VSERVE VCARE

SSLC 2022 – 23
SPECIAL PACKAGE FOR FINAL EXAM
MATHEMATICS

SSLC PASSING PACKAGE
PRACTICE PAPER – 1

Sub: Mathematics   **Max. Marks: 55**
Time: 90 min

I. **Choose the correct answer:**   **1×10 =10**

1. In an arithmetic progression , if a_n=2n+1, then the common difference of the progression is
   (A) 0   (B) 1
   (C) 2   (D) 3

2. The degree of linear polynomial is
   (A) 0   (B) 1
   (C) 2   (C) 3

3. If $\sin\theta= \frac{12}{13}$, then cosec θ is
   (A) $\frac{12}{5}$ (B) $\frac{13}{5}$
   (C) $\frac{12}{13}$ (D) $\frac{13}{12}$

4. A straight line passing through a point on a circle is
   (A) A tangent   (B) a secant
   (C) A radius   (D) a transversal

5. If the area of the circular base of a cylinder is 22cm and the height is 10cm , then the volume of the cylinder is
   (A) $220cm^2$ (B) $2200cm^3$
   (C) $22000cm^3$ (D) $220cm^3$

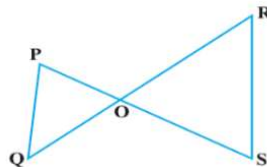6. The length of an arc of a sector of a circle of radius r and angle θ is
   (A) $\frac{\theta}{360} \times \pi r^2$ (B) $\frac{\theta}{360} \times 2\pi r^2$
   (C) $\frac{\theta}{180} \times 2\pi r$ (D) $\frac{\theta}{360} \times 2\pi r$

7. In the pair of linear equations $a_1 x + b_1 y + c_1 = 0$ and $a_2 x + b_2 y + c_2 = 0$, if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$, then the
   (A) equations have no solution   (B) equations have unique solution
   (C) equations have three solution   (D) equations have infinitely many solutions

8. In the figure if ΔPQR~ΔSOR and PQ: RS= 1:2 , then OP : OS is
   (A) 1:2   (B) 2:1
   (C) 3:1   (D) 1:3

II.   **Answer the following**   **1×8=8**

9. cos θ= $\frac{24}{25}$, then write the value of sec θ .

10. Write the formula to find the total surface area of a right circular cone whose circular base radius is 'r' and slant height is 'l'.

11. Find the HCF of the smallest prime number and the smallest composite number.

12. If $p(x) = 2x^3 + 3x^2 - 11x + 6$ then find the value of $p(1)$

13. If one root of the equation $(x + 4)(x + 3) = 0$ is -4, the find another root of the equation.

14. If $\sin^2A=0$, then find the value of cosA.

15. In the given figure, O is the centre of a circle, AC is a diameter. If $\lfloor ACB = 50^0$, the find the measure of $\lfloor BAC$.
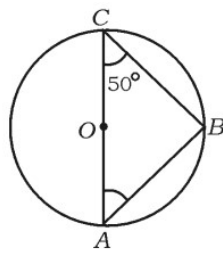
16. If $x + y = 8, \ x - y = 2$, then find the value of x

III.   **Answer the following**   **2×8=16**
IV.

17. Find the coordinates of the midpoint of the line segments joining the points (2,3) and (4,7).

18. Solve : $2x + 3y = 11$
            $2x - 4y = -24$.

19. Find the sum of the first 20 terms of arithmetic series 5+10+15+……… using suitable formula

20. Find the value of the discriminant of the quadratic equation $2x^2 - 5x - 1 = 0$, and hence write the nature of its roots.

21. Draw a circle of radius 4cm and construct a pair of tangents to the circle such that the angle between the tangents is 60^0

22. Find the value of sin 60^0.Cos 30^0+ sin30^0.cos60^0

        OR

(1+tan θ+ secθ) (1+cotθ-cosecθ) = 2

23. Find the quadratic polynomial whose sum and product of its zeros respectively (4,1)

24. Two cubical dice whose faces are numbered 1 to 6 are rolled simultaneously once. Find the probability that the sum of two numbers occurring on their top faces is more than 7

        OR

A Bags contain 3 res balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is

(i) Red?   (ii) Not red?

V. Answer the following questions   3×5=15

25. Calculate the mode for the following frequency distribution

| C.I	Frequency (f_i)
0-5	8
5-10	9
10-15	5
15-20	3
20-25	1

26. An insurance policy agent found the following data for distribution of ages of 35 policy holders, draw a 'less than type' (below) of ogive for the given data

Ages (in years)	Number of policy holders
Below 20	2
Below 25	6
Below 30	12
Below 35	16
Below 40	20
Below 45	25
Below 50	35

27. Construct a triangle with sides 6cm, 7cm and 8cm and then construct another triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the constructed triangle

28. Prove that ' the lengths of the tangents drawn from an external point to a circle are equal

29. In the figure ABCD is a square and two semicircles touch each other externally at P. The length of each semicircle is equal to 11cm. Find the area of the shaded region.
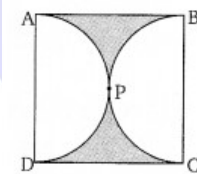
OR

AC and BD are two concentric circles with centre O of radius 21cm and 7cm respectively. If $\angle AOB=30^0$ as shown in the figure. Find the area of the shaded region.
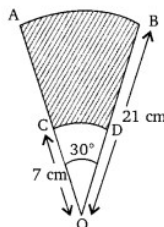
VI. Answer the following question: 4×2=8

30. Solve graphically

$2x+ y =8$

$x + y =5$

31. Prove that if in two triangles, corresponding angles are equal, then their corresponding sides are in

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VII.   <u>**Choose the correct answer:**</u>   **1×10 =10**

32. The surface area of a sphere of radius 7cm is
     (A) $154cm^2$ (B) $616cm^3$
     (C) $616cm^2$ (D) $308cm^2$

33. If the nth term of an arithmetic progression is $a_n=3n-2$, then its 9th term is
     (A) -25   (B) 5
     (C) -5   (D) 25

