

MATHEMATICS-X

Summative Assessment II

DESIGN OF SAMPLE QUESTION PAPER

TYPE OF QUESTIONS	MARKS PER QUESTION	TOTAL NO. OF QUESTIONS	TOTAL MARKS
M.C.Q	1	8	8
SA-1	2	6	12
SA-11	3	10	30
LA	4	10	40
TOTAL		34	90

BLUE PRINT

S.NO	TOPICS	MCQ(1)	SA1(2)	SA2(3)	LA(4)	TOTAL
1	ALGEBRA	2(2)	4(2)	9(3)	8(2)	23(9)
2	GEOMETRY	1(1)	2(1)	6(2)	8(2)	17(6)
3	TRIGONOMETRY	1(1)		3(1)	4(1)	8(3)
4	PROBABILITY	1(1)		3(1)	4(1)	8(3)
5	COORDINATE GEOMETRY	2(2)	2(1)	3(1)	4(1)	11(5)
6	MENSURATION	1(1)	4(2)	6(2)	12(3)	23(8)
		8(8)	12(6)	30(10)	40(10)	90(34)

MATHEMATICS-X

Summative Assessment II

SAMPLE QUESTION PAPER

Time allowed: 3hrs

Max marks: 90

Instructions

1. All questions are compulsory.
2. This Q.P consists of 34 questions divided into four sections A,B,C,D.
3. section A is of 1mark each, section B is of 2marks each, section C is of 3marks each,section D is of 4marks each.

Section A

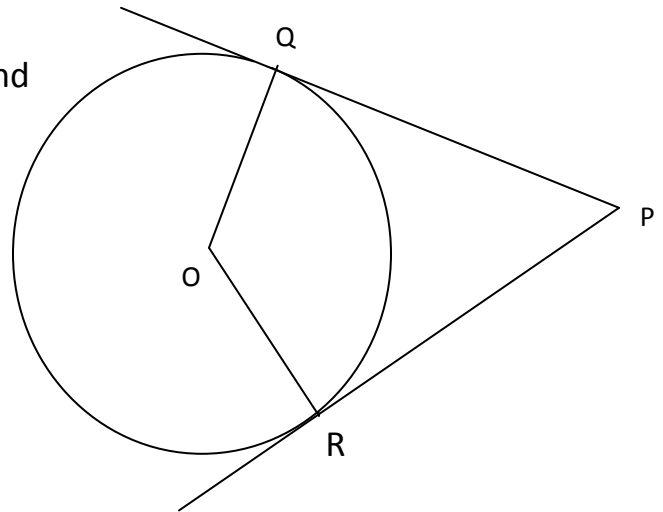
1. Which of the following is a solution of the equation $2x^2+x-6=0$?
(a) $x=2$ (b) $x=-12$ (c) $x=3/2$ (d) $x=-3$
2. The sum of first five multiples of 3 is
(a)45 (b)65 (c)75 (d)90
3. The length of the tangent drawn from a point 8cm away from the centre of a circle of radius 6cm is
(a) $\sqrt{7}$ cm (b) $2\sqrt{7}$ cm (c)10cm (d)5cm
4. If the angle of elevation of top of a tower from a point at a distance of 100m from its foot is 60° then the height of the tower is
(a) $50\sqrt{3}$ m (b) $\frac{200}{\sqrt{3}}$ m (c) $\frac{100}{\sqrt{3}}$ m (d) $100\sqrt{3}$ m
5. A card is drawn from a deck of playing cards.The probability of drawing a red face card is
(a) $\frac{1}{26}$ (b) $\frac{3}{26}$ (c) $\frac{4}{26}$ (d) $\frac{1}{13}$

6. One end of a diameter of a circle is at (2,3) and centre is (-2,5) what are the coordinates of the other end of this diameter
- (a)(-6,7) (b)(6,-7) (c)(6,7) (d)-6,-7)
7. AOBC is a rectangle whose three vertices are A(0,3) O(0,0) B(5,0). The length of its diagonal is
- (a)5 (b)3 (c) $\sqrt{34}$ (d)4
8. A metallic sphere of total volume π is melted and recast into the shape of a right circular cylinder of radius 1cm .what is the height of cylinder.
- (a)1cm (b)2cm (c)3cm (d)4cm

Section B

9. Find the roots of the equation $6x^2 - x - 2 = 0$.
10. Find the 7th term from the end of A.P 7,10 ,13.....184.
11. If PQ, PR are tangents to the circle

With centre O and $\angle QPR = 50^\circ$ then find $\angle OQR$.



