1. *Evaluate the following integrals :*

(*i*) $\int (x+1)(2x+3)\,dx$, [S.C. July 1961] (*ii*) $\int \left(t+\frac{1}{t}\right)^2 dt$,

(*iii*) $\int (x^a + a^x + a^a)\,dx$, (*iv*) $\int \sqrt{x}\left(x^3+\frac{4}{x}\right)dx$.

2. Evaluate each of the following :

(*i*) $\int \sin x^0\,dx$; (*ii*) $\int \frac{\sin x+\cos x}{\sqrt{1+\sin 2x}}\,dx$ (*iii*) $\int \frac{2\sin^3 x+3\cos^3 x}{\sin^2 x\,.\,\cos^2 x}\,dx$;

(*iv*) $\int \frac{\cos^2 x-\sin^2 x}{\sqrt{1+\cos 4x}}\,dx$; (*v*) $\int \frac{1}{1-\sin x}\,dx$ [H.

3. *Evaluate :*

(*i*) $\int \frac{(e^{2x}+e^{4x})}{(e^x+e^{-x})}\,dx$; (*ii*) $\int \frac{2^x+2^{2x}+2^{3x}}{2^{2x}}\,dx$; (*iii*) $\int \frac{1+x^3}{1+x}\,dx$;

(*iv*) $\int \frac{(2-3x^2)^3}{x\sqrt[3]{x}}\,dx$; (*v*) $\int \sin^2 x\,.\,\cos^2 x\,dx$; (*vi*) $\int \frac{x^4+1}{x^2+1}\,dx$. [A.I. CBSE 19

4. *Evaluate the following integrals :*

(*i*) $\int \sin^2 ax\,dx$; (*ii*) $\int \frac{dx}{1+\cos x}$; (*iii*) $\int \frac{dx}{1-\cos 2x}$;

(*iv*) $\int \frac{dx}{1+\sin x}$; (*v*) $\int \frac{\sec x}{\sqrt{1+\cos 2x}}\,dx$; (*vi*) $\int \frac{1-\cos x}{1+\cos x}\,dx$.

5. *Evaluate the following :*

(*i*) $\int \sin 2x\,.\,\cos 3x\,dx$; (*ii*) $\int \cos 5x\,.\,\sin 3x\,dx$ (*iii*) $\int \cos 7x.\cos 3x\,dx$;

(*iv*) $\int \sin 2x\,.\,\sin 4x\,dx$; (*v*) $\int \sqrt{1+\sin x}\,dx$

[Hints. See worked out Ex. 3 (*iv*)] [I.S.C. Com.

6. *Evaluate the following integrals :*

(*i*) $\int \frac{2x^2+3x-2}{x+2}\,dx$; (*ii*) $\int \frac{x^3-7x+6}{x^2+3x}\,dx$; (*iii*) $\int \frac{x^5-1}{x-1}\,dx$;

(*iv*) $\int \frac{x^4+x^2+1}{x^2-x+1}\,dx$; (*v*) $\int \frac{2+3\sin x}{\cos^2 x}\,dx$

[I.S.C. 1