केंद्रीय विद्यालय संगठन ,जयपुर रीजन

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PRACTICE PAPER : 2024-25

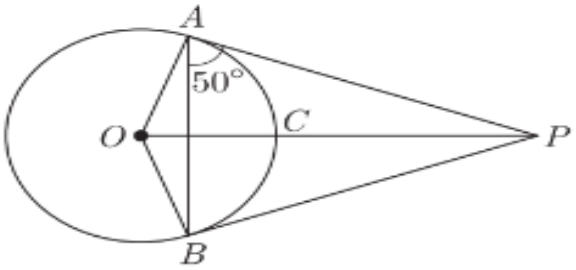
सेट सं /SET No :- B

कक्षा/ Class: 10 विषय /SUBJECT- MATHS STANDRAD (041)

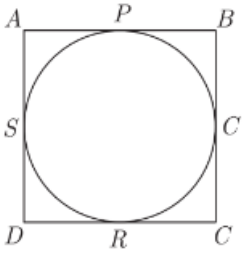
MARKING SCHEME

S.No.	Section A	Marks
1.	b) $6 + \sqrt{5}$	1
2.	(c) 9696	1
3.	(c) $\frac{3}{2}$	1
4.	(b) coincident	1
5.	(b) 24	1
6.	(d) $3\sqrt{3} + 4$	1
7.	(a) $\frac{40\sqrt{3}}{3}$ cm	1
8.	(b) (- 3,- 5)	1
9.	(c) $\frac{1}{3}$	1
10.	(a) $16cm$	1
11.	(b) 1	1
12.	(b) Equilateral triangle	1
13.	(d) 55 cm	1
14.	(a) 104.76 cm^2	1
15.	(a) 16:31	1
16.	(c) 14	1
17.	(a) $\bar{x} + \frac{n+1}{2}$	1
18.	(c) ¾	1
19.	(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1
20.	(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1

SECTION - B		
21.	Sum of zeroes = *-11/3* Product of zeroes = *-4/3* Answer = *-145/12*	1 1
22.	$1 + \frac{\cot^2 \propto}{1+\text{cosec} \propto} = 1 + \frac{\text{cosec}^2 \propto - 1}{1+\text{cosec} \propto}$ $= \text{cosec} \propto$ **OR** $sec^4 A - sec^2 A = sec^2 A\ (sec^2 A - 1)$ $= (1 + tan^2 A)\ tan^2 A$ $= tan^4 A + tan^2 A$	1 1 1 1

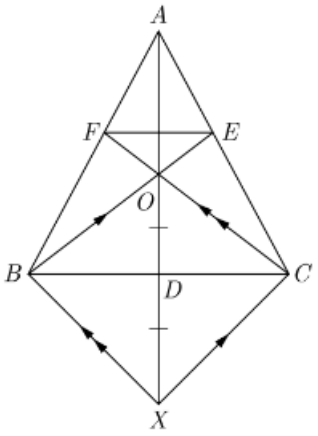
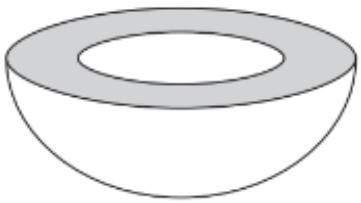
23.	Using SSS criteria of similarity △PQR ~ △ZYX $\rightarrow \angle R = \angle X$ $= 180^\circ - (60^\circ + 70^\circ) = 50^\circ$ Thus $\angle X = 50^\circ$	1 1
24.	As per the given question we draw the figure as below.  Since PA ⊥ OA, $\angle OAP = 90^0$ $\angle OAB = \angle OAP - \angle BAP$ $= 90^0 - 50^0 = 40^0$ Since OA and OB are radii, we have $\angle OAB = \angle OBA = 40^0$ Now $\angle AOB + \angle OAB + \angle OBA = 180^0$ $\angle AOB + 40^0 + 40^0 = 180^0$ $\angle AOB = 180^0 - 80^0 = 100^0$ Hence , $\angle AQB = 100^0$	 1 1
25.	Length of the arc = *[31 – (6.5 + 6.5)] = 18 cm* Area of the sector = ½ x radius x length of the arc = *½ x 6.5 x 18 = 58.5 cm²* **OR** *2πr – r = 37* *r = 7 cm* Circumference = *44 cm*	1 1 1 1

	SECTION - C	
26.	Correct proof	3
27.	Check for the condition of parallel lines These lines are parallel and hence do not cross each other **OR** Let the fraction be x/y According to the first condition, $(x - 2)/y = 1/3$ $3x - 6 = y$ $y = 3x - 6$ ……(1) According to the second condition, $x/(y - 1) = 1/2$ $2x = y - 1$	2 1 1 1