34. If $P(A) = \frac{2}{3}$, then $P(\overline{A})$ is
     (A) $\frac{1}{3}$ (B) 3
     (C) 1   (C) $\frac{3}{2}$

35. The lines represented by $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$ are
     (A) intersecting lines   (B) parallel lines
     (C) coincident lines   (D) perpendicular lines to each other
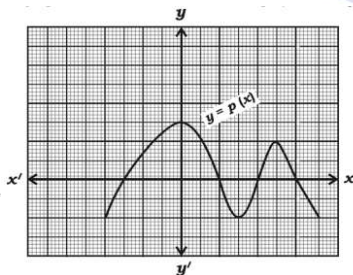
36. The value of $\sec^2 26 - \tan^2 26$
     (A) $\frac{1}{2}$ (B) 0
     (C) 2   (D) 1

37. The base radius and height of a right circular cylinder and right circular cone are equal and if volume of the cylinder is $360cm^3$, then the volume of the cone is
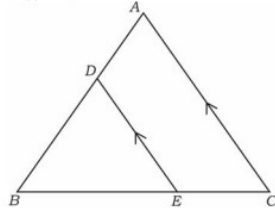   (A) $120cm^3$ (B) $180cm^3$
     (C) $90cm^3$ (D) $360cm^3$

38. In the given graph, the number of zeros of the polynomial $y = p(x)$ is

     (A) 3   (B) 5
     (C) 4   (D) 2

39. In ΔABC, if DE ∥ AC, then the correct relation is

(A) $\dfrac{BD}{AB} = \dfrac{AC}{DE} = \dfrac{BC}{BE}$

(B) $\dfrac{BD}{AB} = \dfrac{DE}{AC} = \dfrac{BE}{BC}$

(C) $\dfrac{AB}{BD} = \dfrac{AC}{DE} = \dfrac{BE}{EC}$

(D) $\dfrac{AD}{BD} = \dfrac{DE}{AC} = \dfrac{BE}{EC}$

VIII. **Answer the following** **1×8=8**

40. Find the value of $\tan 45^0 + \cot 45^0$

41. Find the coordinates of the midpoint of the line joining the points (x_1, y_1) and (x_2, y_2)

42. State Basic Proportionality Theorem.

43. In the figure AB and AC are the two tangents drawn from the point A to the circle with centre O. If |BOC = 130^0 find |BAC
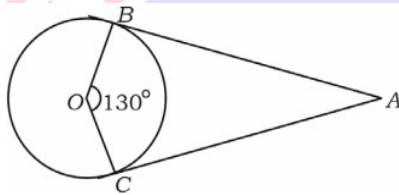
44. Writhe formula to find the curved surface area of the cone whose radius is 'r' and the slant height is 'l' units

45. $\dfrac{x+1}{2} = \dfrac{1}{x}$ Write this quadratic equation in the standard form

46. Express the denominator of $\dfrac{23}{20}$ in the form of $2^m \times 5^n$ and state whether the given fraction is terminating or non-terminating repeating decimal

47. If $p(x) = 2x^2 - 3x + 2$ then find the value of $p(-1)$

IX. **Answer the following** **2×8=16**

48. Solve : $2x + y = 11$
    $x + y = 8$.

49. Find the sum of $5+8+11+\ldots\ldots$ to 10 terms using suitable formula

50. Find the discriminant of the quadratic equation $2x^2 - 5x + 3 = 0$, and hence write the nature of its roots.

51. Find the distance between the points (-5,7) and (-1,3)

52. Draw a pair of tangents to a circle of radius 3cm which are inclined to each other at an angle of 60^0

53. Prove that $5 + \sqrt{3}$ is an irrational number

54. A fair of cubical dice whose faces are numbered 1 to 6 are rolled once. Find the probability that the number occurring on its top face is a prime number

55. Find the roots of the equation $6x^2 + 7x - 10 = 0$

X. <u>**Answer the following questions**</u>   **3×5=15**

56. Calculate the median for the following frequency distribution

C.I	Frequency (f_i)
20-40	7
40-60	15
60-80	20
80-100	8

OR

Find the mode for the following frequency distribution

| C.I	Frequency (f_i)
1-3	6
3-5	9
5-7	15
7-9	9
9-11	1

57. The following table gives the information of daily income of 50 workers of a factory. Draw a less than type ogive for the following data

Daily income	Number of workers
Less than 100	0
Less than 120	8
Less than 140	20
Less than 160	34
Less than 180	44
Less than 200	50

58. Prove that 'the tangent at any point of a circle is perpendicular to the radius drawn through the point of contact'.

59. Construct a triangle ABC with sides BC= 3cm, AB=6cm and AC=4.5cm and construct another triangle whose sides are $\frac{4}{3}$ of the corresponding sides of the ΔABC

60. ABCD is a square of side 14cm ,with centers A,B,C and D four circles are drawn such that each circle touch externally, two of the three remaining circle. Find the area of the shaded region.
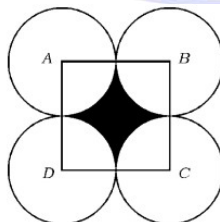
XI. <u>**Answer the following question**</u>:   **4×2=8**

61. Solve graphically
$$x + y = 7$$
$$3x - y = 1$$

62. State and prove Pythagoras theorem.

Sub: Mathematics   Max. Marks: 55
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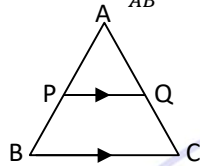**XII.**   **Choose the correct answer:** $1\times10 =10$

63. The 10th term of an AP 5,9,13,…… is
    (A) 36   (B) 31
    (C) 41   (D) 21

64. In $\triangle ABC$, if PQ ∥ BC, then $\frac{AP}{AB}$ =

    (A) $\frac{PB}{AB}$ (B) $\frac{AQ}{AC}$
    (C) $\frac{BC}{PQ}$ (D) $\frac{AP}{PB}$

65. The maximum number of tangents that can be drawn to a circle from an external point is
    (A) 1   (B) 2
    (C) 3   (D) 4

