केंद्रीय विद्यालय संगठन ,जयपुर रीजन

KENDRIYA VIDYALAYA SANGATHAN JAIPUR REGION

पूर्व -बोर्ड / Pre-Board Examination- 1st : 2024-25

सेट सं /SET No :- A

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

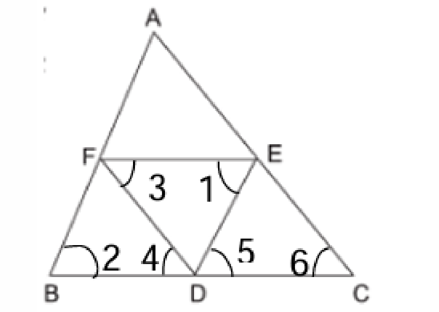
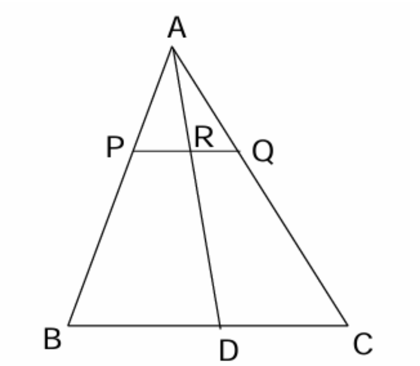
MARKING SCHEME

S.No.	Section A	Marks
1.	(a) x^2 -9	1
2.	(a) a) It has a solution (either a unique or infinitely many).	1
3.	(b) 70˚	1
4.	(b) n(n+2)	1
5.	(b) 2r	1
6.	(a) 1	1
7.	(b) 3 cm	1
8.	(d) at most n Zeroes	1
9.	(b) 4 : 3	1
10.	(b) isosceles and similar	1
11.	(b) -2	1
12.	(c) √3	1
13.	(d) 64	1
14.	(c) 1/3	1
15.	(a) 1:2	1
16.	(b) Centred at the class marks of the class	1
17.	(b) 2:3	1
18.	(d) 3/26	1
19.	(a)Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)	1
20.	(d) Assetion (A) is false but Reason (R) is true.	1

SECTION - B		
21.	We have 96= $2^5 \times 3$ and 404 = $2^2 \times 101$ ∴HCF = 2^2=4 Given HCF = 404m – 96n ⇨ 404m -96n = 4 => 4(101m -24n) =4 ⇨ 101(5) – 24n =1 ⇨ n=21 **OR** LCM(48, 56, 36) = 1008 sec 1008 sec = 16 min 48 sec So bell will ring at 7: 16 am 48 sec	½ ½ 1 1 1
22.	P(winning a lottery) = $\frac{Favorable\ outcomes}{Total\ no\ of\ outcomes} = \frac{5}{1000} = 0.005$	1 1

	OR (b) (i) 8/25 (ii) 4/5	1 1
23.	Sin A = $\frac{\sqrt{3}}{2}$ then Cot A = $\frac{1}{\sqrt{3}}$ $2\cot^2 A - 1 = \frac{-1}{3}$	1 1
24.	Let AB be the diameter of the circle having its center at C(1,-3) such that coordinates of one end A are (-4,1). Let the coordinates of B be (x,y). Since C is the mid point OF AB. ∴ C coordinate is $\left(\frac{x+4}{2}, \frac{y-1}{2}\right)$ But, the coordinates of C are given to be (1, -3) $\frac{x+4}{2} = 1$ and $\frac{y-1}{2} = -3$ => x+4 =2 and y-1 = -6 ⇨ x =-2 and y =-5 So Coordinates of B are (-2, -5)	1 1
25.	$\sqrt{(x-7)^2 + (y-1)^2} = \sqrt{(x-3)^2 + (y-5)^2}$ Squaring both sides $(x-7)^2 + (y-1)^2 = \sqrt{(x-3)^2 + (y-5)^2}$ x-y = 2	1 1

SECTION - C		
26.	sec θ - tan θ = 1/p sec θ =$\frac{p2+1}{2p}$ tan θ = $\frac{p2-1}{2p}$. sin θ = $\frac{p2-1}{p2+1}$.	½ 1 ½ 1
27.	Correct proof	3
28.	It is given that α and β are the zeroes of the quadratic polynomial $f(x) = kx^2 + 4x + 4$. ∴ $\alpha+\beta - \frac{4}{k}$ and $\alpha\beta=\frac{4}{k}$ We have, $\alpha^2 + \beta^2=24$ $(\alpha+\beta)^2 - 2\alpha\beta = 24$ ⇨ $\left(-\frac{4}{k}\right)^2 - 2 \times \frac{4}{k} = 24$ => $\frac{16}{k^2} - \frac{8}{k} = 24$ ⇨ $16 - 8k = 24k^2$ => $3k^2+k-2=0$ ⇨ $k = -1$ or 2/3	½ 1 ½ 1

