20. Calculate correct to six places of decimals.

$(1.01)^{3/2}-(0.99)^{3/2}$.

21. Sum the series to infinity :

$\frac{5}{1!}+\frac{7}{3!}+\frac{9}{5!}+.....$

22. Sum to n terms of the series

$3.5.7+5.7.9+7.9.11+.....$

4186/M11

MAY 2010

Paper I — CALCULUS AND CLASSICAL ALGEBRA

(For those who joined in July 2003 and after)

Time : Three hours Maximum : 100 marks

SECTION A — ($8 \times 5 = 40$ marks)

Answer any EIGHT questions.

1. If $y=\frac{1}{(x+1)(2x-1)}$, find y_n.

2. At which point is the tangent to the curve $x^2+y^2=5$ parallel to the line $2x-y+6=0$.

3. Find the radius of the curvature of the curve $x^4+y^4=2$ at the point $(1,1)$.

4. Show that $\int_0^{\pi/4}\log(1+\tan\theta)d\theta=\frac{\pi}{8}\log 2$.

5. Evaluate $\int(\log x)^2 dx$.