

CLASS: XII	INDIAN SCHOOL MUSCAT SECOND PERIODIC TEST SET - C	SUBJECT: MATHEMATICS
Q. NO.	VALUE POINTS	SPLIT UP OF MARKS
1.	<ul style="list-style-type: none"> * For applying the identity $\cos 2x = 2\cos^2 x - 1$ correctly in the numerator * Simplifying to get the final answer : $2\sin x + 2x\cos x + C$ 	1 mark 1 mark
2.	<ul style="list-style-type: none"> * For applying completing the square method & reducing to the form $\int \frac{dx}{\sqrt{9-(x-2)^2}}$ * For getting the final answer : $\sin^{-1}\left(\frac{x-2}{3}\right) + C$ 	1 mark 1 mark
3.	<ul style="list-style-type: none"> * Applying identity $1 + \cos 2x = 2\cos^2 x$ in the denominator * Splitting the terms & simplifying to obtain $\int e^x(f(x) + f'(x))dx$ * For the final answer : $e^x \tan x + C$ 	½ mark 1 mark ½ mark
4.	<ul style="list-style-type: none"> * Applying property $\int_0^a f(x)dx = \int_0^{a-x} f(a-x)dx$ to obtain $\int_0^{\pi/2} \log(\cot x)dx$ * Adding both to get the final answer: 0 	1 mark 1 mark
5.	<ul style="list-style-type: none"> * Solving to get $[1 + (n-1)h]^2 - [1 + (n-1)h]$ * Applying identities $\sum(n-1)^2$ and $\sum(n-1)$ correctly * Simplification & substituting $nh = 3$ 	1 ½ marks 1 mark 1 mark ½ mark

	* Final answer : $\frac{27}{2}$	
6.	<ul style="list-style-type: none"> * Reducing to the form: $5x - 2 = A \frac{d}{dx}(3x^2 + 2x + 1) + B$ * Finding values of $A = 5/6$, $B = -11/3$. * Simplification & getting final answer : $\frac{5}{6} \log 3x^2 + 2x + 1 - \frac{11}{3\sqrt{2}} \tan^{-1}\left(\frac{3x+1}{\sqrt{2}}\right) + C$ 	1 mark 1 mark (1 ½ + ½) marks
7.	<ul style="list-style-type: none"> * Applying ‘integration by parts’ formula correctly * Solving $\int \frac{x^2}{1+x^2} dx$ correctly by adding & subtracting 1. * Solving to get the final answer $: x \log(x^2 + 1) - 2x + 2 \tan^{-1} x + C$ 	1 mark 1 ½ marks 1 ½ marks