Short answer type (2 marks)

Q.1.	*Evaluate:* $\int \dfrac{x^3 - x^2 + x - 1}{x - 1} dx$
Q.2.	*Evaluate:* $\int \left(\dfrac{1}{\sin^2 x \cdot \cos^2 x} \right) dx$
Q.3.	*Evaluate:* $\int \dfrac{2}{1 + \cos 2x} dx$
Q.4	*Evaluate:* $\int \dfrac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha} dx$
Q.5	*Evaluate:* $\int \tan^{-1} \left(\sqrt{\dfrac{1 - \sin x}{1 + \sin x}} \right) dx$
Q.6	*Evaluate:* $\int \left(\dfrac{\sin x}{\sin(x + a)} \right) dx$
Q.7	*Evaluate:* $\int \dfrac{\sin x - x \cos x}{x(x + \sin x)} dx$
Q.8	*Evaluate:* $\int \left(\dfrac{x + \cos 6x}{3x^2 + \sin 6x} \right) dx$
Q.9	*Evaluate:* $\int \dfrac{\cos x}{(1 + \sin x)(2 + \sin x)} dx$
Q.10	*Evaluate:* $\int x\sqrt{x^4 - 1} \, dx$

Long answer type (4 marks)

Q.11	*Evaluate:* $\int \dfrac{x^2 - 3x + 1}{\sqrt{1 - x^2}} dx$
Q.12	*Evaluate:* $\int \dfrac{1}{\log x} - \dfrac{1}{(\log x)^2} \, dx$
Q.13	*Evaluate* $\int \dfrac{1}{x^3 (x^5 + 1)^{\frac{3}{5}}} dx$
Q.14	*Evaluate* $\int \dfrac{\sec x}{1 + 2\sin^2 x} dx$

Q.15	Evaluate $\int \dfrac{1}{\sin x + \sin 2x} dx$
Q.16	Evaluate: $\int (\sqrt{\tan x} + \sqrt{\cot x})dx$
Q. 17	Evaluate: $\int \dfrac{3x + 5}{x^3 - x^2 - x + 1} dx$
Q.18	Evaluate: $\int \sec^3 x\, dx$
Q.19	Evaluate: $\int \dfrac{(x - 5)e^x}{(x - 3)^3} dx$
Q.20	Evaluate $\int \dfrac{\sqrt{x^2 + 1}[\log(x^2 + 1) - 2\log x]}{x^4} dx$

Answers

1	$\dfrac{x^3}{3} + x + c$	2	$\tan x - \cot x + C$
3.	$\tan x + C$	4.	$2(\sin x + x\cos\alpha) + c$
5	$\dfrac{\pi}{4}x - \dfrac{x^2}{2} + C$	6	$x\cos\alpha - \sin\alpha\, \log|\sin(x + a)|+c$
7	$\log\left|\dfrac{x}{x + \sin x}\right| + c$	8	$\dfrac{1}{6}(3x^2 + \sin 6x) + c$
9	$\log\left|\dfrac{1+\sin x}{2+\sin x}\right| +c$	10	$\dfrac{x^2}{2}\sqrt{x^4 - 1} + \dfrac{1}{2}\log\left|x^4 + \sqrt{x^4 - 1}\right| + C$
11	$-\dfrac{x}{2}\sqrt{1 - x^2} + \dfrac{3}{2}\sin^{-1}x + 3\sqrt{1 - x^2} + c$	12	$\dfrac{x}{\log x} + c$
13	$-\dfrac{1}{2}\left(1 + \dfrac{1}{x^5}\right)^{\frac{2}{5}} + c$	14	$\dfrac{1}{6}\log\left|\dfrac{1 + \sin x}{1 - \sin x}\right| + \dfrac{\sqrt{2}}{3}\tan^{-1}(\sqrt{2}\sin x) + c$
15	$\dfrac{1}{2}\log|1 + \cos x| + \dfrac{1}{6}\log|1 - \cos x| \\ - \dfrac{2}{3}\log|1 + 2\cos x| + c$	16	$\sqrt{2}\sin^{-1}(\sin x - \cos x) + c$
17	$-\dfrac{1}{2}\log|x - 1| - \dfrac{4}{x - 1} + \dfrac{1}{2}\log|x + 1| + c$	18	$\dfrac{1}{2}(\sec x\, \tan x + \log|\sec x + \tan x| + c$
19	$\dfrac{e^x}{(x - 3)^2} + c$	20	$\dfrac{-1}{3}\left(1 + \dfrac{1}{x^2}\right)^{\frac{3}{2}}\left[\log\left(1 + \dfrac{1}{x^2}\right) - \dfrac{2}{3}\right] + c$