$$R[\Omega^{-2} g'_{\mu\nu}(x)] = \Omega^{+2}\left[R' - 2(N-1)\, g'^{\mu\nu} f_{;\mu;\nu} + \right.$$
$$\left. + (N-2)(N-1)\, g'^{\mu\nu} f_{;\mu} f_{;\nu}\right]$$

$$f = \ln \Omega \qquad f_\mu \equiv f_{;\mu}$$

$$g_{\mu\nu} \to g'_{\mu\nu} = \Omega^{-2} g_{\mu\nu} \qquad \phi \to \phi' = \Omega^s \phi$$

$$R \to R' = R\left(\Omega^{-2} g_{\mu\nu}\right) = \Omega^2\left[R - 2(N-1)\, g^{\mu\nu} f_{;\mu\nu} + \right.$$
$$\left. + (N-2)(N-1)\, g^{\mu\nu} f_{;\mu} f_{;\nu}\right]$$

$$\mathcal{L} = g^{1/2}\left(\frac{1}{2}\xi \phi^2 R + \frac{1}{2} g^{\mu\nu} \phi_{;\mu} \phi_{;\nu} + \mathcal{L}_{\text{matter}}\right)$$

$$\frac{\xi}{2} g^{1/2} \phi^2 R \to \frac{1}{2}\xi \underbrace{\Omega^{-\cancel{4}\,N} g^{1/2} \Omega^{2s} \phi^2 \Omega^2}_{\Omega^{2s+2-N} \qquad \cancel{\Omega^{2(s-1)}}\, g^{1/2} \phi^2} \left[R - 2(N-1)\, g^{\mu\nu} f_{;\mu\nu} + \right.$$
$$\left. + (N-2)(N-1)\, g^{\mu\nu} f_{;\mu} f_{;\nu}\right]$$

$$\frac{1}{2} g^{1/2} \phi_{,\mu} \phi_{\nu} g^{\mu\nu} \to \frac{1}{2} \Omega^{-\cancel{4}\,N} g^{1/2} \Omega^2 g^{\mu\nu} (\Omega^s \phi)_{;\mu} (\Omega^s \phi)_{;\nu} =$$

$$= \frac{1}{2} g^{1/2} g^{\mu\nu} \Omega^{\cancel{-2}\;2-N} \left(s \Omega^{s-1} \Omega_{,\mu} \phi + \Omega^s \phi_{,\mu}\right)\left(s \Omega^{s-1} \Omega_{,\nu} \phi + \Omega^s \phi_{,\nu}\right) =$$

$$= \frac{1}{2} g^{1/2} g^{\mu\nu} \Omega^{\cancel{-2}\;2-N+2s} \left(s \underbrace{\Omega^{-1} \Omega_{,\mu}}_{f_\mu} \phi + \phi_{,\mu}\right)\left(s \underbrace{\Omega^{-1} \Omega_{,\nu}}_{f_\nu} \phi + \phi_{,\nu}\right) =$$

$$= \frac{1}{2} g^{1/2} g^{\mu\nu} \Omega^{\cancel{2(s-1)}\;2-N+2s} \left(s^2 f_\mu f_\nu \phi^2 + s f_\mu \phi \phi_{,\nu} + s f_\nu \phi \phi_{,\mu} + \phi_{,\mu} \phi_{,\nu}\right) =$$

$$= \frac{1}{2} g^{1/2} g^{\mu\nu} \Omega^{2s+2-N} \left(s^2 f_{,\mu} f_{,\nu} \phi^2 + 2s f_{,\mu} \phi \phi_{,\nu} + \phi_{,\mu} \phi_{,\nu}\right)$$

$$\mathcal{L} \to \mathcal{L}' = g^{1/2}\Big\{ \frac{1}{2}\xi\phi^2\,\Omega^{2s+2-N}\Big[R - 2(N-1)\,g^{\mu\nu} f_{;\mu\nu} + (N-2)(N-1)\,g^{\mu\nu} f_{,\mu} f_{,\nu}\Big]$$
$$+ \frac{1}{2} g^{\mu\nu}\,\Omega^{2s+2-N}\Big[s^2 f_{,\mu} f_{,\nu}\phi^2 + 2s f_{,\mu}\phi_{,\nu}\phi + \phi_{,\mu}\phi_{,\nu}\Big]\Big\}$$

if $2s+2-N=0$ then

$$\mathcal{L}' = \mathcal{L} + g^{1/2}\Big\{ \frac{1}{2}\xi\phi^2\Big[-2(N-1)\,g^{\mu\nu} f_{;\mu\nu} + (N-2)(N-1)\,g^{\mu\nu} f_{,\mu} f_{,\nu}\Big] +$$
$$+ \frac{1}{2} g^{\mu\nu}\Big(s^2 f_{,\mu} f_{,\nu}\phi^2 + 2s f_{,\mu}\phi_{,\nu}\phi\Big)\Big\} =$$

$$= \mathcal{L} + g^{1/2}\Big\{ \frac{1}{2}\xi\Big[(+)\,2(N-1)\,g^{\mu\nu} f_{\nu}(\phi^2)_{,\mu} + (N-2)(N-1)\,\phi^2 g^{\mu\nu} f_{,\mu} f_{,\nu}\Big] +$$
$$+ \frac{1}{2} g^{\mu\nu}\Big(s^2 f_{,\mu} f_{,\nu}\phi^2 + \cancel{2}s f_{,\mu}(\phi^2)_{,\nu}\Big\}$$

by parts $\phi\Box f$

cancel if $\xi = -\frac{N-2}{4(N-1)}$ $\Big(s = \frac{N-2}{2}$

$$\Box f = g^{-1/2}\left(g^{1/2} g^{\mu\nu} f_{\nu}\right)_{,\mu}$$

Then we get

$$\mathcal{L}' = \mathcal{L} + g^{1/2}\phi^2 g^{\mu\nu} f_{,\mu} f_{,\nu}\underbrace{\Big[\frac{1}{2}\xi(N-2)(N-1) + \frac{s^2}{2}\Big]} = \mathcal{L}$$

$$\frac{1}{2}(-)\frac{(N-2)}{4\cancel{(N-1)}}\cdot(N-2)\cancel{(N-1)} + \frac{1}{2}\frac{(N-2)^2}{8} = 0$$