66. The probability of an event 'E' is 0.05, then the probability of an event 'not E' is
    (A) 0.05   (B) 0.95
    (C) $\frac{1}{0.05}$ (D) $\frac{1}{0.95}$

67. The pair of linear equation $x + y = 9$ and $x - y = 1$, the values of x and y are
    (A) 5 and 4   (B) 4 and 5
    (C) 6 and 3   (D) 3 and 6

68. The formula used to find the volumes of a cone of radius 'r' and height 'h' is
    (A) $\pi r^2 h$ (B) $\frac{1}{2}\pi r^2 h$
    (C) $\frac{1}{3}\pi r^2 h$ (D) $\frac{1}{4}\pi r^2 h$

69. In the figure the value of sin C is
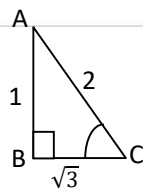
    (A) $\frac{2}{\sqrt{3}}$ (B) $\frac{\sqrt{3}}{2}$
    (C) $\frac{1}{2}$ (D) 1

70. The product of prime factors of 120 is
    (A) $2^3 \times 3^2 \times 5^1$ (B) $2^2 \times 3^1 \times 5^1$
    (C) $2^3 \times 3^1 \times 5^2$ (D) $2^3 \times 5^1 \times 3^1$

XIII. <u>**Answer the following**</u>   1×8=8
71. Write the discriminant of the quadratic equation $ax^2 + bx + c = 0$
72. State Basic Proportionality Theorem.
73. If $\sin\theta = \frac{3}{5}$, find $\operatorname{cosec}\theta$
74. Find the surface area of a sphere with radius 7cn.
75. Find the sum of first 10 natural numbers
76. Write the value of $\cos^2 60^0 + \sin^2 60^0$
77. Write the number of zeros of the polynomial $p(x) = x^3 + 2x^2 + x + 6$
78. Write the number of solutions that the pair of linear equation $a_1 x + b_1 y + c_1 = 0$ and
    $a_2 x + b_2 y + c_2 = 0$, if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

XIV. <u>**Answer the following**</u>   2×8=16
79. Find the sum of 2+7+12+….. up to 10 terms
80. Draw a line segment of length 8cm and divide it in the ration 3:2
81. Prove that $5 - \sqrt{3}$ is an irrational number
82. Find the distance between the points (2,3) and (4,1)
83. Solve $x^2 - 3x - 10 = 0$ using quadratic formula.
84. In $\triangle ABC \lfloor C = \theta$ and $\lfloor B = 90^0$, BC=4cm , AC=5cm, then find $\sin\theta$ and $\tan\theta$
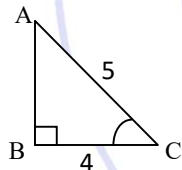
85. Solve : $2x + y = 7$
            $x - y = 5$.
86. A die is thrown twice. What is the probability that sum of two faces is 8?

XV. <u>**Answer the following questions**</u>   3×5=15
87. Prove that 'the tangents drawn from an external point are equal'

88. Construct a triangle with sides 4cm, 5cm and 6cm and then construct another triangle similar to it
    whose sides are $\frac{2}{3}$ of the corresponding sides of first triangle

89. Calculate the mean for the following frequency distribution

C.I	Frequency (f_i)
1-5	7
5-9	2
9-13	2
13-17	8
17-21	1

The following table gives the production yield per hectare of wheat of 100 farms of a village. Draw a more than type to give .

Yield productivity	40-45	45-50	50-55	55-60	60-65	65-70
Number of farms	4	6	16	20	30	24

90. Find the area of the shaded region where ABCD is a square of side 14cm
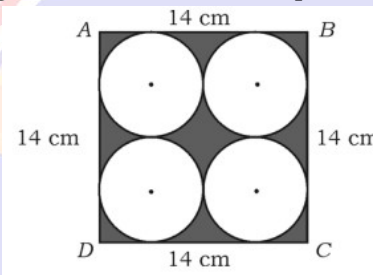
XVI. **Answer the following question:**   **4×2=8**

91. Solve graphically

$$y = 2x - 2$$
$$y = 4x - 4$$

92. State and prove Thales theorem.

Sub: Mathematics   **Max. Marks: 55**

Time: 90 min

XVII.   Choose the correct answer: **1×10 =10**

93. The value of 'x' in the arithmetic progression 2,x,14 is
    (A) 28   (B) 16
    (C) 7   (D) 8

94. If the ratio's of two sides of two similar triangle is 4:9, then the ratios of the areas of these triangle is
    (A) 2:3   (B) 4:9
    (C) 81:16   (D) 16:81

95. Volume of the frustum of a cone whose height 'h' and radii of two circular ends are r_1 and r_2
    (A) $\frac{1}{3}\pi h(r_1 + r_2 + r_1 r_2)$ (B) $\frac{1}{3}\pi h(r_1{}^2 + r_2{}^2 + r_1{}^2 r_2{}^2)$
    (C) $\frac{1}{3}\pi h(r_1{}^2 + r_2{}^2 + r_1 r_2)$ (D) $\frac{1}{3}\pi h(r_1 + r_2 + r_1{}^2 r_2{}^2)$

96. The value of $\tan 45^0$ is
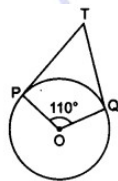   (A) $\sqrt{3}$ (B) 0
    (C) 1   (D) $\frac{1}{\sqrt{3}}$

97. The number of solutions for the pair of linear equation $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$ is
    (A) 0   (B) 1
    (C) 2   (D) infinity

98. In the figure $\angle$POQ=110^0. If TP and TQ are two tangents to the circle with centre 'O' then the measure of $\angle$PTQ is

