

INDIAN SCHOOL MUSCAT
SECOND PRE- BOARD EXAMINATION
FEBRUARY 2020
CLASS X
Marking Scheme – MATHEMATICS

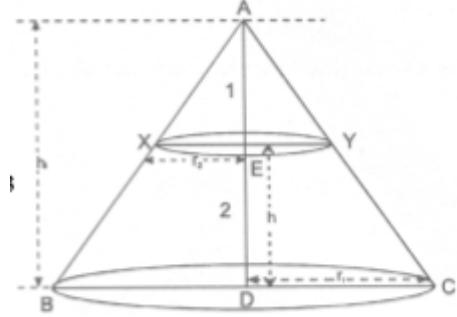
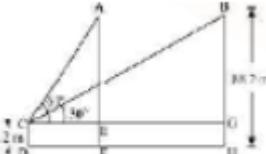
SET A

Q.NO.	SECTION -A			MARKS
	SET - A	SET - B	SET - C	
1.	(C) No solution	(C) 30 - 40	(D) No solution	1
2.	(A) 2 units	(B) 30^0	(C) 2 units	1
3.	(C) 30 - 40	(A) (0, 0)	(A) 30 - 40	1
4.	(C) 19000	(B) 24^0	(D) 19000	1
5.	(C) (7, 3)	(B) $\frac{3}{4}$	(A) (7, 3)	1
6.	(B) 30^0	(C) 19000	(A) 30^0	1
7.	(B) $\frac{3}{4}$	(C) (7, 3)	(D) $\frac{3}{4}$	1
8.	(A) (0, 0)	(C) No solution	(D) (0, 0)	1
9.	(B) 24^0	(D) Four	(B) 24^0	1
10.	(D) Four	(A) 2 units	(D) Four	1
11.	$\frac{2}{3} \pi r^3$ OR $1/12\pi h^3$	5:8	5:8	1
12.	(i) $x^2 - x - 12$ OR (ii) 3	7/8	(i) $x^2 - x - 12$ OR (ii) 3	1
13.	5:8	5	$\frac{2}{3} \pi r^3$ OR $1/12\pi h^3$	1
14.	5	$\frac{2}{3} \pi r^3$ OR $1/12\pi h^3$	7/8	1
15.	7/8	(i) $x^2 - x - 12$ OR (ii) 3	5	1
16.	2.7 cm	20	$LCM = a^3 b^2$	1
17.	(i) 42 cm OR (ii) 4 cm	$LCM = a^3 b^2$	2.7 cm	1
18.	$b^2 - 4ac = -3 < 0$, No real roots	2.7 cm	$b^2 - 4ac = -3 < 0$, No	$\frac{1}{2} + \frac{1}{2}$
19.	$LCM = a^3 b^2$	$b^2 - 4ac = -3 < 0$, No	(i) 42 cm OR (ii) 4	1
20.	20	(i) 42 cm OR (ii) 4	20	1

Q.NO.	Answers	Marks (with split up)
	SECTION B:	
21.	Tan y = 10/ AE $\Rightarrow AE = 40$ m Tan x = CE / AE $\Rightarrow CE = 100$ m So CD = 110 m	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
22.	(i) Total cards = $52 - 8 = 44$ Probability = $2/44 = 1/22$ OR (ii) total = 46 Probability = $5/46$	1 1 1 1
23.	$TSA = 14 a^2$ $= 350 \text{ cm}^2$	1 1

24.	Fig $\angle APO = 30^\circ$ $AP = 3 \text{ cm}$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
25.	$a = 184$ $d = -3$ $a_7 = 166$	$\frac{1}{2}$ $\frac{1}{2}$ 1
26.	(i) Fig. $\angle A = \angle C$ $\angle AEB = \angle CBE$ $\Delta ABE \sim \Delta CFB$ OR (ii) Fig. Distance between tops = 13 m	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ 1 1
	SECTION C:	
27.	(i) $4 \cot^2 45^\circ - \sec^2 60^\circ + \sin^2 60^\circ + \cos^2 90^\circ$ $= (4 \times 1) - (2)^2 + (\frac{\sqrt{3}}{2})^2 + 0 = \frac{3}{4}$ OR (ii) $ \begin{aligned} &= \left(1 + \frac{\sin \theta}{\cos \theta} + \frac{1}{\cos \theta}\right) \left(1 + \frac{\cos \theta}{\sin \theta} - \frac{1}{\sin \theta}\right) \\ &= \left(\frac{\cos \theta + \sin \theta + 1}{\cos \theta}\right) \left(\frac{\sin \theta + \cos \theta - 1}{\sin \theta}\right) \quad (\text{By taking LCM and multiplying}) \\ &= \frac{(\sin \theta + \cos \theta)^2 - (1)^2}{\sin \theta \cos \theta} \quad (\text{Using } a^2 - b^2 = (a+b)(a-b)) \\ &= \frac{\sin^2 \theta + \cos^2 \theta + 2\sin \theta \cos \theta - 1}{\sin \theta \cos \theta} \\ &= \frac{1 + 2\sin \theta \cos \theta - 1}{\sin \theta \cos \theta} \quad (\text{Using identify } \sin^2 \theta + \cos^2 \theta = 1) \\ &= \frac{2\sin \theta \cos \theta}{\sin \theta \cos \theta} = 2 \end{aligned} $	$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$ $+ \frac{1}{2} + 1$ 1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
28.	(i) HCF = 4 OR (ii) Let a be any positive integer and $b = 3$. Then $a = 3q + r$ for some integer $q \geq 0$ And $r = 0, 1, 2$ because $0 \leq r < 3$ Therefore, $a = 3q$ or $3q + 1$ or $3q + 2$ Or, $ \begin{aligned} a^2 &= (3q)^2 \text{ or } (3q+1)^2 \text{ or } (3q+2)^2 \\ a^2 &= (9q^2) \text{ or } 9q^2 + 6q + 1 \text{ or } 9q^2 + 12q + 4 \\ &= 3 \times (3q^2) \text{ or } (3q^2 + 2q) + 1 \text{ or } 3(3q^2 + 4q + 1) + 1 \\ &= 3k_1 \text{ or } 3k_2 + 1 \text{ or } 3k_3 + 1 \end{aligned} $	$1 + 1 + 1$ $\frac{1}{2}$ 1 $\frac{1}{2}$ 1
29.	Finding Mid values Calculating u Calculating f_u Calculating Σf_u Formula $p = 10$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

