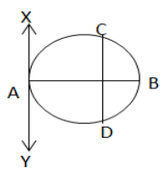
SINDHI HIGH SCHOOL, BENGALURU
III -PRE-BOARD EXAMINATION (2025-26)
SUBJECT – Mathematics (Standard) (O41)

Class: X **SET-II** **Max Marks: 80**
Date: 16-01-2026 **Reading Time:8:30 am-8:45am**
Number of printed sides:06 **Writing Time:8:45 am- 11:45am**

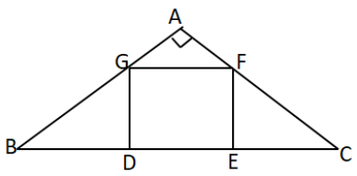
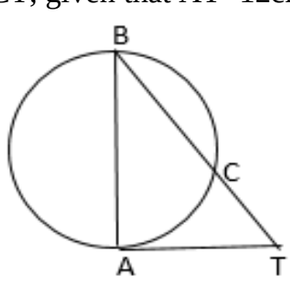
GENERAL INSTRUCTIONS:

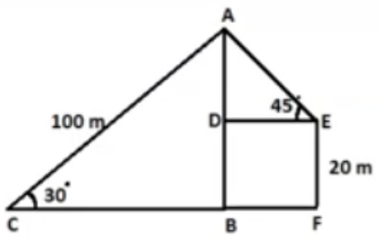
- This Question paper contains - five sections A,B,C,D and E. Each section is compulsory. However, there is some internal choice in some questions.
- **Section A** has 18 MCQ's and 02 Assertion Reason based questions of 1 mark each.
- **Section B** has 5 Very Short Answer(VSA) questions of 2 marks each.
- **Section C** has 6 Short Answer(SA) questions of 3 marks each.
- **Section D** has 4 Long Answer(LA) questions of 5 marks each.
- **Section E** has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each.
- Internal Choice is provided in 2 questions in Section-B, 2 questions in Section-C, and 2 Questions in Section-D.
- You have to attempt only one alternatives in all such questions.

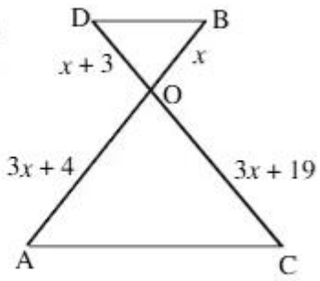
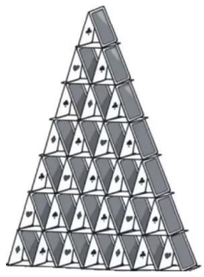
Q.NO	**SECTION – A** **This section consists of 20 multiple choice questions of 1 mark each**	**Marks**
1	If n is a natural number then $2(5^n+6^n)$ always ends with A) 1 B)4 C)3 D)2	1
2	Which of the following parabolas cross x-axis at distinct points ? A) $y=x^2-4x+4$ B) $y=x^2-4x-12$ C)$y=x^2-6x+9$ D)$y=x^2+16x+64$	1
3	For what values of k, the following equations has no solution 2x+3y = 5 and 6x+ky = 15 A)k=9 B) $k\neq 9$ C) $k=\pm 9$ D)No value of k	1
4	The value of k for which the quadratic equation $2x^2$-kx +k has equal zeroes A) 0 only B) 4 C) 8 only D)0, 8	1
5	Which of the following is true if the polynomial ax^2+bx+c has distinct rational roots A) $b^2-4ac<0$ B) $b^2-4ac>0$ C) b^2-4ac, a perfect square D) $b^2-4ac=0$	1
6	If x-2, 2a, x-3 are in AP, then which of the following is correct A) $x=\frac{a}{2}$ B) $2a=2x-5$ C) $4a=2x-5$ D) $a=2x-5$	1
7	The ratio in which the line segment joining points $(2,-3)$ and (5,6) is divided by x-axis. A)2:3 B)2:1 C)1:2 D)3:2	1