    (A) 60^0 (B) 70^0
    (C) 80^0 (D) 90^0

99. The probability of certain event is
    (A) 0   (B) 0.5
    (C) 0.75   (D) 1

100.   If 180= $2^x \times 3^2 \times 5$ then the value of x is _____
    (A) 1   (B) 2
    (C) 3   (D) 4

XVIII. <u>**Answer the following**</u>   1×8=8

101.   State the converse of Pythagoras theorem
102.   In an AP $a_n=3n+2$, find the 12th term
103.   The two lines $4x + py + 8 = 0$
         $4x + 4y + 2 = 0$ are parallel to each other then find the value of p
104.   Write the number of zeros of the polynomial $p(x) = 2x^2 - 9x + 10$
105.   Find the value of $\frac{\sin 28^0}{\cos 62^0}$
106.   Write the formula to find the frustum of the cone
107.   Write the number of tangents that can be drawn to a circle at any point on it
108.   In $\triangle ABC$, $AB \perp BC$, $ACB=30^0$, $AB=15cm$, then find the length of BC
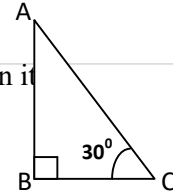
XIX. <u>**Answer the following**</u>   2×8=16

109.   Find the sum of 1+4+7+…..+100
110.   Divide the line segment of PQ=7 cm in the ration 1:2
111.   Solve $2x^2 - 5x + 3 = 0$ using quadratic formula
112.   Find the midpoint of AB if A(2,4) and B(6,10)
113.   In the figure find the value of $\sin \alpha$ and $\cos \theta$
114.   Solve : $2x + y = 10$
         $x - y = 2$.
115.   Prove that $\sqrt{3} + 4$ is an irrational number
116.   In the figure DE || BC Find EC
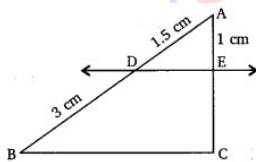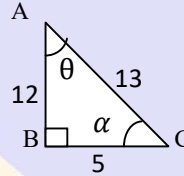
XX.   <u>**Answer the following questions**</u>   3×5=15

117.   Prove that 'the tangents at any point of a circle is perpendicular to the radius drawn at the point of contact'
118.   Construct a triangle ABC with sides AB=6cm, BC= 5cm and ABC=80^0 and then construct another triangle similar to it whose sides are $\frac{4}{3}$ of the corresponding sides of triangle ABC
119.   Calculate the mode for the following frequency distribution

C.I	Frequency (f_i)
5-15	3
15-25	4
25-35	8
35-45	7
45-55	3

120.   Draw more than type ogive curve for the following data .

CI	CF
More than 0	100
More than 50	88
More than 100	70
More than 150	43
More than 200	23
More than 250	6
More than 300	0

121.   In the figure AXB and CYD are the arcs of two concentric circles with centre O. The length of the arc AXB is 11cm. If OC=7cm and AOB= 30^0, then find the area of shaded region
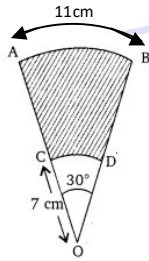
XXI.   Answer the following question: **4×2=8**

122.   Solve graphically
$$x + y = 5$$
$$2x - y = 4$$

123.   Prove that, "If the corresponding angles of two triangles are equal, then their corresponding sides are in the ratio"

Sub: Mathematics   Max. Marks: 55

Time: 90 min

XXII.   **Choose the correct answer:** $1 \times 10 = 10$

124.   If $p(A) = \frac{4}{5}$, then $p(\overline{A})$ is

(A) 1   (B) $\frac{1}{5}$

(C) $\frac{3}{5}$ (D) 4

125.   If the nth term of arithmetic progression is $a_n = 2n+2$, then its 7th term is

(A) -14   (B) 16

(C) 14   (D) 0

126.   Lines represented by $2x + 3y - 4 = 0$ and $4x + 6y - 8 = 0$ is

(A) Intersecting lines   (B) parallel lines

(C) coincident lines   (D) perpendicular lines

127.   Straight line which passes through two points on a circle is

(A) a chord   (B) a secant

(C) a tangent   (D) the radius

128.   If a and b are any two positive integer, then HCF (a,b) × LCM (a, b) is equal to

(A) a+b   (B) a-b

(C) a×b   (D) 1

129.   If $5 \sin \theta = 4$, then cosec θ is

(A) $\frac{3}{5}$ (B) $\frac{5}{4}$

(C) $\frac{4}{5}$ (D) $\frac{4}{3}$

130.   In the given graph, the number of zeros of polynomial $y = p(x)$
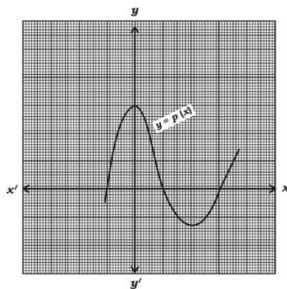
(A) 2   (B) 3

(C) 0   (D) 4

131.   The curved surface area of cylinder of radius 7cm an height 2cm is

(A) 44cm^2 (B) 88cm^2

(C) 22cm^2 (D) 154cm^2

XXIII. <u>**Answer the following**</u>   1×8=8

132.   Write 120 as product of prime factors

133.   Write the formula to find total surface area of cylinder whose radius is 'r' units are height is
'h' units

134.   Find the value of $\cos 48^0 - \sin 42^0$

135.   In two linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, if $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$, then
write the number of solutions these pair of equation have.

136.   Write the formula to find the sum of first n terms of an arithmetic progression, whose first
term is 'a' and common difference is 'd'.

137.   State Basic Proportionality theorem.

138.   Write the degree of polynomial $p(x) = x^3 + 3x^2 + 2$

139.   If $b^2 - 4ac > 0$, what is the nature of roots?

XXIV. <u>**Answer the following**</u>   2×8=16

140.   Find the HCF of 336 and 54 by Euclid division algorithm

141.   Find the 20th term of AP: 3,8,13,…..253

142.   Construct a pair of tangent to a circle of radius 4.5cm, such that the angle between the two
radii is 135^0

143.   Find the distance between the two points (0,5) and B(-5,0)

144.   Find $\sin 30^0 . \cos 45^0 + \cos 60^0 . \sin 45^0$

145.   Solve $x^2 - 3x + 1 = 0$ using quadratic formula

146.   Solve the following pair of linear equations : $3x + 4y = 10$
$$2x - 2y = 2.$$

147.   A bag contains 3 red and 5 black balls. A ball is drawn at random from the bag. What is the
probability that the ball drawn is (i) red   (ii) not red?