12. What point on the x-axis is equidistant from (7,6) and (-3,4)?
13. If the perimeter of a protractor is 72cm calculate its area? ($\pi = 22/7$)
14. A rectangular sheet of paper 44cm x 18cm is rolled along its length and a cylinder is formed. Find its volume. ($\pi = 22/7$)

Section C

15. Find the sum of first 25 terms of an A.P whose n th term is $2-3n$
16. The sum of the areas of two squares is 640sqm . If the difference of their perimeters be 64m find the sides of the squares.
17. Find the roots by completing the square method: $2x^2-7x+3=0$.
18. Draw $\triangle ABC$ with $BC=6\text{cm}$, $\angle B=60^\circ$, $\angle C=45^\circ$. Construct another triangle whose sides are $\frac{2}{3}$ of corresponding sides of $\triangle ABC$.
19. Prove that the parallelogram circumscribing a circle is a rhombus.
20. Two poles of equal heights are standing opposite to each other on either side of a road which is 80m wide. From a point between them on the road, angles of elevation of their tops are 30° and 60° . Find the heights of the poles.
21. From 30 tickets marked with numbers 2 to 31, one ticket is drawn at random; find the probability that it is; (a) a multiple of 7 (b) an even number (c) a prime number.
22. . Prove that the points $(0,0)$ and $(5,5), (-5,5)$ are the vertices of an isosceles right triangle.
23. Metallic spheres of radii $6\text{cm}, 8\text{cm}, 10\text{cm}$ are melted to form a solid sphere. Find the radius of the resulting sphere.
24. Water in a canal 6m wide and 1.5m deep is flowing with a speed of 10km/hr . How much area will it irrigate in 30min , if 8cm of standing water is needed?

Section D

25. A motor boat, whose speed is 15km/hr in still water, goes 30km downstream and comes back in a total of 4hrs and 30minutes. determine the speed of stream

26. A sum of Rs1890 is to be used to give seven cash prizes . If each prize is Rs50 less than the preceeding prize, find the value of each prize.

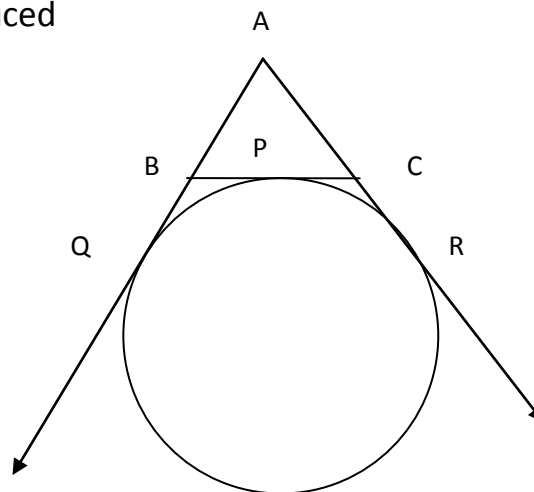
27. Prove that the tangents drawn from an external point to a circle are equal

28.. A circle is touching the side BC of $\triangle ABC$

at P and touching AB and AC produced

at Q and R.

Prove that $AQ = \frac{1}{2} \times \text{perimeter of } \triangle ABC$.



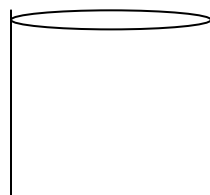
29. A man standing on the deck of a ship which is 10m above water level, observes the angle of elevation of the top of a hill as 60° and angle of depression of the base of the hill as 30° . calculate the distance of the hill from ship and height of the hill.

30. From a bag containing 5 red, 6 black and 7 yellow balls, a ball is drawn at random. find the probability that it is (a) red (b) not yellow (c) neither black nor red (d) either black or yellow.

31. If the vertices of a triangle are $(1, k)$, $(4, -3)$ and $(-9, 7)$., and its area is 15 squnits, find the value of k.

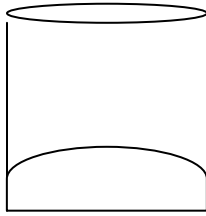
32. A canvas tent is of the form of a cylinder of diameter 15m and height 2.4m surmounted by a cone of equal base and height 4m. Find the cost of the canvas required at Rs50 per sqm.