8	If $\theta=30^0$, then cos3θ is A) $\tan0^0$ B)$\sin0^0$ C) $\sin90^0$ D) both $\tan0^0$ and $\sin0^0$	1
9	If secA+ cosecA= $2\sqrt{2}$ then 1-$\tan^2$A is A) 1 B)0 C) 2 D)$\sqrt{2}$	1
10	Sum of areas of three sectors with sector angles 30^0, 45^0 and 105^0 and radii of each sector being 7cm is A) 77cm^2 B) 154cm^2 C) 144cm^2 D) 180cm^2	1
11	A right circular cylindrical vessel is full of water. How many right cones having the same radius and height as that of the right cylinder will be required to store that water? A) 2 B)3 C)4 D)5	1
12	If 2k and k are respectively represents median and mean , then what does mode represent? A) 3k B)7k C)6k D)4k	1
13	Average weight of 11 students is increased by 2kg. If the original sum of weights of 11 students is 210, then the new sum is A)232kg B) 200 kg C) 220kg D) 245 kg	1
14	A card is drawn at random from a well shuffled pack of 52 cards. The probability that the card is not an ace is A) $\frac{1}{13}$ B)$\frac{9}{13}$ C)$\frac{4}{13}$ D) $\mathbf{\frac{12}{13}}$	1
15	One ticket is selected at random from 00, 01, 02……50. Suppose x is the sum of digits , then probability that x=9 is A)$\frac{3}{27}$ B)$\frac{5}{51}$ C) $\frac{2}{51}$ D) $\frac{2}{17}$	1
16	At the end of a diameter of a circle of radius 5cm, tangent XAY is drawn to the circle. The length of the chord CD parallel to XY and at a distance 8cm from A is  A) 4cm B) 5cm C)6cm D)8cm	1
17	When two circles of radii r_1 and r_2 and centres O_1 and O_2 touch each other externally, then O_1O_2 is A) $r_1 - r_2$ B) $r_1 + r_2$ C) $r_2 - r_1$ D)$\frac{r_1}{r_2}$	1
18	The height of the largest right circular cone that can be cut out from a cube of edge 8cm is A)84 cm B)4$\sqrt{5}$cm C) 8cm D)64cm	1

	Assertion – Reason questions. In the following questions, A statement of Assertion (A) is followed by a statement of reason (R) a)Both Assertion(A) and Reason (R) are true and Reason(R) is the correct explanation of (A) b)Both Assertion(A) and Reason (R) are true and Reason(R) is not the correct explanation of (A) c)Assertion(A) is true and Reason(R) is false d)Assertion(A) is false and Reason(R) is true	
19	**Assertion (A):** The point P(0, 3) is equidistant from the points A$(-3,0)$ and B(3,0) **Reason: (R):** Every point on y-axis is equidistant from any two points on x-axis.	1
20	**Assertion (A)** : If P is a point on the circle centred at O. The number of tangents at P is one. **Reason (R)** : If P is a point on the circle whose centre is O, then there is one and only one perpendicular from O to the tangent at P.	1
	SECTION-B **This section has 5 very short answer type questions of 2 marks each.**	
21	A bag contains 18 balls out of which some are red in colour. If 6 more red balls are put in the bag and then a ball is drawn at random, the probability of drawing a red ball is tripled than what it was before. Find the number of red balls in the bag. **OR** Two different dice are tossed together. Find the probability i) That the number on either die is even ii)That the sum of numbers appearing on the dice is 5	2
22	Find two pairs of positive integers whose difference is 91 and HCF is 13. How many such pairs are possible?	2
23	A line intersect x- axis and y- axis at P and Q respectively. If (-3,5) is the midpoint of PQ , find the coordinates of P and Q OR One of the vertices of an equilateral triangle is (0,4). Find the other vertices lying below the origin , if the length of altitude of the triangle is 9units.	2
24	If sin(A+B)=1 and cos(A-B)= $\frac{\sqrt{3}}{2}$ $0^0 < A+B \leq 90^0$ and A> B , then find the values of A and B OR Evaluate : (CosA+ SinA)(CotA-TanA) for $A=30^0$	2
25	If D and E are points on sides AB and AC respectively of ΔABC such that DE ‖ BC and BD=CE. Prove that ΔABC is an isosceles triangle	2
	SECTION-C **This section has 6 short answer type questions of 3 marks each.**	
26	Find the values of k such that the polynomial $2x^2 -(k+6)x + 2(2k-1)$ has sum of zeroes equal to half of their product OR If p and q are zeroes of the polynomial $2x^2 +7x -4$ then find the value of $\frac{p}{q} + \frac{q}{p}$	3

