



<https://shikshamentor.com/applied-maths-sem-ii-diploma-msbte-k-scheme-syllabus/>  
**312301 – Applied Mathematics (Sem II)**  
**As per MSBTE's K Scheme**  
**CO / CM / IF / AI / AN / DS**

Unit II		Definite Integration	Marks - 12	
S. N.	MSBTE Board Asked Questions	Exam Year	Marks	
1.	Evaluate: $\int_5^{10} \frac{dx}{(x-1)(x-2)}$	S-19 S-22 W-18	4	
2.	Evaluate: $\int_{-1}^1 \frac{1}{1+x^2} dx$	S-22 S-07	3	
3.	Evaluate: $\int_1^2 \frac{1}{3x-2} dx$	W-22 W-09	2	
4.	Evaluate: $\int_0^{\pi/2} \sin x \cdot \cos x dx$	W-17 S-22	4	
5.	Evaluate: $\int_0^1 \frac{dx}{x^2+x+1}$	S-17	4	
6.	Evaluate: $\int_0^{\pi} \cos^3 x \sin x dx$	S-19	4	
7.	Evaluate: $\int_0^{\pi/2} \sin^3 x dx$	S-17	2	
8.	Evaluate: $\int_1^e \frac{1}{x} \log x dx$	S-17	2	
9.	Evaluate: $\int_0^1 x \cdot \sin^{-1} x dx$	S-17	4	
10.	Evaluate: $\int_0^{\pi/2} \frac{\sin(2x)}{4-\sin^2 x} dx$	S-17	4	
11.	Evaluate: $\int_0^{\pi/2} \frac{dx}{5+4\cos x}$	W-17	4	
12.	Evaluate: $\int_0^{\pi/2} \sin 3x \cdot \cos 3x dx$	W-17	4	
13.	If $\int_0^a 3x^2 dx = 8$ find the value of 'a'.	S-18	2	
14.	Evaluate: $\int_0^1 \frac{dx}{1-x+x^2}$	S-18	4	
15.	Evaluate: $\int_0^{\pi/2} \log(\sin x) dx$	S-18	4	
16.	Evaluate: $\int_2^4 \frac{1}{2x+3} dx$	W-18 W-19	2	

17.	Evaluate: $\int_0^{\pi/2} \frac{dx}{3+4\cos x}$	W-18	4
18.	Evaluate: $\int_0^{\pi/2} \sin 5x \cos 3x dx$	W-18	4
19.	Evaluate: $\int_1^2 \frac{dx}{4x-1}$	W-18	2
20.	Evaluate: $\int_0^1 x \cdot \tan^{-1} x dx$	S-19	4
21.	Evaluate: $\int_1^2 \frac{dx}{2x+5}$	W-19	2
22.	Evaluate: $\int_0^{\pi} \frac{x \sin x}{1+\cos^2 x} dx$	W-19	4
23.	Evaluate: $\int_0^{\pi/4} \log(1 + \tan x) dx$	W-19 S-22 W-22	4
24.	Evaluate: $\int_0^1 \frac{1-x}{1+x} dx$	S-22	2
25.	Evaluate: $\int_0^1 \frac{e^x - e^{-x}}{e^x + e^{-x}} dx$	S-22	4
26.	Evaluate: $\int_0^{\pi/2} \frac{\cos x}{1+\sin^2 x} dx$	S-22	4
27.	Evaluate: $\int_0^{\pi} \frac{dx}{5+4\cos x}$	S-22 W-22	4
28.	Evaluate: $\int_0^{\pi/2} \frac{dx}{\sqrt{9-4x^2}}$	W-22	2/4
29.	Evaluate: $\int_{-1}^1 \frac{x^2 \sin x}{1+\cos x} dx$	W-22	4
30.	Evaluate: $\int_0^{\pi/2} \frac{dx}{4+5\cos x}$	W-07	4
31.	Evaluate: $\int_1^5 \frac{\sqrt[3]{9-x}}{\sqrt[3]{9-x} + \sqrt[3]{x+3}} dx$	S-18 S-23	4
32.	Evaluate: $\int_0^{\pi/2} \frac{1}{1+\sqrt{\cot x}} dx$	W-18 S-19	4
33.	Evaluate: $\int_3^7 \frac{(10-x)^2}{x^2+(10-x)^2} dx$	S-19	4
34.	Evaluate: $\int_0^{\pi/2} \frac{\tan x}{1+\tan x} dx$	W-19	4
35.	Evaluate: $\int_0^7 \frac{\sqrt[3]{x}}{\sqrt[3]{x} + \sqrt[3]{7-x}} dx$	S-22	4
36.	Evaluate: $\int_0^{\pi/2} \frac{\sqrt[3]{\sec x}}{\sqrt[3]{\sec x} + \sqrt[3]{\operatorname{cosec} x}} dx$	W-22	4
37.	Evaluate: $\int_1^4 \frac{\sqrt[3]{9-x}}{\sqrt[3]{9-x} + \sqrt[3]{x+4}} dx$	S-18	4
38.	Evaluate: $\int_0^{\pi/2} \frac{\sqrt[3]{\sin x}}{\sqrt[3]{\cos x} + \sqrt[3]{\sin x}} dx$	S-18	4
39.	Evaluate: $\int_0^5 \frac{\sqrt{9-x}}{\sqrt{9-x} + \sqrt{x+4}} dx$	S-19 S-22	4

40.	Evaluate: $\int_0^4 \frac{\sqrt[3]{x+5}}{\sqrt[3]{x+5} + \sqrt[3]{9-x}} dx$	W-18 W-22	4
41.	Evaluate: $\int_1^3 \frac{\sqrt[3]{x+5}}{\sqrt[3]{x+5} + \sqrt[3]{9-x}} dx$	S-18	4
42.	Evaluate: $\int_0^{\pi/2} \frac{1}{1+\tan x} dx$	W-19	4
43.	Evaluate: $\int_0^{\pi/2} \frac{1}{1+\cot x} dx$	W-22	4
44.	Evaluate: $\int_0^{\pi/2} \frac{\tan x}{\tan x + \cot x} dx$	S-22	4
45.	Evaluate: $\int_2^5 \frac{\sqrt{x}}{\sqrt{7-x} + \sqrt{x}} dx$	W-18	4
46.	Evaluate: $\int_0^5 \frac{\sqrt{5-x}}{\sqrt{x} + \sqrt{5-x}} dx$	W-19	4
47.	Evaluate: $\int_{\pi/6}^{\pi/3} \frac{1}{1+\sqrt[n]{\tan x}} dx$	S-22	4
48.	Evaluate: $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx$	W-22	4
49.	Evaluate: $\int_0^{\pi/2} \frac{1}{1+\sqrt{\tan x}} dx$	S-19 W-19	4
50.	Evaluate: $\int_0^{\pi/2} \frac{1}{1+\sqrt[3]{\tan x}} dx$	W-18	4

**Thank You**

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