29.	Since D, E, F are the mid points of BC, CA, AB respectively Therefore, EF||BC, DF||AC, DE||AB BDEF is a parallelogram ∠ 1= ∠ 2 & ∠ 3 = ∠ 4 Δ FBD ∼ Δ DEF Also, DCEF is a parallelogram ∠ 3= ∠ 6 & ∠ 1 = ∠ 2 (proved above) Δ DEF ∼ Δ ABC  **OR**  Since PQ//BC therefore Δ APR ∼ Δ ABD => AP/AB = PR/BD …….. (i) Δ AQR ∼ Δ ACD => AQ AC = RQ DC …….. (ii) Now, AP AB = AQ AC ……….(iii) Using (i), (ii) & (iii), PR BD = RQ DC But, BD = DC => PR = RQ or AD bisects PQ	1 ½ ½ ½ ½ 1 1 1
30.	Radius of park = r Radius of outer circle R= r+7 $2\pi r = 88$ ⇨ r=14 ⇨ Radius of outer circle is R=r +7= 14+7= 21 ⇨ Area of road surrounding the park = $A = \pi R^2 - \pi r^2$ $\pi[21^2 - 14^2]$ 245 π **OR** ϴ=30° ; R=7 ; r = 7/2 Area of Shaded region= $\frac{30}{360}(\pi R^2 - \pi r^2)$= $\frac{1}{12}\frac{22}{7}(7^2 - 3.5^2)$= 9.625 or (77/8)	1 2 ½ 2½
31.	(x,y) = (2,1)	3

SECTION - D		
32.	Let there be n persons and each get p rupees Hence, p = $\frac{9000}{n}$ $\frac{\mathbf{9000}}{\boldsymbol{n}}$ - $\frac{\mathbf{9000}}{\boldsymbol{n+20}}$ = 160 $n^2 + 20n - 1125 = 0$ $n^2 + 45n - 25n - 1125 = 0$	2 2

	$(n + 45)(n - 25) = 0$ $n = 25, -45$ 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*.	1 2 2 1
33.	Applying property of perpendicular from centre to chord $PA.PB = (PN - AN)(PN + BN)$ $PA.PB = (PN - AN)(PN + AN)$ [AN=BN as ON⊥AB] $PA.PB = PN^2 - AN^2$ $PN^2 - AN^2 = (OP^2 - ON^2) - AN^2$ $PN^2 - AN^2 = OP^2 - OA^2$ $PN^2 - AN^2 = OP^2 - OT^2$ ...(ii) [OA=OT=radii of circle] Use above result to evaluate unknown $PA.PB = OP^2 - OT^2$ $PA.PB = PT^2$ [In ΔOTP, $PT^2 = OP^2 - OT^2$ (By Pythagoras theorem)] $PA.PB = PT^2$	½ 1 1½ 2
34.	Correct figure Height 20 √3 Distances 20 ,60	1 1½ 1½ + 1
35.	$F_1 + f_2 = 32$ Correct complete table Correct ΣFx	½ 1 1

	F_1 & F2 = 10, 22 OR x + y = 16 Correct Values in Formula x & y =10 & 6	$2\frac{1}{2}$ ½ 1 3½

SECTION E		
36.	Let , policeman take n min to catch the theif , then theif runs (n+3) min. (i) an+3 = 47 +2n (ii) Sn = $5n^2 + 135n$ (iii) (a) Sn+3 Thief = Sn policeman $3n^2 + 13n - 90 = 0$ n = -18 min. time is always positive so n = 5 OR (b) Sn+3 Thief = Sn policeman $n^2 - 32n + 135 = 0$ at n = 27 min. distance covered by thief will negative, so n = 5 min	 1 1 2 2
37.	i. 25√3/3 m ii. 24 m iii. (a) 30(√3 - 1)m **OR** (b) 45 m	1 1 2
38.	*i.* AA *ii.* 4:3 *iii.* (a) 1.6 m **OR** (b) √48.96 m	1 1 2