Class- X Mathematics Basic (241)
Marking Scheme
PRE-BOARD-2022-23

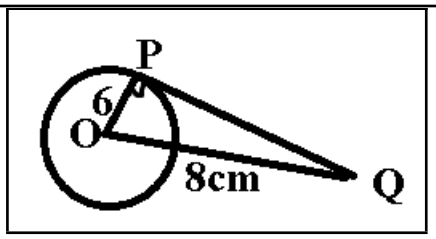
Time Allowed: 3 Hours **Maximum Marks: 80**

SECTION:A

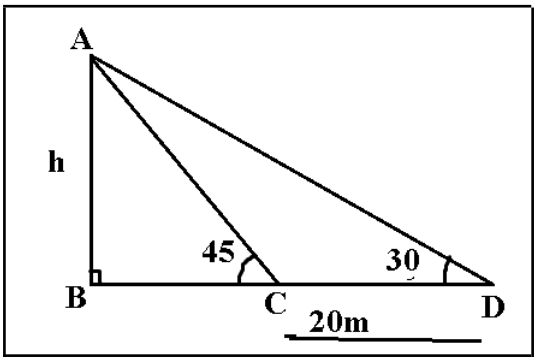
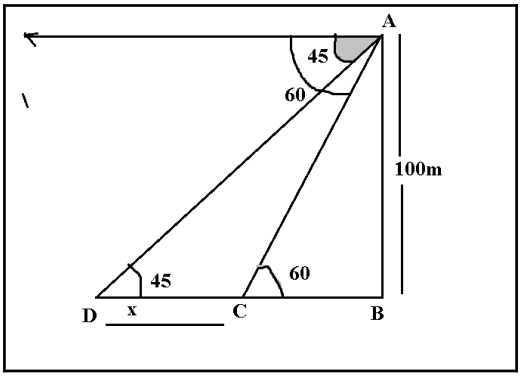
Q1.	b)x^2y^2	Q11.	(c) $\frac{x^2-1}{2x}$
Q2.	C)$\frac{5}{7} \neq \frac{-4}{6}$	Q12.	d) 12cm
Q3.	b) D=5	Q13.	(c)11cm
Q4.	(d) four places	Q14.	a)77
Q5.	(d) k=8	Q15.	(d)3600
Q6.	(c) 30 units	Q16.	a)7,13
Q7.	(b)(3,2)	Q17.	b)9
Q8.	(b)3.2cm	Q18.	©13
Q9.	(a)$\frac{-1}{2}$	Q19.	(c)
Q10	(a)0	Q20.	(d)

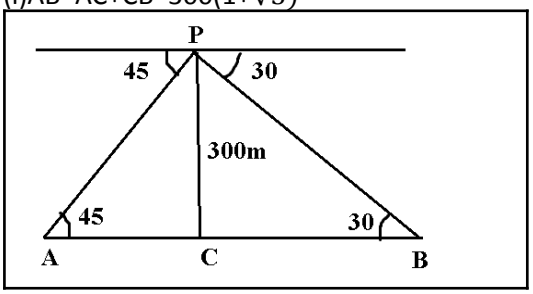
SECTION:B

Q21	$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ $\frac{2}{k+2} = \frac{3}{6} = \frac{-4}{-(3k+2)}$ K=2	½ ½ 1
Q22	Given , To prove $\frac{AD}{DB} = \frac{AE}{EC}$ $\therefore DE \| \| BC$ (Converse of BPT) $\therefore \angle D = \angle B$ and $\angle E = \angle C$ (Corresponding angles) $\angle B = \angle C$ therefore AB=AC (Sides opposite to equal angles are equal) OR, Given , To prove $\angle A = \angle B$ then CA=CB (Sides opposite to equal angles are equal) CA-AD=CB-BE => CD=CE $\frac{CD}{AD} = \frac{CE}{EB}$ then DE||AB (By Converse of BPT)	½ ½ ½ ½ 0½ ½ ½ ½
Q23	$\angle OPQ = 90°$	½ ½ 1

	 In ΔOPQ $0Q^2 = OP^2 + PQ^2$ $8^2 = 6^2 + PQ^2$ $PQ = \sqrt{28} = 2\sqrt{7}$ cm.	
Q24	$\angle$OQP=90° $\angle$QOP=180° − 120° = 60° (Linear Pair) In ΔOPQ $\angle$QPO=180° − ($\angle$QOP+$\angle$OQP) (ASP) =180° − 150° = 30°	½ ½ 1
Q25	Perimeter of Sector$p = 2r + \frac{\theta}{360^0}2\pi r$ $16{\cdot}4 = 2\times5{\cdot}2 + \frac{2\pi\times5{\cdot}2\times\theta}{360}$ $\frac{\theta}{360\cdot} = \frac{3}{5\cdot2\pi}$ Area of Sector=$\frac{\theta}{360}\pi r^2$=$\frac{3}{5\cdot2\pi}.\pi\times(5.2)^2$ Area =3X5.2=15.6 sq.units Or, $Area\ of\ sector = \frac{\theta}{360^0}\times\pi r^2$ $r = 2, \quad \theta = 60^0$ $Area = \frac{60}{360}\times\frac{22}{7}\times21\times21$ =231 sq.cm	1 1 ½ 1+1/2
	SECTION:C	
26	For correct assumption For correct proof For correct conclusion	½ 2 ½
27	Speed of boat x km/h , Speed of stream y km/hr. Upstream=x-y and Downstream=x+y $\frac{32}{x-y} + \frac{36}{x+y} = 7$ $\frac{40}{x-y} + \frac{48}{x+y} = 9$ $\frac{1}{x-y} = u, \quad \frac{1}{x+y} = v$ $32u + 36v = 7 \quad , \quad 40u + 48v = 9, \quad \Rightarrow u = \frac{1}{8} \ and \ v = \frac{1}{12}$ $x = \frac{10km}{h}\ and \quad y = 2km/h$ Or, For correct equation (x-5) (y+3)=xy-9 3x-5y=6 (x+3) (y+2)=xy+67 2x+3y=61 x=17, y=9	½ ½ ½ 1 ½ ½ ½ ½ ½ ½