XXV. <u>**Answer the following questions**</u>   3×5=15

148.   Prove that 'the length of the tangent drawn from an external point to a circle are equal'

149.   Construct a triangle with sides 5cm, 6cm, 7cm and then construct another triangle similar to
it whose sides are $\frac{3}{5}$ of the corresponding sides of given triangle.

150.   The following table gives the production yield per hectare of wheat of 100 farms of a village.
Draw a more than type distribution and draw its ogive.

Yield productivity	50-55	55-60	60-65	65-70	70-75	75-80
Number of farms	2	8	12	24	38	16

151.   Find the median for the following data in frequency distribution table

C.I	Frequency (f_i)
15-20	2
20-25	3
25-30	6
30-35	4
35-40	5

152.   Find the area of the shaded region, in fig, if radii of the two concentric circles with centre O are 7cm and 14cm repsectively , and AOC $= 40^0$
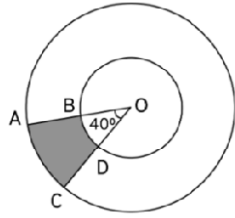
XXVI.   **Answer the following question:**   **4×2=8**

153.   State and prove Pythagoras theorem.

154.   Find the solution of the following pair of linear equation by the graphical method.

$$2x + y = 8$$
$$x + y = 5$$

XXVII.   Choose the correct answer: 1×10 =10
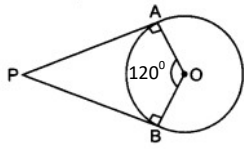
155.   If the first term of an AP is 3, common difference is 2 then its 20th term is
(A) 39   (B) 41
(C) 42   (D) 43

156.   If the areas of two triangles are in the ration 81:16, then the ratios of their corresponding sides are
(A) 9:4   (B) 4:9
(C) 2:3   (D) 16:81

157.   In the figure, if PA and PB are tangents , AP=AB, then   APB =

(A) 90^0 (B) 60^0
(C) 180^0 (D) 70^0

158.   The value of cos 45^0
(A) 1   (B) $\frac{\sqrt{3}}{2}$
(C) $\frac{1}{\sqrt{2}}$ (D) $\frac{2}{\sqrt{3}}$

159.   The correct relationship between mean, median and mode is
(A) 3 median = mode + 2 mean   (B) 2 median =2 mode + mean
(C) median = 2 mode + 2 mean   (D) 3median = 2 mode + mean

160.   If a and b are real numbers, q and r are quotient and remainder respectively, then which of the following is correct according to Euclid's Division Lemma
(A) b = aq - r   (B) b = cq + r
(C) c = ab + r   (D) a = bq + r

161.   The probability of an event 'E' is 0.3, then the probability o an event 'Not E' is
(A) 1   (B) 0.3
(C) 0.7   (D) 0.5

162.   Write the degree of the polynomial $p(x) = 2x^2 - x^3 + 5$
(A) 2   (B) 1
(C) 3   (D) 4

XXVIII. <u>**Answer the following**</u>   **1×8=8**

163.   In an AP, a_n=3n+2, then find 12th term.

164.   If the area of the base of the cone is 24cm^2 and its height is 6cm. Find the volume.

165.   State Pythagoras theorem

166.   Find the value of x and y for the following pair of linear equations : $x - y = 2$
$$x + y = 4.$$

167.   Write the general form of quadratic equations

168.   Express 210 as a product of its prime factors

169.   Find the value of $\sin 30^0 + \tan 45^0$

170.   Find the zeros of quadratic of polynomial $p(x) = x^2 - 2x - 8$

171.

XXIX. <u>**Answer the following**</u>   **2×8=16**

172.   Find the coordinates of the point which divides the line segment joining the points (4,-3) and (8,5) in the ratio 3:1

173.   Find the sum of first 30 terms of the AP: 1+5+9+13+……..

174.   Draw a pair of tangent to a circle of radius 5cm, which are inclined each other at angle 60^0

175.   Write the nature of roots for the following quadratic equation $x^2 - x + 12 = 0$

176.   Find the value of $\cot 23^0. \tan 67^0$

177.   Find the HCF of 134 and 225 using Euclid division algorithm

178.   Solve the following pair of linear equations : $2x + y = 8$
$$x + y = 5.$$

179.   In the figure DE ∥ BC , BD = 7cm, AD = 5cm and AC = 18cm. Find the value of AE and CE
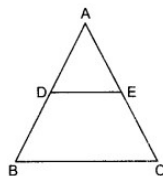
XXX. <u>**Answer the following questions**</u>   **3×5=15**

180.   Prove that 'the tangents ant any point of the circle is perpendicular to the radius through the point of contact'

181.   Construct a triangle with sides 5cm, 6cm, 7cm and then construct another triangle similar to it whose sides are $\frac{7}{5}$ of the corresponding sides of given triangle.

182.   Find the mode for the following data in frequency distribution table given below

C.I	Frequency (f_i)
0-10	7
10-20	9
20-30	15
30-40	11
40-50	8

183. Draw s ' less than ' ogive for the given distribution table

Height (in kg)	No. of students
Less than 38	0
Less than 40	3
Less than 42	5
Less than 44	9
Less than 46	14
Less than 48	28
Less than 50	32
Less than 52	35

184. Find the area of the shaded region in the given figure
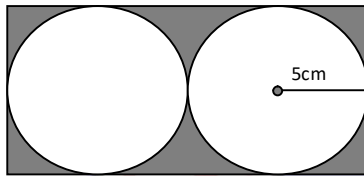
XXXI. <u>**Answer the following question**</u>: **4×2=8**

185. Solve graphically : $3x + y = 15$
$$x + y = 3$$

186. Prove that , if in two triangles , corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar.

SSLC PASSING PACKAGE
PRACTICE PAPER – 7

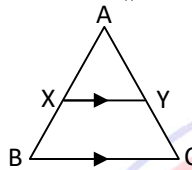**Sub: Mathematics**   **Max. Marks: 55**