30.	length of arc = 22 cm Ar (sector) = 231 cm^2	$1\frac{1}{2}$ $1\frac{1}{2}$
31.	$g(x) = x^2 - 5/3$ $q(x) = x^2 + 2x + 1$ $= (x + 1)^2$ \therefore Zeroes are $-1, -1, \sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.	$\frac{1}{2}$ $1\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
32.	$a + 3d = 7$ $a + 8d = 17$ $d = 2, a = 1, S_{10} = 100$	1 $\frac{1}{2}$ $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$
33.	P --- (4, 6) Q --- (3, 2) R --- (6, 5) Ar (PQR) = $9/2$	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $1\frac{1}{2}$
34.	(i) Infinite number of sol. $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ or $\frac{2}{a+b+1} = \frac{3}{a+2b+2} = \frac{7}{4a+4b+1}$ If $\frac{2}{a+b+1} = \frac{3}{a+2b+2}$ $\Rightarrow a-b=1$ and if $\frac{3}{a+2b+2} = \frac{7}{4a+4b+1}$ $\Rightarrow 5a-2b=11$ on solving we get, $a=3$ and $b=2$ OR (ii) Father's present age = x yrs Son's present age = y yrs $x = 6y$ ----- (1) $x - 4y = 12$ ----- (2) Solving (1) and (2) $X = 36$ yrs and $y = 6$ yrs	1 1 1 1 1 1 1 $\frac{1}{2}$ 1 $\frac{1}{2}$ 1 $\frac{1}{2}$
	<u>SECTION D:</u>	
35.	Less than cf Less than ogive More than cf More than ogive Median	$1\frac{1}{2}$ $1\frac{1}{2}$ 1

36.	(i) Construction of ΔABC Construction of each parallel lines Shading similar triangle OR (ii) Construction of circle Construction of PQ Construction of tangents from P Construction of tangents from Q	1 $\frac{1}{2}$ 1 + 1 $\frac{1}{2}$ 1 1 1 1	
37.	(i) $\Delta AEY \sim \Delta ADC$ (AA ~) $\frac{r}{R} = \frac{h}{H} = \frac{l}{L}$ $AE : ED = 1 : 2$ $\Rightarrow H = 3h$ $\Rightarrow R = 3r$ $\text{Vol of cone } AXY = \frac{1}{3} \pi r^2 h$ $\text{Vol of cone } ABC = \frac{1}{3} \pi R^2 H = \frac{1}{27}$ <p>Vol of upper cone : vol of frustum = 1: 26</p> <p>OR</p> (ii) Volume of embankment = volume of well $\Rightarrow \pi(R^2 - r^2)h = \pi r^2 H$ $\Rightarrow h = 0.4 \text{ m}$	 Fig. $\frac{1}{2}$ 1 $\frac{1}{2}$ 1 $\frac{1}{2}$ 1 1 2	
38.	Given, To prove, Figure Construction Proof	1 $\frac{1}{2}$ $\frac{1}{2}$ 1	
39.	Fig $CE = 29\sqrt{3} \text{ m}$ $CG = 87\sqrt{3} \text{ m}$ Distance travelled by balloon = $58\sqrt{3} \text{ m}$	 1 1 1 1	
40.	(i) Let the original speed of the train be $x \text{ km/h.}$ $\therefore 360/x - 360/(x+5) = 1$ $\Rightarrow x^2 + 5x - 1800 = 0$ $\Rightarrow x = (-45), 40$ But since speed cannot be in negative. $\therefore x = 40 \text{ km/hr.}$ OR (ii) Let the larger and smaller number be x and y respectively.	$\frac{1}{2}$ 1 1 1 1 $\frac{1}{2}$ $\frac{1}{2}$	

	<p>According to the given question, $x^2 - y^2 = 180$ and $y^2 = 8x$ $\Rightarrow x^2 - 8x = 180$ $\Rightarrow x = 18, -10$ $x = 18$ $\therefore y^2 = 8x = 8 \times 18 = 144$ $\Rightarrow y = \pm\sqrt{144} = \pm 12$ \therefore smaller number = ± 12 Therefore, the numbers are 18 and 12 or 18 and -12.</p>	1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
	SET- B:	
23.	$a = -62, d = 3, a_{11} = -32$	
25.	TSA = 1400 sq. units	
30.	$l = 15.7$ cm, ar(sector) = 78.5 cm^2	
39.	H = 40 m Distance between the building and lamp post = 34.64 m	
	SET – C:	
23.	LSA = 200 cm^2	
32.	$n = 14$ $x = 40$	