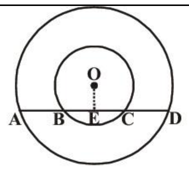
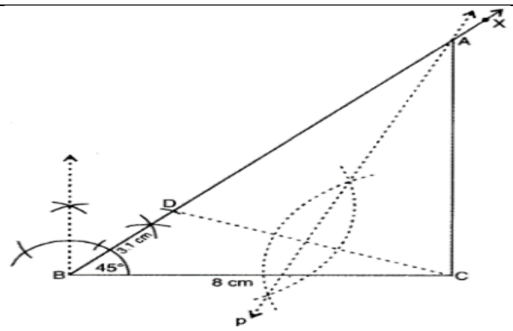
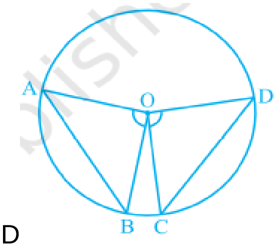
KENDRIYA VIDYALAYA SANGATHAN
KOLKATA REGION
SESSION ENDING EXAM 2022 (TERM-2)
MARKING SCHEME
CLASS –IX SUBJECT- MATHEMATICS
TOTAL MARKS-40 TIME-90 MINUTES

Q. No.	SECTION:- A	Marks
1	$P(x) = x+2$ $P(2) = 2+2=4$ and $p(-2) =-2+2=0$ $x = -2$ is the zero of the polynomial. OR $p(x) = 5x- 4x^2 +3$ $P(1) = 5(-1) – 4 (-1)^2 +3 = - 5 - 4+3= - 6$	 (1) (1) (1) (1)
2.	$\angle x=\angle y=45°$ so,$\angle x+\angle y=90°$	(1) (1)
3.	 We know that perpendicular drawn from the centre of the circle bisect the chord. Hence BE=EC …. (1) and AE=ED…. (2) On subtracting (1) and (2) we get AE-BE =ED-EC AB=CD	(1) (1)
4.	Let r be the radius and h be the height of the cylinder. Then, $2\pi rh =88$ and $h=14$ $2\times \frac{22}{7} \times r \times 14= 88$ $r =\frac{88\times 7}{2\times 22\times 14}$ r=1 cm d=2r=2 cm **OR** volume of the cube = $(side)^3$ $1000 = (side)^3$ 10= side Side of Cube=10 cm Total Surface Area= $6(side)^2 =6 (10)^2 =600$ cm²	 (1) (1) (1) (1) (1) (1)
5.	The total number of days for which the record is available =250 days No of days when the forecasts were correct=175 Days ∴Probability = $\frac{\text{Totalno.of correct forecast}}{\text{Total No.ofdays for which the record is available}}$ $=\frac{175}{250}$ =0.7	 (1) (1)
6.	Total outcomes = 1000 Frequency of Head = 455 Frequency of Tail = 545	

	Probability of getting head = P(H) = 455/1000 = 0.455 Probability of getting tail = P(T) = 545/1000 = 0.545.	(1) (1)
	Section B	
7.	$x^3+y^3=(x+y)^3-3xy(x+y)$ $=(12)^3-3x27x12$ $=756$ OR $9x^2+49y^2+25z^2-42xy-30xy+70yz$ $=(3x)^2+(7y)^2+(5z)^2-2.3x.7y-2.3x.5z+2.7y.5z$ $=(-3x)^2+(7y)^2+(5z)^2+(2\times.-3x\times.7y)+(2.\times-3x.\times5z)+(2\times7y\times5z)$ Using identity $a^2+b^2+c^2+2ab+2bc+2ac=(a+b+c)^2$ $=(-3x+7y+5z)^2$ $=(-3x+7y+5z)(-3x+7y+5z)$	(1) (1) (1) (1) (1) (1)
8.	103×107 Identity: $(x+a)(x+b)=x^2+(a+b)x+ab$ $103\times107=(100+3)(100+7)$ Substituting x = 100, a = 3, b = 7 in the above identity, we get $=(100)^2+(3+7)(100)+(3)(7)$ $=10000+1000+21$ $=11021$ OR $998^3=(1000-2)^3$,which is in the form of $(a-b)^3$ $(a-b)^3=a^3-b^3-3ab(a-b)$ that implies, $1000^3-2^3-3\times1000\times2(1000-2)$ $=1000000000-8-6000(998)$ $=1000000000-5988000-8$ $=994011992$	(1) (1) (1) (1) (1) (1)
9.		(1) (2)
10.	Height of conical vessel (h) = 8 cm Slant height of conical vessel (l) = 10 cm $\therefore r^2+h^2=l^2$ $\Rightarrow r^2+8^2=10^2$ $\Rightarrow r^2=100-64=36$ $\Rightarrow r=6$ cm Now, volume of conical vessel = $\frac{1}{3}\pi r^2h=\frac{1}{3}\times3.14\times6\times6\times8=301.44cm^3$ = 0.30144 litres	(1) (2)
	Section C	

