Ans. To the Q.No. 1

The Generative Adversarial Network (GAN) comprises of two models: a generative model G and a discriminative model D. The generative model can be considered as a counterfeiter who is trying to generate fake ~~imag~~ currency and use without being caught, where discriminator try to catch the fake currency.

The adversarial setup is represented mathematically as follows:

* The generator's objective is to minimize its loss, which is represented as $\log(1 - D(G(z)))$, where z is a random noise vector.
* The generator's objective is to maximize it loss, ~~with~~ which is represented as $\log(D(x)) + \log(1 - D(G(z)))$, where x is a real data.

They are trained iteratively, with the generator trying to generate better fake samples to fool the discriminator, and discrimination try to better distinguish between real and fake.

Ans. To The Q. No. 2

CycleGAN involves two type of adversarial losses: generator adversarial loss and cycle consitency loss:

1) Generator adversarial loss is applied to both generator, where each generator tries to generate image of its domain. the generator aim to minimize this loss against it's corresponding discriminator

2) Cycle consistency loss ensures that an image generated by generator is cycle cosistent. This loss

compares and input photo to the cycleGA to the generated photo and calculates the difference.

In summary, the generator adversarial loss ensure realistic images, while cycle consistency loss for consistent images.