Time: 90 min

XXXII.   Choose the correct answer: **1×10 =10**

187.   The nth term of an AP is an = 4n +5. Then its 5th term is
   (A) 20   (B) 14
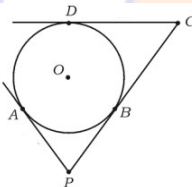   (C) 25   (D) 24

188.   In the Δ ABC , XY ‖ BC then,

   (A) $\frac{AX}{AB} = \frac{AC}{AY}$ (B) $\frac{AX}{BX} = \frac{AY}{CY}$
   (C) $\frac{AX}{BX} = \frac{XY}{AY}$ (D) $\frac{AB}{BX} = \frac{AC}{AY}$

189.   In the given figure, if PA, PB and CD are the tangents to a circle with centre O. If PC = 8cm and   AP = 5cm , the length of the tangent CD is

   (A) 5cm   (B) 3cm
   (C) 8cm   (D) 13cm

190.   The lines $x - 2y = 0$ and $3x + 4y - 20 = 0$ are
   (A) Intersecting lines   (B) coincident lines
   (C) parallel lines   (D) perpendicular lines

191.   The roots of the equation $(x$ -3$) (x$ +2$) = 0$ are
   (A) -3, 2   (B) 3, -2
   (C) -3, -2   (D) 3, 2

192.   The value of sinθ × cosecθ is
   (A) 2   (B) 1
   (C) $\frac{-1}{2}$ (D) $\frac{\sqrt{3}}{2}$

193.   The formula to find the total surface are a of a right circular cylindrical vessel of base radius 'r'cm and height 'h' cm opened at one end
   (A)$(\pi r^2 + 2\pi rh)cm^2$ (B) $(2\pi rh)cm^2$
   (C) $\frac{1}{}\pi r^2 h \, cm^3$ (D) $(\pi r^2 + h)cm^2$

194.   When a dice is rolled , the probability of getting an odd number is

(A) $\frac{3}{4}$ (B) $\frac{1}{2}$

(C) $\frac{1}{4}$ (D) $\frac{5}{6}$

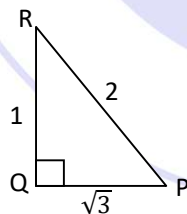**XXXIII.   Answer the following**   **1×8=8**

195.   If the ratio of corresponding sides if two similar triangle is 9:16, then what us the ratio of areas of these triangles

196.   Write $\frac{x+1}{2} = \frac{1}{x}$ in the standard form of a quadratic equation

197.   If the 17th term of an AP exceeds its 10th term by 7, write the common difference of this progression

198.   Find the length of the sides of a cube whose volume is 64cm³

199.   Find the zeros of quadratic of polynomial $p(x) = x^2 - 3$

200.   If sin A = $\frac{3}{4}$, write the values of cosec A

201.   17= 6×2 + 5 is compared with Euclid's division lemma a = bq + r, then which number is representing the remainder?

202.   If the pair of linear equations in two variables is inconsistent, then how many solutions do they have?

XXXIV.   Answer the following   **2×8=16**

203.   Find the sum of first 20 terms of the AP: 10, 15, 20,…. By using formula

204.   Draw a line segment of length 10cm and divide it in the ratio 2:3 by geometric construction

205.   Find the HCF of 865 and 255 using Euclid division algorithm

206.   Find the coordinates of the midpoint of the line segment joining the points P(3,4) and Q(5,6) by using midpoint formula

207.   Find the value of discriminant of $2x^2 - 5x + 3 = 0$

208.   In the figure find the values of sin P and tan R

209.   Solve the following pair of linear equations by elimination method: $2x + y = 14$
$$x - y = 4.$$

210.   In the figure, if AE ∥DB, CD = 14cm, CE = 12cm and BD = 5cm, find AE
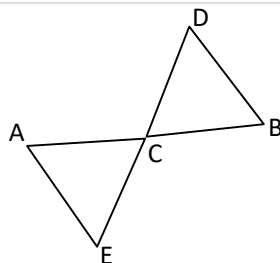
XXXV. <u>**Answer the following questions**</u>   3×5=15

211.   Prove that 'the lengths of tangents drawn from an external point to a circle are equal'

212.   Construct a triangle ΔABC with sides BC = 3cm, AB = 6cm and AC = 4.5cm and then construct another triangle similar to it whose sides are $\frac{4}{3}$ of the corresponding sides of ΔABC.

213.   Find the median for the following data in frequency distribution table given below

C.I	Frequency (f_i)
20-40	7
40-60	15
60-80	20
80-100	8

214.   The following table gives the information of daily income of 50 workers of a factory. Draw a ' less than 'ogive for the given data

Daily income	Less than 100	Less than 120	Less than 140	Less than 160	Less than 180	Less than 200
Number of workers	0	8	20	34	44	50

215.   ABCD is a square of side 14cm. P, Q,R nad S are the midpoints of AB, BC, CD and AD respectively. Also PS, PQ, QR and SR are the areas of the circles. Find the area of the shaded region
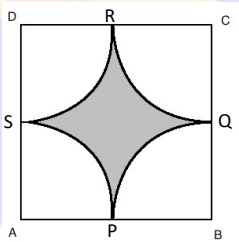
XXXVI.   <u>**Answer the following question**</u>:   4×2=8

216.   Solve graphically : $x + y = 4$
            $2x - y = 5$

217.   Prove that, the ratios of the areas of the two similar triangles are equal to the square of the ratio of their corresponding sides.

