

Scoring Indicators

Question Paper Set 1

COURSE NAME

Q No	Scoring Indicators	Split score	Sub Total	Total score
	PART A			9
I. 1	2	1	1	
I. 2	$y = 2x - 1$	1	1	
I. 3	$\frac{\pi}{4}$	1	1	
I. 4	$\sin 30^\circ = \cos 60^\circ = \frac{1}{2}$ answer: 0	$\frac{1}{2}$ $\frac{1}{2}$	1	
I. 5	$\sin A \cos B + \cos A \sin B$	1	1	
I. 6	9	1	1	
I. 7	$5x^4 + 0 = 5x^4$	1	1	
I. 8	$y' = -\frac{x}{y}$	1	1	
I. 9	$y' = 1$ $y'' = 0$	$\frac{1}{2}$ $\frac{1}{2}$	1	
	PART B			24
II. 1	$z_1 + z_2 = 8 - i$ $z_1 - z_2 = -2 + 3i$	1.5 1.5	3	
II. 2	Formula $\frac{ 4 + 3 - 2 }{\sqrt{3^2 + 4^2}}$ Answer: 1	1 1 1	3	
II. 3	Finding third side = 4 $\cos A = \frac{4}{5}$	1 1 1	3	

	$\tan A = \frac{3}{4}$			
II. 4	$\cos 330^\circ = \cos 30^\circ = \frac{\sqrt{3}}{2}$ $\sin 120^\circ = \sin 60^\circ = \frac{\sqrt{3}}{2}$ and ans: 0	1.5 1.5	3	
II. 5	$\sin 35^\circ + \sin 25^\circ = 2 \sin 30^\circ \cos 5^\circ$ $\sin 30^\circ = \frac{1}{2}$ and ans: $\cos 5^\circ$	2 1	3	
II. 6	Multiplying numerator and denominator by 3 $\lim_{3\theta \rightarrow 0} \frac{\sin 3\theta}{3\theta} = 1$ & $\lim_{\theta \rightarrow 0} \cos \theta = 1$ Ans: 3	$\frac{1}{2}$ 1+1 $\frac{1}{2}$	3	
II. 7	$\frac{d}{dx}(\sqrt{x}e^x) = \sqrt{x} \frac{d(e^x)}{dx} + e^x \frac{d(\sqrt{x})}{dx}$ $\frac{d(e^x)}{dx} = e^x$ & $\frac{d(\sqrt{x})}{dx} = \frac{1}{2\sqrt{x}}$ Final answer	1 1 1	3	
II. 8	$\frac{dx}{dt} = 2at$ $\frac{dy}{dt} = 2a$ Ans: $\frac{1}{t}$	1 1 1	3	
II.9	$x \frac{dy}{dx} + y = 0$ Ans: $-\frac{y}{x}$	2 1	3	
II. 10	$y' = e^x - e^{-x}$ $y'' = e^x + e^{-x} = y$	1.5 1.5	3	

PART C				42
III	i) Expansion & substitute $i^2 = -1$ Answer = $8+i$	3 1	4	7
	ii) modulus = $\sqrt{8}$ amplitude = 45 degrees	1 2	3	
IV	i) equation of perpendicular line is $-x - 3y + k = 0$ Substitute (3, -2) and finding $k = -3$ Ans: $x + 3y + 3 = 0$	2 1 1	4	7
		1		

	ii) substitute the slopes in the formula of angle getting $\tan \theta = \frac{1}{\sqrt{3}}$ ans: 30 degrees	1 1	3	
V	Expansion of the first product & substitute $i^2 = -1$ Answer = $7 - i$ Expansion of the second product & substitute $i^2 = -1$ Ans: $-8 + 2i$ Final Ans: $-4 + 3i$	2 1 2 1 1	7	
VI	i) formula and substitution simplification and getting the ans: $x - y + 1 = 0$	2 2	4	7
	ii) $4 - x = 2x + 3$ $x = 1/3$ $y = 11/3$	1 1 1	3	
VII	$LHS = \frac{\operatorname{cosec} \theta (\operatorname{cosec} \theta + 1) + \operatorname{cosec} \theta (\operatorname{cosec} \theta - 1)}{\operatorname{cosec}^2 \theta - 1}$ writing $\operatorname{cosec}^2 \theta - 1 = \cot^2 \theta$ and getting $\frac{2 \operatorname{cosec}^2 \theta}{\cot^2 \theta}$ final answer = $2 \sec^2 \theta$	3 2 2	7	
VIII	$\cos 60 = 1/2$ $\cos 40 \cos 80 = \frac{1}{2} (-\cos 60 - \cos 40)$ $\cos 20 \cos 40 \cos 80 = 1/8$ and final ans: $1/16$.	1 3 3	7	7
IX	i) dividing numerator and denominator by $(x-2)$ Apply the algebraic limit for numerator and denominator answer: $8/3$	1 2 1	4	7
	ii) factorisation of numerator = $(x-1)(x+5)$ factorisation of denominator = $(x-1)(x+2)$ answer: 2	1 1 1	3	
X	i) write $\sec x = 1/\cos x$ and then apply the quotient rule $\frac{d}{dx}(\cos x) = -\sin x, \frac{d}{dx}(1) = 0$ ans: $\tan x \sec x$	2 1 2 1	5	7
	ii) derivative of $\sin x = \cos x$ and derivative of $\cos x = -\sin x$ ans: $4 \cos x + 3 \sin x$	1 1	2	

XI	i) write the formula of $1 - \cos 2x$ Apply the formula $\lim (\sin x/x) = 1$ ans: 2	2 2 1	5	7
	ii) substitute $x = 2$ ans: 2	1 1	2	
XII	i) Apply the of quotient rule derivatives of $\log x$ and x ans: $\frac{1 - \log x}{x^2}$	2 1 1	4	7
	ii) Apply the product rule derivatives of $\tan^{-1} x$ and x^2 ans: $\frac{x^2}{1+x^2} + 2x \tan^{-1} x$	1 1 1	3	
XIII	i) Use of product rule Derivatives of e^{2x} and $\cos 3x$ Final answer: $-3e^{2x} \sin 3x + 2e^{2x} \cos 3x$	1 2 1	4	7
	ii) $\frac{d}{dx} (\log(\sec x + \tan x)) = \frac{1}{(\sec x + \tan x)} \frac{d}{dx} (\sec x + \tan x)$ $\frac{d}{dx} (\sec x) = \sec x \tan x$ and $\frac{d}{dx} (\tan x) = \sec^2 x$ Ans: $\sec x$	1 1 1	3	
XIV	$y' = -x \sin x + \cos x$ $y'' = -x \cos x - 2 \sin x$ final answer	2.5 2.5 2	7	