	Perimeter= 2(x+y)=52units	½
28	For x=2 4+(a+1)x2+b=0 4+2a+2+b=0 2a+b+6=0 For x=-3 9+(a+1)(-3)+b=0 9-3a-3+b=0 -3a+b+6=0 a=0 and b=-6	1 1 1
29	LHS=$\frac{\tan\theta+\sec\theta-1}{\tan\theta-\sec\theta+1}\theta\ -\ \theta\ =\ 1]$ $=\frac{(\tan\theta+\sec\theta)-(\theta-\theta)}{\tan\theta-\sec\theta+1}$ $=\frac{(\tan\theta+\sec\theta)[1-(\sec\theta-\tan\theta)]}{\tan\theta-\sec\theta+1}$ $=\frac{(\tan\theta+\sec\theta)[1-\sec\theta+\tan\theta]}{(\tan\theta-\sec\theta+1)}$ =tan θ + sec θ =RHS OR, LHS=$(\cot\theta\ -\ \theta)^2$ $=\left(\frac{\cos\theta-1}{\sin\theta}\right)^2$ $=\frac{(1-\cos\theta)^2}{\theta}=\frac{(1-\cos\theta)(1-\cos\theta)}{(1-\theta)}$ $=\frac{(1-\cos\theta)(1-\cos\theta)}{(1+\cos\theta)(1-\cos\theta)}$ $=\frac{1-\cos\theta}{1+\cos\theta}$=RHS	½ 1 1 1/2 ½ 1 1 1/2
30	Given, To prove, Figure Correct proof	1 2
31	For Correct zeroes 2/5 and -2 a=5 b=8 c=-4 Sum=$\frac{2}{5}+(-2)=\frac{-8}{5}$ $-\frac{8}{5}=-\frac{8}{5}$ $product=(-2)\frac{2}{5}=-\frac{4}{5}$ $-\frac{4}{5}=-\frac{4}{5}$	1+1/2 ½ ½ ½
	SECTION:D	
32	Speed of train = x km/h and reduced speed= (x-8) km/hr. $\frac{480}{x-8}-\frac{480}{x}=3$ $3x^2-24x-3840=0$ $x^2-8x-1280=0$ $x=40,\ -32$ $x=40Km/h$ Or,	½ 1 1+1/2 ½ 1 ½ 1 1

	$x^2 + y^2 = 400$ $4(x - y) = 16$ $x = 4 + y$ $(4 + y)^2 + y^2 = 400$ $2y^2 + 8y - 384 = 0$ Y=12, -16 Y=12 X=4+12=16 unit	½ 1 1
33	Figure Given, To prove, constructions Proof Application EC=9 cm	½ 1 1/2 2 1
34	(I) Length of arc =22 cm (ii)Area of Sector =231 sq.cm (iii)Area of segment=$(231 - \frac{441\sqrt{3}}{4})$sq.cm.	1 2 2
35	In ΔABC *right angled at* B  $\tan tan\ 45^0 = \frac{h}{BC}$ $then\ h = BC$ In ΔABD $\tan tan\ 30^0 = \frac{h}{BD}$ $or,$ $\frac{1}{\sqrt{3}} = \frac{h}{h+20}$ $h = \frac{20}{\sqrt{3}-1}$ $therefore \quad h = 10(\sqrt{3} + 1)m$ Or, In ΔABC *right angled at* B $\tan tan\ 60^0 = \frac{AB}{BC}$ $OR, \sqrt{3} = \frac{100}{BC}$ $OR,$ $BC = \frac{100}{\sqrt{3}}$ In ΔABD  $\tan tan\ 45^0 = \frac{AB}{BD}$ $Or, 1 = \frac{100}{BC+x}$	1 1 1 1 1(for fig) 1 1 1 1

	$Or,\ BC + x = 100$ $\frac{100}{\sqrt{3}} + x = 100$ $x = 100 - \frac{100}{\sqrt{3}}$ $x = \frac{100(3-\sqrt{3})}{3} m$	
	SECTION:E	
Q36.	(i)152 (ii)272 (iii)4400	1 1 2
37	(i)AB=AC+CB=300(1+$\sqrt{3}$)  (ii)Point A will be nearest, Distance from A to C =300m (iii)Distance of P from A=300$\sqrt{2}m$ Distance of P from B= 600m	1 1 2
38.	(i)$3\sqrt{2}$ unit (ii) $3\sqrt{2}$ unit (iii)6 unit	 1 1 2