Sub: Mathematics   **Max. Marks: 55**

Time: 90 min

XXXVII.   **Choose the correct answer:**   **$1 \times 10 = 10$**

218.   If the nth term of an arithmetic progression is $a_n = 2n - 7$, then its 5th term is

(A) 3   (B) 0

(C) 17   (D) -2

219.   If the tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle 80^0, the POA is

(A) 50^0 (B) 60^0

(C) 80^0 (C) 70^0

220.   The value of cot 90^0 is

(A) $\frac{1}{\sqrt{3}}$ (B) 1

(C) $\sqrt{3}$ (C) 0

221.   The volume of a sphere of radius 'r' unit is

(A) $\frac{2}{3}\pi r^2$ (B) $\frac{2}{3}\pi r^3$

(C) $\frac{4}{3}\pi r^2$ (C) $\frac{2}{3}\pi r^2$

222.   The graphical representation of the pair of equation $2x + 3y - 4 = 0$ and $6x + 9y + 6 = 0$ is

(A) intersecting lines   (B) parallel lines

(C) coincident lines   (D) perpendicular lines to each other

223.   In the fig., DE || BC, if AD = 3cm, AB = 8cm and AC = 15cm find AE
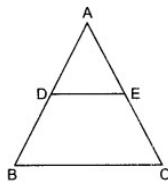
(A) 1.8   (B) 0

(C) 2   (D) 5.6

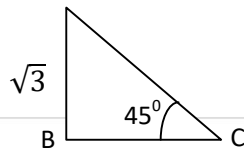224.   The HCF of 16 and 60 is

(A) 4   (B) 6

(C) 10   (D) 8

225.   A quadratic polynomial its zeros are -3 and 4 is

(A) $x^2 - x + 12$ (B) $x^2 + x + 12$

(C) $x^2 - x + 10$ (D) $x^2 - 2x + 12$

XXXVIII. **Answer the following** $1\times8=8$

226. Write the standard form of a quadratic polynomial

227. In the figure, ABC is a right angled triangle. If $C = 45^0$ and $AB = \sqrt{3}$cm , find the length of BC

A

$\sqrt{3}$

45^0

B   C

228. Find the sum of 20 terms in an AP: 4,9,13,…

229. State the converse of Pythagoras theorem

230. Write the formula to find the volume of frustum of the cone of height h and radii of the two circular ends are r_1 and r_2.

231. If $P(E) = 0.95$ then find $P(\overline{E})$

232. Write the discriminant of $x^2 + 5x + 6 = 0$

233. State fundamental theorem of arithmetic

XXXIX. **Answer the following** $2\times8=16$

234. Find the sum of first 20 positive odd integers

235. Draw a circle of radius 3cm and construct two tangents at the endpoints of diameter.

236. Prove that $5 - \sqrt{3}$ is an irrational number

237. Find the distance between the points (1,4) and (3,5)

238. Find the nature of the equation $2x^2 + 3x - 1 = 0$

239. If $\sin \theta = \frac{3}{5}$, find the value if $2\cos^2\theta - 1$

240. Solve : $2x - y = -2$
$x + y = 11$.

241. A coin is tosses two times. Find the probability of getting both heads.

XL. **Answer the following questions** $3\times5=15$

242. Prove that ' the length of the tangents drawn from an external point to a circle are equal'

243. Construct a triangle ABC with sides 3cm, 4cm and 5cm and construct another triangle whose sides are $\frac{3}{5}$ of the corresponding sides of the ΔABC

244. Calculate the mean for the following frequency distribution

C.I	Frequency (f_i)
10-20	3
20-30	5
30-40	2
40-50	1
50-60	7
60-70	2

245.   Draw a less than type ogive for the following data

Daily income	Number of workers
Less than 140	2
Less than 150	9
Less than 160	14
Less than 170	18
Less than 180	20

246.   In the figure, O is the centre of a circle such that diameter AB = 13cm and AC = 12cm. BC joined. Find the area of the shaded region
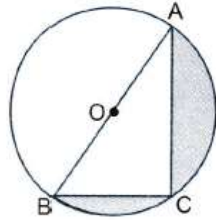
XLI.   **Answer the following question:**   **4×2=8**

247.   State and prove Basic proportionality theorem
248.   Solve graphically
$$x + 3y = 11$$
$$x - y = -1$$

Sub: Mathematics   **Max. Marks: 55**

Time: 90 min

XLII.   **Choose the correct answer:**   **1×10 =10**

249.   The sum of first n natural number is

(A) $\frac{n(n-1)}{2}$ (B) $\frac{n(n+1)}{2}$

(C) $\frac{n(n+1)}{3}$ (D) $n(n+1)$

250.   If the ratios of the sides of the two similar triangle is 5:9 then the ratios of the areas of these triangle is

(A) 2:3   (B) 5:9

(C) 25:81   (D) 81:25

251.   The number of points in which a tangent touches a circle are

(A) 1   (B) 0

(C) 2   (D) infinite

252.   Surface area of a sphere whose radius is 7cm is

(A) 154cm^2 (B) 308cm^2

(C) 616cm^2 (D) 770cm^2

253.   The relation among mean, median and mode is

(A) 3median = 2mean + mode   (B) 3mean = 2median + mode

(C) mean = 3 median + mode   (D) mode = 3 mean + 2 median

254.   The distance between the point from origin

(A) $\sqrt{x^2 + y^2}$ (B) $\sqrt{x^2 - y^2}$

(C) $\sqrt{x + y}$ (D) $\sqrt{x - y}$

255.   If a pair of linear equation $x + 2y = 3$ and $2x + 4y = k$ are coincident , then the value of k is

(A) 3   (B) 6

(C) -3   (D) -6

256.   A die is thrown once, then the probability of getting a number 3 is

(A) $\frac{1}{2}$ (B) $\frac{1}{6}$

(C) $\frac{2}{3}$ (D) $\frac{-2}{3}$

XLIII. **Answer the following**   1×8=8

257.   Find the 15th term of an AP: 3, 1, -1, -3, …..

258.   State converse of Pythagoras theorem.

259.   Write the formula for area of a sector with radius 'r' and the angle at the centre is 'θ'

260.   If $\sin \theta = \dfrac{5}{13}$, find the value of tan θ

261.   Write the formula to find total roots of the quadratic equation $ax^2 + bx + c = 0$

262.   Write the formula to find the volume of a cone

263.   Find the sum of zeros of polynomial $p(x) = 2x^2 - 9x + 10$

264.   Find the prime factors of 180.

XLIV. **Answer the following**   2×8=16

265.   Find the sum of first 20 terms of an AP: 3, 7, 11, 15, …..

266.   Find the discriminant of the quadratic equation $2x^2 + x + 4 = 0$ and hence find the nature of its root

267.   Solve the following pair of linear equations : $3x + 2y = 11$
$$5x - 2y = 13.$$

268.   Find the coordinates of a point which divides the line joining the points (-1,7) and (4,-3).

                                        OR

         Find the area of the triangle whose vertices are (2,3), (4,0) and (6,-3)

