

**CHOITHRAM SCHOOL MANIK BAGH INDORE**  
**SESSION : 2018-19**

**Class : X**  
**Date of Assignment: 14/09/18**

**Subject : Mathematics**

**Assignment no. 3**  
**Date of Submission: 19/09/18**

Q. No.	Questions	MARKS	LEVEL
	VERY SHORT ANSWER TYPE		
Q1	Find the Arithmetic progression whose 1 <sup>st</sup> term is 10 & common difference is 5.	1 mark	Knowledge
Q2	If $\operatorname{cosec}^2 \alpha (1 + \cos \alpha)(1 - \cos \alpha) = x$ , then find the value of x.	1 mark	Understanding
Q3	In a triangle ABC, $\angle C = 90^\circ$ , prove that $\operatorname{cosec}^2 A - \tan^2 B = 1$	1 mark	H.O.T.
	SHORT ANSWER TYPE – I		
Q4	In an Arithmetic progression, if $a = 3, n = 8, S_8 = 192$ , find $d$ .	2 marks	Knowledge
Q5	Evaluate: $\frac{\cot(90 - \theta) \sin(90 - \theta)}{\sin \theta} + \frac{\cot 40}{\tan 50} - (\cos^2 20 + \cos^2 70)$	2 marks	Logical Reasoning
Q6	At a point, the angle of elevation of a tower is such that its tangent is $\frac{5}{12}$ . On walking 240m nearer to the tower, the tangent of the elevation becomes $\frac{3}{4}$ . Find the height of the tower.	2 marks	Understanding
Q7	Prove the following identity $(\sin \theta - \sec \theta)^2 + (\cos \theta - \operatorname{cosec} \theta)^2 = (1 - \sec \theta \operatorname{cosec} \theta)^2$	2 marks	H.O.T.
	SHORT ANSWER TYPE – II		
Q8	The sum of the areas of two squares is 468 m <sup>2</sup> . If the difference of their perimeters is 24m, find the sides of two squares.	3 marks	Understanding
Q9	Find the roots of the equation: $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}, x \neq -4, 7$ .	3 marks	Multi Conceptual
Q10	A sum of Rs 70,000 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs 2000 less than its preceding prize, find the value of each of the prizes.	3 marks	H.O.T.
	LONG ANSWER TYPE		
Q11	Prove that $\frac{(1 + \cot \theta + \tan \theta)(\sin \theta - \cos \theta)}{\sec^3 \theta - \operatorname{cosec}^3 \theta} = \sin^2 \theta \cos^2 \theta$	5 marks	H.O.T.
Q12	A ladder rests against a vertical wall at an inclination $\alpha$ to the horizontal. Its foot is pulled away from the wall through a distance P so that its upper end slides a distance Q down the wall and then the ladder makes an angle $\beta$ to the horizontal. Show that $\frac{P}{Q} = \frac{\cos \beta - \cos \alpha}{\sin \alpha - \sin \beta}$	5 marks	Logical Reasoning