	$y = 2x + 1$ ……..(2) From equation (1) and (2), we have $3x - 6 = 2x+1$ $\Rightarrow x=7$ Substitute value of x in equation (1), we get $y = 3(7) - 6 = 21-6 =15$ Hence, fraction is 7/15	1
28.	$\alpha + \beta = - 5/2$ $\alpha\beta = k/2$ $\alpha^2 + \beta^2 + \alpha\beta = 21/4$ $(\alpha + \beta)^2 - \alpha\beta = 21/4$ $k = 2$	1 1 1
29.	Proof by correct method	3
30.	*We have* $\angle RPQ = 50^O$ *Since* $\angle OPQ + \angle QPR$ *is right angle triangle,* $\angle OPQ = 90^O - 50^O = 40^O$ *Since, OP = OQ because of radii of circle, we have* $\angle OPQ = \angle OQR = 40^O$ *In triangle POQ we have* $\angle POQ = 180^0 - (\angle OPQ + \angle OQP) = 180^O - (40^O + 40^O) = 100^O$ **OR**  We have a rectangle ABCD circumscribe a circle which touches the circle at P, Q, R, S. We have to prove that ABCD is a square. As per given information we have drawn the figure below. Since tangent drawn from an external point to a circle are equals, AP = AS PB = BQ DR = DS RC = QC Adding all above equation we have AP + PB + DR + RC = AS + SD + BQ + QC AB + CD = AD + BC Since ABCD is rectangle, AB = CD and AD = BC Thus 2AB = 2BC ,AB = BC Since adjacent sides are equal So, ABCD is a square	1 1 1 1 1
31.	There are 36 possible outcomes of rolling two dices. n(S) = 36 (i) an even number on both dice. Favourable outcome arc (2, 2), (2, 4), (2, 6), (4, 2) (4, 4), (4, 6), (6, 2), (6, 4) and (6, 6). Number of favourable outcomes $n(E_1\}) = 9$	1.5

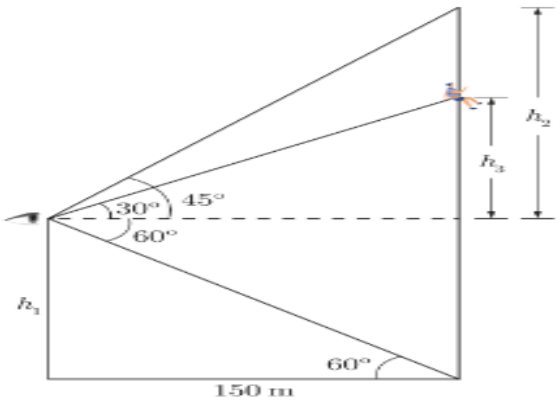
	P(an even number on both dice), $P(E_1\}) = \frac{n(E1)}{(n(S)} = 9/36 = 1/4$ (ii) sum of two numbers more than 9 Favourable outcome are (4, 6), (5, 5), (5, 6), (6, 4), (6, 5) and (6, 6). Number of favourable outcomes $n(E_2) = 6$ P (sum of two numbers more than 9), $P(E_2\}) = \frac{n(E2)}{(n(S)} = 6/36 = 1/6$	1.5

SECTION - D		
32.	Let there be n persons and each get p rupees Hence, $p = \frac{9000}{n}$ $\frac{9000}{n} - \frac{9000}{n+20} = 160$ $n^2 + 20n - 1125 = 0$ $n^2 + 45n - 25n - 1125 = 0$ $(n + 45)(n - 25) = 0$ $n = 25, -45$ Thus, number of persons are *25* **OR** It is given that the tank is filled in $\frac{8}{75}$ hours that is, the taps fill $\frac{75}{8}$ part of the tank in 1 hour. Then, $\frac{1}{x} + \frac{1}{x+10} = \frac{8}{75}$ $4x^2 - 115x + 375 = 0$ $(4x - 15)(x - 25) = 0$ $4x - 15 = 0$ $x = 415$ *or,* $x - 25 = 0$ $x = 25$ When $x = 415$, then, $x - 10 = 415 - 10$ $= 415 - 40$ $= -425$ This cannot be possible because time can never be negative. When $x = 25$, then, $x - 10 = 25 - 10$ $x = 25$ Therefore, the tap of smaller diameter can separately fill the tank in *25 hours*.	2 2 1 2 2 1

