CLASS XII MATHEMATICS IMPORTANT QUESTIONS

VSA

1.Evaluate: (i)$\int \text{cosec}^2(3-4x)\,dx$ $(ii)\int \frac{\sin x}{1+\cos x}dx$

$(iii)\int \frac{1}{x\log x}dx$ $(iv)\int \frac{dx}{5+4x^2}$ $(v)\int(\sin x-\cos x)e^x dx$

SA (Differentiation and its applications)

1.Discuss the continuity of a given function in a given interval/
find k,for which a function is continous in a given interval.

2. Find $\frac{dy}{dx}$ *for* $(i)\sin^2 y+\cos xy=\pi,$

$(ii)\, y=\sin^{-1}\left(\frac{2^{x+1}}{1+4^x}\right)$

$(iii)\, y=x^{\cos x}+(\cos x)^{\sin x}$

$(iv)\, x=a(\cos t+t\sin t),\ y=a(\sin t-t\cos t)$

3.Find the equation of tangent/Normal to a given curve
(i) at a point on it (ii) parallel to a given line

4.Find the intervals in whichthe function is increasing/dec.
(i) y=1-12x-9x$^2-2x^3$ $(ii)\, y=\sin x+\cos x, 0\le x\le 2\pi$

$(iii)\, y=x+\frac{1}{x},\ x\neq 0.$

LA

1. One question on maxima/minima, like
Show that the height of cylinder of maximum volume that
can be inscibed in a sphere of radius R is $\frac{2R}{\sqrt{3}}$.....

Integration (SA)

1.(i) $\int \frac{1}{\sqrt{7-6x-x^2}}dx$ $(ii)\int \frac{5x+3}{\sqrt{x^2+4x+10}}dx$

2. $\int \frac{1-x^2}{x(1-2x)}dx$ 3. $\int \frac{x+1}{(x+3)^3}e^x dx$

4 $\int_0^a \frac{\sqrt{x}}{\sqrt{x}+\sqrt{a-x}}dx$ 5. $\int_{\pi/6}^{\pi/3} \frac{\sqrt{\sin x}}{\sqrt{\sin x}+\sqrt{\cos x}}dx$

LA

1. $\int \frac{5x}{(x^2+1)(x^2-5x+6)}dx$ 2. $\int_1^3 (2x^2+3x)dx$ by limit of sum

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