LGS GROUP OF COLLEGES

A PROJECT OF LAHORE GRAMMAR SCHOOL

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Subject: Math Test No. Date:

	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	●	○	○	○	6	○	○	○	○	11	○	○	○	○	16	○	○	○	○
2	○	●	○	○	7	○	○	○	○	12	○	○	○	○	17	○	○	○	○
3	○	●	○	○	8	○	○	○	○	13	○	○	○	○	18	○	○	○	○
4	○	○	●	○	9	○	○	○	○	14	○	○	○	○	19	○	○	○	○
5	○	○	○	○	10	○	○	○	○	15	○	○	○	○	20	○	○	○	○

Marks Obtained

S/Q:-

{i}

$y=\sqrt{x}$, when x changes from 4 to 4.41.

As 'x' changes from 4 to 4.41, so,

$$y+\delta y = \sqrt{x+\delta x}$$

So, $x=4$ and $\delta x = 4.41-4 = 0.41$

$$y+\delta y = \sqrt{4+0.41}$$

$$\delta y = \sqrt{4+0.41} - \sqrt{x} \qquad \because y=\sqrt{x}$$

$$\delta y = \sqrt{4.41} - \sqrt{4}$$

$$\delta y = 2.1 - 2$$

$$\delta y = 0.1$$

$\delta y = 0.1$

{ii}

$xy - \ln x = c$

diff on b/s

$$d(xy) - d(\ln x) = d(c)$$

$$x\,dy + y\,dx - \frac{1}{x}dx = 0$$

Multiplying 'x' on b/s

$$x^2dy + xy\,dx - dx = 0$$

So,

$$x^2dy = dx - xy\,dx$$

$$x^2dy = dx(1-xy)$$

$$\frac{dy}{dx} = \frac{1-xy}{x^2}$$

$$\frac{dy}{dx} = \frac{1-xy}{x2}$$

{iii}

$$= \int \frac{(\sqrt{\theta}-1)^2}{\sqrt{\theta}} d\theta$$

$$= \int \frac{(\theta + 1 - 2\sqrt{\theta})}{\sqrt{\theta}} d\theta$$

$$= \int \left(\frac{\theta}{\sqrt{\theta}} + \frac{1}{\sqrt{\theta}} - \frac{2\sqrt{\theta}}{\sqrt{\theta}}\right) d\theta$$

$$= \int (\theta^{1/2} + \theta^{-1/2} - 2)\, d\theta$$

So,

$$= \int \theta^{1/2} d\theta + \int \theta^{-1/2} d\theta - 2\int d\theta$$

$$= \int \theta^{1/2}\, d\theta + \int \theta^{-1/2}\, d\theta - 2\int d\theta$$

$$= \frac{\theta^{3/2}}{3/2} + \frac{\theta^{1/2}}{1/2} - 2\theta = \frac{2\theta^{3/2}}{3} + \frac{2\theta^{1/2}}{1} - 2\theta$$

$$= \frac{2\theta^{3/2}}{3} + 2\theta^{1/2} - 2\theta + c$$

Long Ques :-

(3)

$$= \int \frac{\cos 2x - 1}{1+\cos 2x} dx = \int -\frac{(1-\cos 2x)}{(1+\cos 2x)} dx \quad \because 1-\cos 2x = 2\sin^2 x$$

$$\because 1+\cos 2x = 2\cos^2 x$$

$$= -\int \frac{(1-\cos 2x)}{(1+\cos 2x)} dx = -\int \frac{(2\sin^2 x)}{2\cos^2 x} dx = -\int \tan^2 x\, dx$$

$$= -\int (\sec^2 x - 1) dx \quad \because \sec^2 x - \tan^2 x = 1$$

$$= -\int \sec^2 x - (-1)\int dx = -\tan x + 1x + c$$

$$= x - \tan x + c$$