33. A juice seller has three types of glasses of inner diameter 5cm and height 10cm.



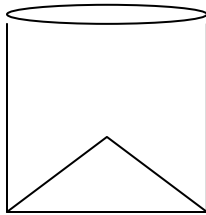
TYPE A

PLANE BOTTOM GLASS



TYPE B

HEMISPHERICAL RAISED BOTTOM



TYPE C

CONICAL RAISED BOTTOM OF HEIGHT 1.5CM

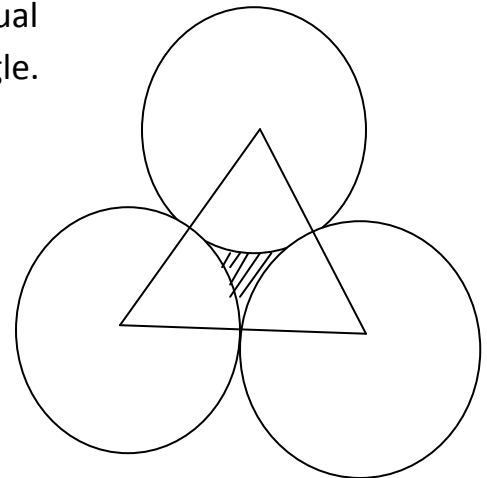
He decides to serve the customer in A type glass.

1. Find volume of TYPE A glass.
2. Which glass has the minimum capacity.?
3. Which mathematical concept is used ?
4. By choosing TYPE A which value is depicted by the juice seller.?($\pi=3.14$)

34.The area of an equilateral triangle is 17320.5 sqcm.with each vertex as centre,a circle is drawn with radius equal to half the length of the side of the triangle.

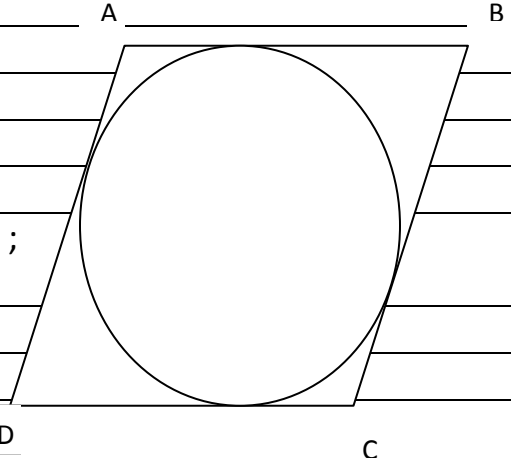
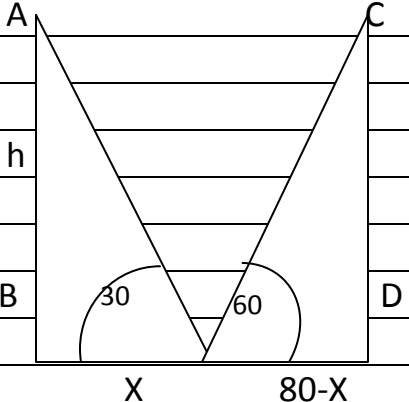
Find the area of shaded region.($\pi=3.14$)

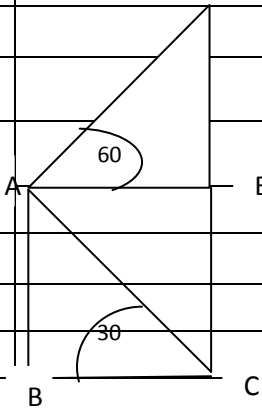
($\sqrt{3} = 1.73205$)



Scoring key Maths x

1	c	1
2	a	1
3	b	1
4	d	1
5	b	1
6	a	1
7	c	1
8	a	1
9	$6x^2+3x-4x-2=0$	1/2
	$(3x-2)(2x+1)=0$	1/2
	$x=\frac{2}{3}, x=\frac{-1}{2}$	1
10	184,.....13,10,7	1/2
	d=-3	1/2
	$a_7=a+6d=166$	1
11	$\angle QOR=130^0$	1/2
	OQ=OR	1/2
	$\angle OQR = \angle ORQ = 50/2 = 25^0$	1
12	Let A(7,6), B(-3,4) be the given points, P(x,0) be required point	
	AP=BP	1/2
	$(x-7)^2+(0-6)^2=(x+3)^2+(0-4)^2$	1/2
	-20x=-60	1/2
	X=3	1/2
13	Perimeter of circular arc+d=72	1/2
	$\pi r+2r=72$	1/2
	r=14cm	1/2
	Area=308sqcm	1/2
14	H=18, circumference of base=44	1/2
	$2\pi r=44$	
	r=7	1/2
	Vol=2772cucm	1
15	$2-3n=a_n$	
	$a_1=-1, a_2=-4, a_3=-7$	1/2
	d=-3	1/2
	$S_{25}=-925$	2
16	$x^2+y^2=640$	1/2