33.	Since BC and OX bisect each other, BXCO is a parallelogram. Therefore BE ‖ XC and BX ‖ CF.  In ΔABX by BPT, we get , $\frac{AF}{FB} = \frac{AO}{OX}$ ……. (1) In ΔAXC , $\frac{AE}{EC} = \frac{AO}{OX}$ *.....(2)* *FROM (1) AND (2) we get* $\frac{AF}{FB} = \frac{AO}{OX}$ *.....(2)* *BY CONVERSE of BPT we have EF‖ BC* *From (1) we get* $\frac{OX}{OA} = \frac{FB}{AF}$ $\Rightarrow \quad \frac{OX+OA}{OA} = \frac{FB+AF}{AF}$ $\Rightarrow \quad \frac{AX}{OA} = \frac{AB}{AF} \quad \Rightarrow \quad \frac{AO}{AX} = \frac{AF}{AB}$ Thus , AO:AX = AF:AB hence proved	1 2 2
34.	As per question the figure is shown below.  Given, outer radius of the hemisphere ,R = 8 cm Inner radius = 6 cm Surface area = $2\pi R^2 + 2\pi r^2 + \pi(R^2 - r^2)$ $\therefore$ surface area $= \pi(2\times8^2 + 2\times6^2 + (8^2 - 6^2)$. $= 228 \times 3.14 = 715.92\ cm^2$ total cost = S.area × 5₹ Total cost = 715.92 × 5 = ₹3579.60 **OR** Diameter of the tent (d)=4.2 m $\therefore$ Radius of the tent (r)=2.1 m [$\therefore$r=d/2]	1 1 1 1

	Height of the cylindrical part of tent (h)=4 m Height of conical part (H)=2.8 m Slant height of conical part(l)=$\sqrt{H^2+r^2}$ l=$\sqrt{(2.8)^2+(2.1)^2}$ l=$\sqrt{7.84+4.41}$ l=$\sqrt{12.25}$ l=3.5m Curved surface area of the cylinder=2πrh =2×227×2.1×4[∵π=227] =2×22×0.3×4 =52.8 m^2 Curved surface area of conical tent=πrl =227×2.1×3.5 =22×0.3×3.5 =23.1 m^2 Total area of cloth required for building one tent=C.S.A of cylinder + C.S.A of conical tent =(52.8+23.1)m^2 =75.9 m^2 Cost of building one tent=75.9×100 = Rs 7590 Total cost of 100 tents=Rs(7590×100) = Rs 7,59,000 Cost to be borne by the associations (50% of the cost) =75900 × 50100 = Rs 379500 Hence, the association are helping the flood victims and showing concern for humanity.	1 2 1 1

		1
35.	F1 =10 F2=22	$2\frac{1}{2}$ $2\frac{1}{2}$

	SECTION E	
36.	(i) It may be seen easily from figure that coordi- nates of point A are (-2,2). OA= $\sqrt{(0+2)^2+(0-2)^2} = 2\sqrt{2}$ (ii) It may be seen easily from figure that coordi- nates of point B are (-1,-2). AB=$\sqrt{(-2+1)^2 + (2+2)^2} = \sqrt{(1+4^{2})}=\sqrt{17}$ (iii) It may be seen easily from figure that coordi- nates of point C are (3, 0). BC= $\sqrt{(-1-3)^2+(-2-0)^2} = \sqrt{4^2+4}=2\sqrt{5}$ or (iv) We have A(-2,2) and B(-1,-2) $\frac{m}{n} = \frac{4}{3}$ $x = \frac{mx2+nx1}{m+n}$ And $y = \frac{my2+ny1}{m+n}$ $x = \frac{-10}{7}$ $y = \frac{-2}{7}$	1 1 2
37.	*Let h_1 be the height of* southern rim of the canyon from ground and h_2 be the height of the northern rim from southern rim. Let h_3 be the height of climbers on northern rim from southern rim. We draw a diagram of the situation as shown below  For h_1 $\tan 60^{o} = \frac{h1}{150}$ ⇒ $h_1 = 259.8\ m$ For h_2 $\tan 45^{0} = \frac{h2}{150}$ ⇒ $h_2 = 150$ m For h_3 $\tan 30^{0} = \frac{h3}{150}$ ⇒ $h_3 = 86.6\ m$ $h_2 - h_3 = 150 - 86.6 = 63.4$ m (i) $h_1 = 259.8$ metre is the height of the south rim.	

	(ii) $h_1 + h_2 = 259.8 + 150 = 400.8$ metre is the height of the north rim. (iii) Climbers have to go to the top $h_2 - h3 = = 63.4$ Or Difference between both rims is 141mt	1 1 2
38.	1. Rs 5000 2. Production during 8th year is (a+7d) = 5000 + 2(2200) = 20400 3. Production during first 3 year = 5000 + 7200 + 9400 = 21600 or N = 125. Difference = 18200 - 11600 = 6600	