27	In the given figure, DEFG is a square and ∠BAC= 90^0. Show that DE^2 =BD×EC 	3
28	Prove that $\frac{sinA+cosA+1}{SinA-cosA+1} = \frac{1}{CosecA-CotA}$ OR Given that Sinθ+ cosθ=x , prove that $Sin^4\theta + Cos^4\theta = \frac{2-(x^2-1)^2}{2}$	3
29	Three traffic lights at a crossing change after 45s, 60s and 75s respectively. If they change together at 6:00 am, when they change together again? How many times does the third light change in 600secs	3
30	The length of major arc of in a circle of radius 28cm is 100cm. Find the area of minor sector of the circle.	3
31	Two pipes together can fill a tank in 7 ½ hours. The pipe with larger diameter takes 8 hours less than the smaller pipe to fill the tank when working separately. Find the time taken by each pipe to fill the tank separately.	3
	SECTION-D **This section has long answer type questions of 5 marks each.**	
32	Find mean, median and mode for the following distribution No of Vehicles: Less than 20 | Less than 30 | Less than 40 | Less than 50 | Less than 60 Frequency: 15 | 37 | 74 | 99 | 120 OR The median of the distribution given below is 15.75. Class: 0-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 Frequency: 4 | x | 8 | y | 4 | 2 | 1 i)Find the values of x and y, if the total frequency is 30. ii) Also the mode of the data	5
33	In the given figure , AB is a diameter of the circle centred at O. The length of AB =5 cm. Prove that ΔATB~ ΔCTA. Also find the length of CT, given that AT=12cm. 	5

34	A boy standing on a horizontal plane is positioned at C. He is flying a drone which is positioned at A and is at a distance of 100m from him at an elevation of 30^0. A girl standing on the roof of 20 m high building , finds the angle of elevation of the drone to be 45^0. The boy and the girl are on the opposite sides. i)Find the distance of the drone from the girl. ii)Find the distance of the boy from the foot of the building. 	5
35	Represent the equations 3x+2y=6, 5x+4y=14 and y+2=0 graphically. Shade the polygonal region bounded by these three lines and write the vertices of the polygon. Also find the area of the polygon so formed . OR Aman invested two sums of money , one at 12% simple interest and other at 8% simple interest for one year. The total amount earned at the end of one year was ₹2200. If the rate of interest were interchanged , the total amount earned would have been ₹40 more. Find the amount invested at two rates.	5
	SECTION- E **This section has 3case study based questions of 4 marks each.**	
36	Singing bowls (hemispherical in shape) are commonly used in sound healing practices. Mallet (cylindrical in shape) is used to strike the bowl in sequence to produce sound and vibration.  One such bowl is shown above. Hemispherical bowl has outer radius 6cm and inner radius5cm. Mallet has height of 10cm and radius 2cm. Answer the following questions i)Find the volume of the material used in making the Mallet ? ii)The bowl is to be polished from inside. Find the inner surface area of the bowl. iii)Find the volume of the metal used to make the bowl OR (iii) Find the total surface area of the mallet (Use pi=3.14)	4

37	In the given figure a folding table is given   The legs of the table are represented by line segments AB and CD intersecting at O. AC and BD are joined. The table top is parallel to the ground. OB = x, OD = x + 3, OC = 3x + 19 and OA = 3x + 4. Answer the following questions: i) Prove that ΔOAC is similar to ΔOBD. ii) Prove that $\frac{OA}{AC} = \frac{OB}{BD}$ iii) Observe the figure and find the value of x. Hence, find the length of OC. OR Observe the figure and find $\frac{BD}{AC}$	4 1 1 2
38	Below is a house of cards, a structure created by stacking playing cards on top of each other in the shape of a pyramid. Each small triangle is made using 3 cards , and each layer has one less triangle than the layer below it.  Ankit and his friends were having sleepover and wanted to do something fun. One of the friends suggested that they could make a house of cards. i)Ankit and his friends want to use 3 cards in the top layer and 18 cards in the bottom layer. Form an AP showing the number of cards in each layer starting from the top layer. ii) Ankit is planning to make pyramid with the top and bottom layer containing 15 and 138 cards respectively. How many layer will such a pyramid have? iii)They have a total of 360 cards with them. Find the maximum number of layers that Ankit and his friends can make using the cards they have, if they want to have one triangle at the top layer. OR Can there be a layer with 84 triangles? Explain your answer.	4 1 1 2