two parts by drawing a plane through the middle point of its height and parallel to the base. What is the ratio of the volume of the original cone to the volume of the smaller cone?
 A) 4 : 1 B) 8 : 1 C) 2 : 1 D) 6 : 1
85. Due to dense fog a train going from Kashmir to Kanyakumari travels $\frac{1}{4}$ th of journey with $\frac{1}{4}$ th of the normal speed and for the rest of the journey its speed is decreased by $\frac{1}{4}$ th. By how much percentage the total time taken by the train is increased?
 A) 50% B) 100% C) 200% D) 400%
86. Two vessels A and B contain milk and water in the ratio 5 : 2 and 3 : 4 respectively. The ratio in which these mixtures be mixed to get a new mixture containing $66\frac{2}{3}\%$ milk is
 A) 5 : 1 B) 2 : 7 C) 5 : 7 D) 4 : 5
87. A cistern can be filled by a tap in 3 hours while it can be emptied by another tap in 8 hours. If both the taps are opened simultaneously, then after how much time will the cistern get filled?
 A) $4\frac{4}{5}$ hrs B) $5\frac{1}{5}$ hrs C) 4 hrs D) 5 hrs

88. A dog is standing at the midpoint of a 100 m long tunnel. He saw a train at 100 m from the entrance of the tunnel. If he runs towards the train they meet after 5 sec and if he runs away from the train they meet after 10 sec. Find the speed of the train.
- A) 81 km/hr B) 90 km/hr C) 72 km/hr D) 99 km/hr
89. A supply of flour in a hostel canteen lasts for 55 days. If its use is increased by 10%, then the number of days the same amount of flour would last will be
- A) 45 days B) 50 days C) 44 days D) 37 days
90. In a cyclic quadrilateral PQRS, if $\angle P = 2$, $\angle Q$ and SR extended intersects a line segment from Q at E in such a way that $\angle QER = 65^\circ$, If $QR = RE$, then find the $\angle SRQ + \angle PSR$.
- A) 210° B) 285° C) 215° D) 220°
91. A college cultural school group charters four identical buses and occupies $\frac{5}{6}$ th of the seats. After $\frac{1}{6}$ th of the passengers left, the remaining passengers used only three of the buses. The fraction of the seats on the three buses that are occupied is
- A) $\frac{25}{27}$ B) $\frac{5}{7}$ C) $\frac{12}{17}$ D) $\frac{15}{27}$
92. Tangents drawn from a point 'P' touch a circle with centre 'O' at A and B respectively. If $\angle AOB = 5 \angle APB$, then $\angle APB = ?$
- A) 30° B) 60° C) 45° D) 15°
93. In a triangle PQR, a line XY intersects sides PQ and PR in such a way that $PX = 2$ cm and area of $\Delta PQR = 64 \text{ cm}^2$. If $\Delta PXY \sim \Delta RPQ$ and area of $\Delta PXY = 16 \text{ cm}^2$, then $PR = ?$
- A) 4 cm B) 6 cm C) 8 cm D) 10 cm
94. If $\tan^2 \theta = \sin \theta$, then find the value of $\sin \theta$. θ ($0 < \theta < 90^\circ$)
- A) $\frac{-1 \pm \sqrt{5}}{2}$ B) $\frac{-1 + \sqrt{5}}{2}$ C) $\frac{-1 - \sqrt{5}}{2}$ D) $\frac{-1 \pm \sqrt{3}}{2}$
95. The distance between 2 places R and S is 42 km. Anita starts from R with a uniform speed of 4 km/hr towards S and at the same time Romita starts from S towards R also with a uniform speed. They meet each other after 6 hours. The speed of Romita is
- A) 3 km/hr B) 4 km/hr C) 5 km/hr D) 6 km/hr
96. If the arithmetic mean of $5a$ and $6b$ is greater than 210 and 'a' is thrice 'b', then the smallest possible value of 'a' is
- A) 59 B) 61 C) 63 D) 60
97. A store offers a variety of discounts that range between 10% and 35% both inclusive. If a book is discounted to a price of Rs.260. then its greatest possible original price was
- A) Rs.400 B) Rs.360 C) Rs.420 D) Rs.460
98. What is the area of the larger segment of a circle formed by a chord of length 5 cm subtending an angle of 90° at the centre?
- A) $\frac{25}{4} \left(\frac{\pi}{2} + 1 \right) \text{ cm}^2$ B) $\frac{25}{4} \left(\frac{\pi}{2} - 1 \right) \text{ cm}^2$
- C) $\frac{25}{4} \left(\frac{3\pi}{2} + 1 \right) \text{ cm}^2$ D) $\frac{25}{4} (3\pi + 1) \text{ cm}^2$

99. The factors of $a^2b + ac^2 - ab^2 + a^2c - b^2c - bc^2$ are

A) $(a + b)(b - c)(c + a)$

B) $(a - b)(b + c)(c - a)$

C) $(a - b)(b + c)(c + a)$

D) $(a + b)(b + c)(c - a)$

100. If $x = 9$, then the value of $x^6 + 3x^5 + 3x^4 + x^3$ is.....

A) 729000

B) 1000000

C) 900000

D) 999999

KEY

1-B; 2-A; 3-A; 4-A; 5-B; 6-C; 7-A; 8-C; 9-B; 10-B; 11-C; 12-D; 13-D; 14-D; 15-A; 16-A; 17-A; 18-A; 19-B; 20-C; 21-A; 22-C; 23-A; 24-A; 25-A; 26-C; 27-A; 28-A; 29-D; 30-B; 31-D; 32-B; 33-C; 34-B; 35-A; 36-B; 37-A; 38-B; 39-C; 40-C; 41-D; 42-B; 43-C; 44-B; 45-B; 46-C; 47-A; 48-B; 49-B; 50-C; 51-A; 52-C; 53-A; 54-B; 55-C; 56-C; 57-B; 58-D; 59-A; 60-C; 61-B; 62-D; 63-D; 64-B; 65-C; 66-D; 67-C; 68-C; 69-D; 70-C; 71-B; 72-A; 73-A; 74-C; 75-C; 76-B; 77-B; 78-C; 79-D; 80-C; 81-D; 82-B; 83-B; 84-B; 85-B; 86-A; 87-A; 88-A; 89-B; 90-B; 91-A; 92-A; 93-A; 94-B; 95-A; 96-C; 97-A; 98-C; 99-C; 100-A.

(ప్రారాబాద్లోని కెలయర్ లాంచర్ సంస్థకు చెందిన నిపుణులు ఈ నమూనా ప్రశ్నపత్రాన్ని రూపొందించారు)