11.	**Proof:** i) In quadrilateral ABED, AB = DE and AB || DE (given) So, quadrilateral ABED is a parallelogram [Since a pair of opposite side is equal and parallel] (ii) In quadrilateral BEFC Again BC = EF and BC || EF. so, quadrilateral BEFC is a parallelogram. [Since a pair of opposite side is equal and parallel] (iii) Since ABED and BEFC are parallelograms. AD = BE and BE = CF (Opposite sides of a parallelogram are equal) Thus, AD = CF. Also, AD || BE and BE || CF Thus, AD ||CF Hence , AD||CF & AD= CF iv) since AD||CF & AD= CF so ADCF is a parallelogram	(1) (1) (1) (1)
12.	We have a circle with centre O, such that ∠AOB = 60° and ∠BOC = 30° ∵∠AOB + ∠BOC = ∠AOC ∴ ∠AOC = 60° + 30° = 90° The angle subtended by an arc at any part of the circle is half the angle subtended by it at the centre. ∴ ∠ ADC = 12 (∠AOC) = 12(90°) = 45° **OR** Given : A circle with centre O. AB = CD  To prove: ∠ AOB = ∠ COD Proof: In triangles AOB and COD, OA = OC (Radii of a circle) OB = OD (Radii of a circle) AB = CD (Given) Therefore, Δ AOB ≅ Δ COD (SSS rule) This gives ∠ AOB = ∠ COD (Corresponding parts of congruent triangles)	 (1) (1) (2) (1) (2) (1)
	Section - II	

13.	Conical tent with height 10m and diameter 14m.	
	=> radius = 14/2 = 7 m	
	h = 8 m	
	slant height = $l^2 = 7^2 + 10^2 = 149$	
	l=12.2	(1)
	slant height of the tent = 12.2 m	
	CSA of the tent = $\pi r l = \frac{22}{7}$ x 7x12.2 = 268.4m^2	(1)
	A) cloth used for the floor = 300 – 268.4= 31.6 m^2	
	B) volume of the tent = $\frac{1}{3}\pi r^2 h$	(1)
	$= \frac{1}{3} \times \frac{22}{7} x 7^2 \times 10$ = 513.3m^3	
	C) Area of the floor = πr^2	
	$= \frac{22}{7} \times 7^2$	(1)
	= 154m^2	
	D) Curved surface Area of tent = $\pi r l$	
	CSA of the tent = $\pi r l = \frac{22}{7}$ x 7x12.2 = 268.4m^2	
	(A) -----(i)	
	(B) ---- (iii)	
	(C) -----(iv)	
	(D) ---- (ii)	
14)	Cardboard in the shape of Square of side = 12 inch .	

Four squares of equal size at corners are cut with side as = x inch .

As we can see that, when 2 Square with side x inch are cut from one side of cardboard \

Length of Cardboard =(12 - 2x) inch

Breadth of cardboard Left = (12 - 2x) inch .

when this shape is fold up the sides , it formed a cuboid with :-

Length of cuboid = Length of Cardboard Left = (12 - 2x) inch
Breadth of cuboid = Breadth of Cardboard Left = (12 - 2x) inch
Height of cuboid = Side of Square cut along the corners = x inch .

.A) Volume of the cuboid = lxbxh=

=(12-2x) (12-2x) x

= $4x^3-48x^2+144x$

And degree of the polynomial = 3

B) x =1 inch

Volume = 10 x10 x1 = 100 cu.inch

C)No, if x=6 then the length and breadth becomes zero.

Length = 12 -2x =12- (2x6)= 12-12 =0
Breadth = 12 -2x =12- (2x6)= 12-12 =0

D)Area covered by the cloth =2(lb+bh+lh) – lb

L=8, b= 8, h = 2

=2(8x8+8x2+8x2) – 8x8 = 128 sq.inch