Q.1 $\iint_R xy^5\,dx\,dy$ where $R = \{(x,y) : 0 \le x \le 1,\ x \le y \le 1-x\}$

Q.2 $\int_0^a \int_0^{\sqrt{a^2-y^2}} \frac{}{\sqrt{a^2-x^2-y^2}}\,dx\,dy$. Evaluate the integral.

Q.3 $\iint y\,dx\,dy$ over the circle $x^2+y^2 \le a^2$.

Q.4 $\iint_D y\,dx\,dy$ where $D = \left\{ \frac{x^2}{a^2} + \frac{y^2}{b^2} \le 1 \text{ and } x \ge 0,\ y \ge 0 \right\}$

Q.5 $\iint xy(x+y)\,dx\,dy$ where R is the region bounded by $y = x^2$ and $y = x$.

Q.6 $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} \frac{dz\,dy\,dx}{\sqrt{1-x^2-y^2-z^2}}$.

Q.7 Find the area of the region bounded by $x=0$, $y=0$, $x^2+y^2=1$, $y=\frac{1}{2}$

Q.8 Find the area of the Region bounded by the parabola $y^2 = 4ax$ and the line $x = 2a$ in the first quadrant.

Q.9 Evaluate $\int_1^e \int_0^{\log y} \int_1^{e^x} \log z\,dz\,dx\,dy$.

Q.10 Evaluate $\iiint (lx+my+nz)\,dx\,dy\,dz$ over the sphere $x^2+y^2+z^2 = 1$.