	$4x-4y=16$	1/2
	$\Rightarrow x-y=16$	
	$y^2+(y+16)^2=640$	1/2
	$Y^2+16y-192=0$	1/2
	$Y=8,y=-24$	1/2
	When $y=8,x=24$	1/2
17	$(x-\frac{7}{4})^2 = -\frac{3}{2} + \frac{49}{16}$	1
	$X=\frac{3}{1}, x=\frac{1}{2}$	2
18	construction Of ΔABC ;	1
	construction Of $\Delta A'BC$;	2
19		FIG 1/2
	$AD+BC=AB+CD$	2
	BUT $AD=BC, AB=CD$	1/2
20		FIG 1/2
	$\tan 30^\circ = \frac{h}{x}, \quad h = \frac{x}{\sqrt{3}}$	1/2
	$\tan 60^\circ = \frac{h}{80-x}$	1/2
	$X=60$	1
	$H=20\sqrt{3}$	1/2
21	$P(\text{mul of } 7) = \frac{4}{30}$	1

	$P(\text{even}) = \frac{15}{30}$	1
	$P(\text{prime}) = \frac{11}{30}$	1
22	Let A(0,0), B(5,5), C(-5,5)	
	$AB = \sqrt{50}$	1/2
	$BC = \sqrt{100}$	1/2
	$AC = \sqrt{50}$	1/2
	$BC^2 = AB^2 + AC^2$	1 1/2
23	$\frac{4}{3}\pi(6^3 + 8^3 + 10^3) = \frac{4}{3}\pi r^3$	1
	$216 + 512 + 1000 = r^3$	1
	$1728 = r^3$	1/2
	$r = 12$	1/2
24	$5000 \times 6 \times 1.5 = A \times 8 / 100$	2
	$A = 562500 \text{ sqm}$	1
25	Upstream speed = $15 - x$, downstream speed = $15 + x$	1/2
	$\frac{30}{15-x} + \frac{30}{15+x} = 4\frac{1}{2}$	1
	solving	1
	$x = 5$	1/2
26	$x, x-50, x-100, x-150$	1
	$\frac{7}{2}(2x + 6x - 50) = 1890$	1
	$x = 420$	1
	420, 370, 320, 270, 220, 170, 120	1
27	GIVEN, TO PROVE, CONST, FIG	2
	PROOF	2
28	$AQ = AB + BQ$	1
	$AR = AC + CR$	1
	$2AQ = AQ + AR$	1
	$= AB + BC + A\hat{D}$	1
29	$\tan 30^\circ = \frac{AB}{BC}$	Fig1
	$BC = 10\sqrt{3}$	1
	$\tan 60^\circ = \frac{DE}{AE}$	
60	$\sqrt{3} = \frac{DC - 10}{BC}$	1
	$DC = 40\text{m}$	1
	$\text{Dist} = 10\sqrt{3}\text{m}$	1
30		
30	$P(R) = \frac{5}{18}$	1

	$P(\text{not yellow}) = \frac{11}{18}$	1
	$P(\text{not black ,not red}) = \frac{7}{18}$	1
	Either black or yellow = $\frac{13}{18}$	1
31	Area of a triangle	1
	substituting	1
	$K = -3$	2
32	$l = 8.5$	1
	$CSA = 2\pi rh + \pi rl$	1
	$= 314 \text{sqm}$	1
	Cost = Rs 157	1
33	1 Vol of glass of type A = 196.25cucm	1
	Vol of glass of type B = 163.54cucm	
	Vol of glass of type C = 186.44cucm	
	2 Glass B	1
	3 Volume of solid fig	1
	4 Honesty	1
34	$\frac{\sqrt{3}}{4}(2R)^2 = 17320.5/\sqrt{3}$	1
	Area of $\triangle ABC$ - Area of 3 SECTORS	1
	$17320.5 - 15700$	1
	1620.5sqcm	1