XII/Mathematics/11/12/17	Marks:30	Duration:1Hour

Q.1. ATTEMPT ANY 4: (20)

Evaluate the following definite integrals:

1. $\int_0^1 x \, tan^{-1} x \, dx$

2. If $\int_0^k \frac{1}{2+8x^2} dx = \frac{\pi}{16}$, find the value of $'k'$

3. $\int_0^{\pi/2} \sqrt{\sin\theta} \cdot cos^5\theta \, d\theta$

4. $\int_0^{\pi/2} \frac{\cos x}{(1+\sin x)(2+sinx)} dx$

5. $\int_0^{\pi/2} \frac{\sqrt{\sin x}}{\sqrt{\sin x}+\sqrt{\cos x}} dx$

6. $\int_0^3 x^2 \cdot \sqrt{3-x} \, dx$

7. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} log\left(\frac{2-sinx}{2+sinx}\right)$

8. $\int_0^{\pi/2} log \, sinx \, dx$

Q.2. ATTEMPT ANY 2: (10)

1. Find the area of region bounded by the following curves, the X-axis and the given lines:
Find the area of circle $x^2+y^2=25$

2. Find the volume of solid generated by rotating the area bounded by $x^2+y^2=36$ and the lines $x=0, x=3$ about X-axis.

3. Find the volume of solid generated by revolving the region bounded by $y^2=x$ and $x=1$ about the X-axis.