A. Please translate the following essays into Chinese. (35 points)

1. A register capable of shifting its binary information either to the right or to the left is called a shift register. The logical configuration of a shift register consists of a chain of flip-flops connected in cascade, with the output of one flip-flop connected to the input of the next flip-flop.

2. Wavelength-routed networks allow optical lightpaths to traverse multiple hops without electrical conversions, as is necessary for SONET. Such lightpaths provide a high bandwidth, low-latency pipe that is transparent to bit rate and coding format, with the potential to reduce the number of expensive electronic equipment.

3. The move to digital modulation provides more information capacity, compatibility with digital data services, higher data security, better quality communications, and quicker system availability.

4. No mathematical system can precisely model a real physical system; there is always uncertainty. Uncertainty means that we cannot predict exactly what the output of a real physical system will be even if we know the input, so we are uncertain about the system. Uncertainty arises from two sources: unknown or unpredictable inputs (disturbance, noise, etc.) and unpredictable dynamics.

5. Software architecture of a system serves both technical and organizational purposes. On the organizational side, the architecture helps in communicating the high-level design. A number of stakeholders need to understand the system at a fairly gross level. Modeling the system at a high level facilitates communication of the high-level system design or architecture. The reduction in detail makes it easier to grasp the assignment of significant system responsibilities to high-level structures.

6. The enhancement MOSFET is the most widely used device in integrated-circuit design. N-channel devices are preferred to p-channel devices because of their higher transconductance, a result of the fact that μ_n is two to three times higher than μ_p. Both devices are, however, utilized in CMOS technology, currently the most popular technology for the design of analog digital integrated circuits.

7. Fourier analysis is a class of methods that represent a signal by a sum of weighted sinusoidal functions called spectral components, i.e., analyze (decompose) a signal into the spectral components.

B. 中文翻英文: (5 points)

如圖一所示, 系統A包含B, C及D三個副系統, 其中副系統B與副系統D之間的實體介面是藉由光纖纜線完成的.