269.   A box contains 28 bulbs of which 7 bulbs are defective, a bulb is drawn randomly from the box. Find the probability of picking a non-defective bulb

270.   Draw a pair of tangents of a circle of radius 4cm, such that the angle between the tangents is 70^0

271.   Prove that $\sqrt{3} + 1$ is irrational

272.   Find the value of $\dfrac{1 - tan^2 45^0}{1 + tan^2 45^0}$

XLV. **Answer the following questions**   3×5=15

273.   Construct a triangle ABC with sides AB = 5cm, BC = 7cm and AC = 6cm and then construct another triangle similar to it whose sides are $\dfrac{3}{4}$ of the corresponding sides of given triangle ABC

274.   Prove that the tangents at any point of the circle are perpendicular to the radius through the point of contact.

275.   Find the mean for the following data in frequency distribution table

C.I	Frequency (f$_i$)
5-15	4
15-25	3
25-35	2
35-45	1

276. The following table gives the daily income of 50 workers of a factory. Draw a 'more than type' distribution and draw its ogive.

Daily income in rupees	100-120	120-140	140-160	160-180	180-200
Number of workers	5	10	20	5	10

277. Find the area of the shaded region, a square OABC inscribed in a quadrant OPBQ if AO = 20cm
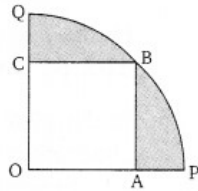
XLVI. **Answer the following question**:   **4×2=8**

278. Find the solution of the following pair of linear equation by the graphical method.
$$x + y = 4$$
$$2x - y = 5$$

279. Prove that the areas of two similar triangles are proportional to the square of their corresponding sides.

Sub: Mathematics   **Max. Marks: 55**

Time: 90 min

XLVII. **Choose the correct answer:**   **1×10 =10**

280.   Write the formula to find the nth term of an AP

(A) $a_n = a - (n-1)d$ (B) $a_n = a + (n+1)d$

(C) $a_n = a + (n-1)d$ (D) $a_n = 2a + (n-1)d$

281.   In ΔABC if $B = 90^0$, AC = 10cm, AB = 8cm, find BC

(A) 10cm   (B) 8cm

(C) 6cm   (D) 4cm

282.   The maximum number of tangents that can be drawn to a circle from an external point is

(A) 0   (B) 1

(C) 2   (D) ∞

283.   The total surface area of a solid hemisphere is

(A) $4\pi r^2$ (B) $3\pi r^2$

(C) $2\pi r^2$ (D) πr^2

284.   The class marks at interval 40-50 is

(A) 50   (B) 10

(C) 45   (D) 40

285.   The distance between the point (3,4) from the x-axis

(A) 0 unit   (B) 3 unit

(C) 4 unit   (D) 5 unit

286.   The number of solutions for the pair of linear equation $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$

(A) 0   (B) 1

(C) 2   (D) 3

287.   Which of the following can not be the probability of an event

(A) $\frac{2}{3}$ (B) -1.5

(C) 15%   (D) 0.7

XLVIII. **Answer the following**   **1×8=8**

288.   Find the nth term of an AP: a, a+d, a+2d

289.   State converse of Thales theorem.

290.   Write the formula for area of the quadrant

291.   If $\sqrt{3}\tan\theta = 1$, find the value of θ

292.   Find the value of the discriminant of the quadratic equation $x^2 - 7x - 7 = 0$

293.   Write the formula to find the total surface area of the frustum of the cone

294.   Find the product of zeros of polynomial $p(x) = 2x^2 - 9x + 10$

295.   If HCF(10, 25) = 5, then the LCM (10,25)

XLIX.   **Answer the following**   **2×8=16**

296.   Solve using quadratic formula $2x^2 - 7x + 3 = 0$
297.   Find the 30th term of an AP: 10, 7, 4, …..
298.   Solve the following pair of linear equations : $x + y = 7$
$$3x - y = 5.$$
299.   Find the distance between A(8,3) and B(2,11)

    OR

    Find the area of the triangle whose vertices are (2,3), (-1,0) and (2, -4)

300.   Draw a circle of radius 6cm from a point 10cm away from the centre, construct a pair of tangent to the circle and measure their length
301.   A lot consists of 144 ball pens of which 20 are defective and others are good, Nory will buy a pen if it is good, but will not buy if it is defective, the shopkeeper draws 1 pen at random and gives it to her , What is the probability that (i) She will buy it
                        (ii) she will not buy it
302.   Evaluate $2\ tan^2 45^0 + cos^2 30^0 - sin^2 60^0$

303.   Find the HCF of 65 and 110 using Euclid's division algorithm

L.   **Answer the following questions**   **3×5=15**

304.   Prove that 'the lengths of the tangents drawn from external point of circles are equal'

305.   Construct a right angled triangle in which the sides of length4cm and 3cm and then construct another triangle similar to it whose sides are $\frac{5}{3}$ of the corresponding sides of given triangle.

306.   Find the mode of the following data.

C I	1-3	3-5	5-7	7-9	9-11
Frequency	7	8	2	2	1

307.   The following table gives production yield of wheat per hectare of 100 farms in a village. Draw a less than type ogive for the given data

Production yield (in kg/ hectare)	No. of farms (cumulative frequency)
Less than 50	2
Less than 55	10
Less than 60	22
Less than 65	46
Less than 70	74
Less than 75	100

308.   From each ecntre of a square of side 4cm, a quadrant of circle of radius 1cm is cut and also a circle of diameter 2cm is cut as shown in the figure, find the area of remaining portion of the square
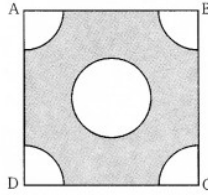
309.   State and prove Pythagoras theorem
310.   Find the solution of the following pair of linear equation by the graphical method.

$$2x + y = 4$$
$$x - y = 2$$