Marking Scheme

Mathematics –Basic(241)

Class- X Session- 2021-22

TERM II

Q.N.	HINTS/SOLUTION	Marks
1	$6x^2 - x - 2 = 0$ $\Rightarrow 6x^2 + 3x - 4x - 2 = 0$ $\Rightarrow 3x(2x+1) - 2(2x+1) = 0$ $\Rightarrow (3x-2)(2x+1) = 0$ $\because x = \frac{2}{3}, -\frac{1}{2}$ OR Since the roots are real and equal, $\therefore D = b^2 - 4ac = 0$ $\Rightarrow k^2 - 4\times2\times3 = 0$ $(\because a = 2, b = k, c = 3)$ $\Rightarrow k^2 = 24$ $\Rightarrow k = 2\sqrt{6}\ or\ -2\sqrt{6}$	1/2 1/2 1 1 1/2 +1/2
2	Total volume of solid = Volume of cone + volume of hemisphere $\Rightarrow \frac{1}{3}\pi r^2 h + \frac{2}{3}\pi r^3$ {r=1 cm , h=1 cm} $\Rightarrow \pi$ cm^3	1/2 1/2 1 1
3	Modal Class 3-5 Using formula and putting the values Finding answer mode = 3.286	1/2 1/2 1 1
4	Using formula and finding the value of a & d a+2d=5 , a+6d=9 a = 3 , d=1 required A.P. is 3,4,5,6,7,……	1/2 1/2 1 1
5	Finding CF Using formula and putting the values Finding answer median = 28.5	1/2 1/2 1 1
6	Correct figure To prove congruency of two triangle in that figure Length of tangent are equal (CPCT) Or ∵Tangent segments drawn from an external point to a circle are equal ∴ BP=BQCR=CQDR=DSAP=AS ⇒BP+CR+DR+AP = BQ+CQ+DS+AS	1/2 1/2 1 1/2 1/2

	⇒ AB+DC = BC+AD ∴ AD= 10-7= 3 cm	1
7	Using the formula of sum of A.P. Finding equation $3n^2 - 51n + 156 = 0$ $n=4$ or 13	**1** **1** **1**
8	Let, AB be the tree broken at C, Also let $AC = x$ In Δ CAD, $\sin 30^0 = \frac{AC}{DC}$ $\Rightarrow \frac{1}{2} = \frac{x}{8}$ $\Rightarrow x = 4\ m$ ⇒the length of the tree is = 8+4 =12m **OR** Let AB and CD be two poles of height h meters also let P be a point between them on the road which is *x* meters away from foot of first pole AB, PD= (80-x) meters. In ΔABP, $tan 60^o = \frac{h}{x} \Rightarrow h = x\sqrt{3}$ ….(1) In ΔCDP, $tan\ 30^o = \frac{h}{80-x} \Rightarrow h = \frac{80-x}{\sqrt{3}}$ ….(2) $x\sqrt{3} = \frac{80-x}{\sqrt{3}}$ $[\because LHS(1) = LHS(2), so\ equating\ RHS]$ $\Rightarrow 3x = 80 - x \Rightarrow 4x = 80 \Rightarrow x = 20m$ So, $80 - x = 80 - 20 = 60m$ Hence the point is 20m from one pole and 60 meters from the other pole.	1 1/2 1/2 1(correct Fig.) 1 1/2 1/2 1(correct Fig.)
9	AB is chord of lager circle and M be the mid point of AB as OM is radius of smaller circle and perpendicular to chord AB. Using Pythagoras property MB = 4cm. AB=8cm.	**1** **1** **1**
10	Let lager number = x, smaller number = y and $y^2 = 8\ x$ Finding $x^2 - 8x - 180 = 0$ $x = 18,\ -10$ Hence number are 18 and 12 or 18 and -12	**1** **1** **1**
11	Correct figure of circle and point Constructing the tangent Measuring the length of tangents = 8cm each Or Draw a circle of radius 6cm Draw OA and Construct $\angle AOB = 120^0$ Draw $\angle OAP = \angle OBP = 90^0$ PA and PB are required tangents	**2** **1** **1** **1** **1** **1**

	Join OP and apply $\tan\angle APO = \tan 30° = \frac{6}{PA}$ ⇒ Length of tangent = $6\sqrt{3}$ cm	**1**
12	Using formula of mean finding class mark putting the value finding the answer Mean = 211	**1** **1** **1** **1**
13	(i) the height and base distance are equal.and tan 45 =1 Angle of elevation = $45^{0.}$ (ii) Height / Base distance = tan 60^{0} base distance $14\sqrt{3}$ m	**1** **1** **1** **1**
14	(i) Height of hemispherical dome = radius of hemispherical Using the formula of volume of hemisphere Correct answer = 19404 m^3 (ii) Using the formula of curved surface area of hemisphere Correct answer = 1232 m^2	**1** **1** **1** **1**